中国疾病预防控制中心寄生虫病预防控制所

在 根ANNUAL REPORT 2005

NATIONAL INSTITUTE OF PARASITIC DISEASES
CHINESE CENTER FOR DISEASE CONTROL AND PREVENTION



▲中华预防医学会全国医学寄生虫学学术研讨会 National Symposium of Chinese Preventive Medicine Association on Medical Parasitology



▲卫生部王陇德副部长莅临本所视察工作



▲卫生部王陇德副部长参观标本馆

Mr. Wang Longde, Vice Minister of Ministry of Health, P.R. China paid visit to IPD

▲卫生部寄生虫病原与媒介生物学重 点实验室第三届学术委员会第一次会议

The 1st Meeting of the 3rd Academic Committee of Ministry of Health's Pivot Laboratory of Parasite Pathogen and Vector Biology March 15, 2005





▲ 2005年2月25日WHO血吸虫病专家组访问我所

WHO Mission on Schistosomiasis visited IPD, February 25, 2005



▲2005年8月7日-12日在印尼巴厘岛第五次亚洲血吸虫病地区网络会议

The 5th RNAS Meeting (Regional Network to Asian Schistosomiasis) Ministry of Health, Republic of Indonesia Sindhu, August 7-12, 2005 Bali-Indonesia



▲ WHO 遏制疟疾联盟抗疟药及供应服务部及药 物政策司官员访问我所

Roll Back Malaria, WHO visited IPD



▲ 2005年12月16日美国大使馆医官和驻沪领事访问 我所

US Consulate Shanghai Paid visit to IPD, December 16, 2005



▲ 2005年9月12-23日国际抗疟药政策发展与 实施培训班

Workshop on Antimalarial Druy Policy Implementation Review September 12-23, 2005



▲ 2005年12月18-19日朝鲜半岛疟疾控制技术非正式磋商会议

Technical Meeting for Control of Malaria on the Korean Peninsula, December 18-19, 2005 Shanghai



▲ 2005年12月9日厄瓜多尔卫生部部长桑多 瓦尔访问我所

Dr. Wellington Sandoval, Minister, Ministry of Health, Ecuador Paid a visit to IPD, China CDC, December 9, 2005



▲ 2005年5月19-21日汤林华所长出席"亚网"理事会 暨合作组织2005年年会

Dr, Tang Lin-hua at Annual Board and EB-Partner Meeting on Asia Collaborative Training Network for Malaria, May 19-21,2005

2005年親所競眾的部分製顶

Some of Our Awards, 2005











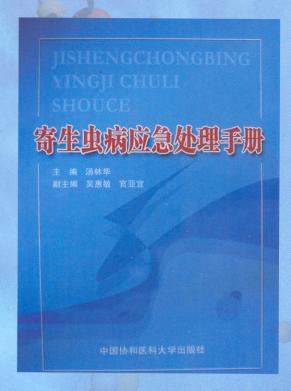






2005年我所编撰的部分部籍

Some of Our Publications, 2005



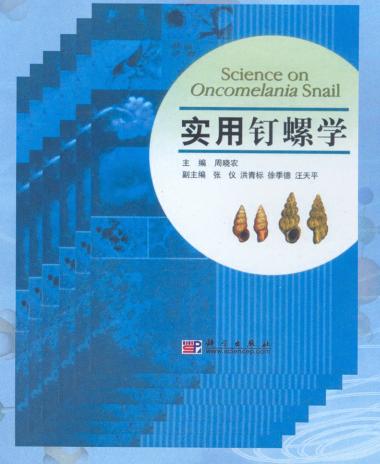
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Schistosomiasis in Asia

Ming-gang Chen Xiao-nong Zhou Kenji Hirayama

The Federation of Asian Parasitologists



中国疾病预防控制中心 寄生虫病预防控制所

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2005

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§ 1.2005 年工作总结及 2006 年工作要点

2005 年行政业务工作总结

2005 年是求真务实、开拓进取之年,在党的十六大精神和"三个代表"重要思想指引下, 我所以科学发展观为指导,以寄生虫病预防控制工作为中心,继续保持旺盛的工作热情和 干劲,与时俱进,努力提升寄生虫病防治能力和科研水平,不断攀登与超越,基本完成年 初制定的各项工作目标。

现将我所 2005 年的行政业务工作总结如下:

1 寄生虫病防治工作上了一个新台阶,应急处理水平进一步提高

近年来,全国寄生虫病疫情出现了上升趋势,血吸虫病、疟疾等寄生虫病的防治形势十分严峻。为进一步控制我国寄生虫病流行趋势,主要开展了以下几个方面的工作:

1.1 技术指导和技术培训

我所专家先后赴湖北、四川、西藏等 16 个省(自治区)百余人次,为疫区提供技术 支持和指导,与当地防治工作者共同开展防治和疫情处理等工作,有效地控制了疫情。

为全面提高全国寄生虫病防治人员的技术水平,我所先后在全国各地举办业务工作会议及各类培训班 30 余次,主要内容涉及我国公共卫生、疾病控制改革方向、流行病学理论、卫生统计学常用方法与软件、卫生经济评估与技术等方面。培训了数百名基层技术骨干,增进了相互间的交流,提高基层技术骨干的理论水平,为全国血吸虫病和疟疾监测、全球基金疟疾项目以及全国人体重要寄生虫病现状调查后续工作的顺利开展奠定了良好的基础。

1.2 技术督导与调研

为有效杜绝疫情反复及防治工作松懈等现象,在卫生部的领导下,专业人员多次赴疫区开展督导检查,如血吸虫病防治的明查暗访工作、国务院血吸虫病防治联系点的技术指导;全球基金疟疾项目的技术督导;丝虫病流动人口监测以及境外回国人员丝虫病监测;西部地区包虫病流行现状调研等,有效地保证了全国寄生虫病防治工作的顺利开展。全年派出专家到各省市区调研或指导、检查工作171人次。

1.3 开展防治和健康教育试点工作

在开展疾控工作的同时,组织专家针对血吸虫病、疟疾、包虫病等开展了相应的防治和健康教育试点工作,如为进一步研究蒿甲醚在湖沼型血吸虫病重流行区对重点人群的保护作用,选择江西省重疫区开展了蒿甲醚控制血吸虫病效果试点观察,为进一步推广该药打下良好的基础;为探索中小学生预防血吸虫病健康教育模式,开展了相关健教材料的预试验和血防健康教育试点工作;同时开展了动物源型黑热病的防治与监测试点,慢性丝虫病的治疗与关怀试点,土源性、食源性寄生虫病防治和健康教育试点等工作。

1.4 健全应急反应机制

根据全国寄生虫病的流行特点,为健全寄生虫病应急反应机制和预测预警系统,进一

步提高对突发公共卫生事件的应急反应能力,我所专家起草的血吸虫病、疟疾突发疫情应 急处理预案经过多次研讨后上报卫生部,其中《血吸虫病突发疫情应急处理预案》已由卫 生部正式下发。

1.5 疫情监测与信息管理

根据全国疾病监测工作安排,我所承担了血吸虫病、疟疾监测的技术指导工作。组织专家编制了《全国血吸虫病监测方案》、《全国疟疾监测方案》、《全国血吸虫病监测方案操作手册》和《全国疟疾监测方案操作手册》。其中《全国血吸虫病监测方案》为我国首个正式下发的传染病监测方案。

完成 2004 年度全国血吸虫病、疟疾、丝虫病、包虫病防治工作调查表的整理、汇总,掌握全国疫情与防治工作进展,同时开展了全国血吸虫病流动点监测和河南、山东等潜在流行区的监测。上述工作为全国寄生虫病防治提供了基础资料与科学依据。

完善全国血吸虫病监测周报和网络直报机制,及时分析和预测疫情动态,并进行急性血吸虫病疫情漏报情况调查并针对血吸虫病、疟疾突发疫情提出应急处理对策,有效控制了疫情。对全国疟疾疫情发展趋势及全国疟疾实际发病人数也进行了科学的预测与推算。

1.6 认真完成卫生部及中国疾病预防控制中心交办的工作任务

我所专家积极参加卫生部、中国疾病预防控制中心组织的政策调研、督导检查、技术标准编制等工作,为卫生部和中国疾病预防控制中心提供技术支持,参与多个技术方案的起草与修订,完成了《水利工程重大项目的卫生学评价方案(草稿)》的编制,制定了《重点寄生虫病防治中长期规划》等近 40 份技术文件,多次组织全国大型培训项目和会议,如血吸虫病、寄生虫病专家咨询委员会换届会议、全国血吸虫病综合治理项目高级师资培训、纪念血吸虫病在中国发现 100 周年大型学术会议等。

2 科研工作取得突破性进展,获准经费再创新高

2.1 课题执行和申请情况

2005 年在研课题 33 项(部级以上重点课题 18 项),其中国家"863"计划 4 项;国家"十五"科技攻关计划 5 项;国家自然科学基金 2 项;科技部中央研究院所专项基金 4 项;上海市科委重大和重点科技攻关项目 3 项,国际合作课题 11 项,所中青年基金项目 3 项,其他来源 1 项(横向课题)。2005 年投入科研经费共 1205.00 万元。

2005 年申报课题 17 项, 获准课题 8 项, 获得经费 860.35 万元。

承担的科技部基础性工作项目"中国人体寄生虫及媒介标本收集、整理和保存"等 5 个课题顺利通过了由科技部委托卫生部主持的专家验收。与国家人类基因组南方研究中心共同完成的"日本血吸虫功能基因组及其应用研究"获得了上海市科学技术进步二等奖。"囊型包虫病的药物治疗研究"和"全球气候变暖对中国血吸虫病传播影响的研究"2 个课题均获得了中华医学科技进步二等奖。

2.2 重视研究生管理和人才培养,支持职工参加继续教育

2005 年共招收研究生 9 名,其中博士研究生 4 名。在读研究生共 28 名,其中博士研究生 5 名,在读的公共卫生硕士 (MPH)研究生 4 名。2005 年毕业研究生 11 名,其中获得博士学位的 4 名,硕士学位的 7 名。采用讲课、实习和社会实践 3 种教学形式,举办了为期 1 个月的"专业寄生虫学与专业英语班",对 2004 级在读硕士生、2005 级在读博士生

和新职工进行了培训,通过增加现场实践活动,使学员理论知识与现场实践相结合,取得较为满意的效果。

5 名博士生参加中国科协主办"第三届优秀博士生学术年会"征文交流, 2 名博士生参加了会议交流。在职职工参加学历学习及业务培训共26人次。

2.3 继续增进国际合作与交流

我所与亚洲疟疾培训网络(简称"亚网")基金会合作,成功举办了为期 13 天的"国际抗疟药政策发展与实施培训班",来自柬埔寨、印度尼西亚、马来西亚、老挝、孟加拉国、缅甸、泰国、菲律宾、越南及中国等 10 个国家的 25 名学员参加了培训。来自 WHO/WPRO、美国药典、美国卫生管理科学药物管理中心、亚网基金会、菲律宾卫生部卫生发展中心、菲律宾热带医学研究所、马来西亚卫生部和我国的 10 位专家为本次培训班学员授课。

受 WHO 和卫生部的委托,承办了"朝鲜半岛疟疾控制技术会议",来自朝鲜、韩国及 WHO 的代表和官员共 12 人参加会议。

通过承办各类国际会议,保持和发展了我所与国际同行间的合作关系,扩大了我所的影响,提高了我所在国际同行间的地位,也使我所有更多参与国际合作与交流的机会,今年共向 WHO/TDR、瑞典全球基金、日本合作课题等渠道申请国际合作课题 3 项。派出 2 名业务骨干赴马来西亚参加亚网基金会举办的"疟疾培训技术研讨班"。

本年度共接待外宾 30 批 128 人次, 出访 24 批, 30 人次。

2.4 论文和其他工作

- 2.4.1 全年在国内外科技期刊以第一作者发表各类论文约 120 篇。其中被 SCI 专业期刊收录的 11 篇,学术会议交流 36 篇,参加著作部分章节撰写 16 篇。胡薇副研究员的《日本血吸虫雌虫、雄虫 cDNA 文库的构建及基因表达谱建立》被教育部、国务院学位委员会评为 2005 年全国优秀博士学位论文。
- 2.4.2 本所主办的《中国寄生虫学与寄生虫病杂志》在去年荣获卫生部首届医药卫生优秀期刊一等奖的基础上,今年又获得中华预防医学会系列杂志优秀期刊一等奖。
- 2.4.3 完成卫生部重点实验室学术委员会的换届工作,产生了新一届卫生部寄生虫病原与媒介生物学重点实验室主任和学术委员会委员,并对学术委员会章程进行了修改和完善。
- 2.4.4 完成由中心牵头的软课题"新发现传染病防治对策研究报告—新发寄生虫病防治对策研究",为科技部提供"十一五"期间我国新发传染病科学研究的课题计划,并为其发布招标指南做准备。
- 2.4.5 为促进寄生虫学与寄生虫病防治科技进步与繁荣,挂靠于我所的中华预防医学会医学寄生虫分会积极组织专题研讨会、专业技术培训班和全国性学术交流会,来自包括台湾、香港在内的各省(区、市)学者共800余人次参加,交流论文331篇。由于工作成绩突出,被评为"中华预防医学会先进分会"。
- 2.4.6 完成了寄生虫病标准编写指南;血吸虫病、疟疾、丝虫病、黑热病和包虫病诊断标准的修订以及"卫生标准体系框架及其构成研究"中的寄生虫病标准部分的制订工作。
- 2.4.7 我所的人体寄生虫和媒介标本馆,既有相当的学术水平,又有科普教育的内容,适合从事寄生虫病防治和科研人员、医学院校学生以及中小学生等不同层次的需要,今年共接待参观者 460 人次。25 篇寄生虫病健康教育科普文章刊于《健康财富周刊》,寄生虫病

健康教育走向社会和社区。

- 2.4.8 全年举办学术讲座 12 次, 共有 270 余人次参加。
- 2.4.9 我所主编的《寄生虫病应急处理手册》、《实用钉螺学》、《亚洲寄生虫学第5卷-亚洲寄生虫病》已出版。

2.5 编辑出版工作

《中国寄生虫学与寄生虫病杂志》共收稿件 240 篇,刊登论著、实验报道等 70 篇,综述及短文约 90 篇,重点报道医学寄生虫学的研究成果和疾病控制经验,交流介绍新理论、新技术和新进展。为庆祝建所 55 周年,特增刊一期,设述评、综述和专题报告等栏目,均由我国寄生虫病领域知名专家撰稿。

3 继续深化人事制度改革,机构设置和人员配置更趋合理

为进一步推进和深化本所人事制度改革,不断完善岗位聘用管理,根据中国疾病预防控制中心有关文件精神和"按需设岗,按岗定责;公平竞争,择优聘用;严格考核,聘约管理"原则,结合本所实际,调整了寄生虫病病原与媒介生物学重点实验室、新技术室、信息与培训中心等部门的职能。为掌握全国与寄生虫病传播相关的媒介种群分布情况,为现场控制媒介和新发寄生虫病提供技术支撑,设立了"媒介控制室",使机构设置更趋合理,职责更加明确。

同时对包括中层干部在内的部分岗位进行公开竞聘。在用工上本着"不求所有,但求 所用",采用人才派遣、项目聘用、客座教授、高级专家返聘等多种方式,逐步改变静态 的用人制度,形成了竞争机制,在提高人才使用效率,更好地选拔寄生虫学专业人才以及 促进人才合理流动等方面收到较好效果,也为"想干事、能干事"的人提供干事业的舞台。

4 围绕所的中心工作,完成其他各项任务

- 4.1 以开展保持共产党员先进性教育活动为契机,全面加强党的思想、组织、作风和制度建设,进一步发挥党委的政治核心作用,支部的战斗堡垒作用和党员的先锋模范作用。针对职工关心的热点问题,制定了整改措施,抓住重点、突出亮点、体现特点,推动了各项工作。通过测评,职工对本次先进性教育活动的满意率为100%。
- 4.2 尽管受瑞金医院门急诊大楼施工的影响,"急性虫媒传染病实验室"改造工程被迫延期,使我所的清产核资、55 周年所庆、所内环境优化工程、建设"职工之家"等相关工作均受到较大影响。但我们克服了重重困难,积极争取上级的支持,经过艰苦努力,最终破瓶颈、解难题,使该工程于今年9月重新开工,同时也为其他工作的顺利开展创造了条件。
- 4.3 举办了"中华预防医学会全国医学寄生虫学学术会议",来自全国各大院校、疾病预防控制机构、科研院所等共计 180 余人参加了会议。会议共征集学术论文 118 篇,会议交流 39 篇,涉及了寄生虫病病原学、流行病学、免疫学及预防控制、传播媒介等多学科、多领域,反映了当前寄生虫学研究和寄生虫病控制的进展、动态、经验、成就和发展趋势,交流的论文内容新颖,总体学术水平较高,学术气氛浓厚。通过学术交流和讨论,不仅加深了相互了解,增强了科技合作,也为优秀科技新人的脱颖而出提供了舞台。此外,首次在分会学术活动中评选优秀论文,同时为每一位论文交流者出具证书的作法,受到与会领导和同仁的肯定与欢迎。
- 4.4 为规范本所的各项工作程序,提高管理水平和工作效率,修订和补充了所的各项规章

制度,并制成汇编,力争把我所的各项工作纳入制度化、规范化和科学化的轨道。

- 4.5 积极推进所务公开,向职代表和民主党派通报了我所设备购置、人员培训和财务状况, 今后将作为制度坚持下去。
- 4.6 为跟上信息时代的步伐,提高工作效率,构建了本所信息平台,建成了一个 20 兆宽带 专线接入、300 个端点的局域网系统和计算机室,设计并完成具有本所特色的网页,所内 电话系统已完成换代。
- 4.7 完成双路进电工程设备安装,保证重要仪器设备不间断供电。同时对本所部分下水管 道和道路路面进行了改造。
- 4.8 关心单身职工和学生的生活,对集体宿舍进行改造,并已全部安装空调,卫生条件得到改善,电话已安装到位。

过去的一年,全所职工同心同德,开拓进取,克服了2号楼延期施工带来的各种困难,通过保持共产党员先进性教育活动,开创了新的工作局面。取得的成绩来之不易,我们将继续保持昂扬向上的拼搏精神,以党的十六大精神和"三个代表"重要思想为指导,使我所的各项工作再上一个新台阶。

2006 年行政业务工作要点

2006年是"十一五"规划的开局之年,也是我所团结奋进、和谐创新的一年。我所要以党的十六届五中全会精神和"三个代表"重要思想为指导,继续以建设一支具有国际影响力的寄生虫病防治科研队伍为目标,进一步登高望远,开拓进取,奋力拼搏,扎扎实实地推动各项工作的开展并取得实效,为保障人民的健康和实现全面建设小康社会的目标作出贡献。

1 切实加强寄生虫病的防治工作

- 1.1 血吸虫病
- 1.1.1 继续完善全国血吸虫病监测工作

在全国血吸虫病流行区设立的 82 个国家级监测点中,建立并完善全国血吸虫病监测数据库,对疫情、螺情、环境和社会等流行因素开展立体监测和分析;在 7 个疫情未控制省和 5 个已达到传播阻断省建立血吸虫病流动监测点。全面掌握全国血吸虫病疫情动态变化。

通过调研和培训,对监测的重点地区提供技术指导与支持。同时在河南、山东、重庆、 江苏北部地区开展病情和螺情调查,对潜在流行区开展监测工作。

1.1.2 有针对性的开展全国血吸虫病健康教育工作

在血吸虫病流行区,选择不同的健康教育方式和方法,针对重点人群实施血吸虫病健康教育干预模式,探索最佳的时间、方法,最大限度地改变当地居民不良的生活行为,降低居民接触疫水频率和急性血吸虫病的发生,达到保护人群身体健康的目标。

1.1.3 建立全国血吸虫病诊断技术平台

为适应日本血吸虫病免疫诊断研究和发展的需要,在现有血清库的基础上,进一步扩大采集相关疾病的样本,建立血吸虫病诊断与检测技术平台。

1.1.4 加强血吸虫病防治的技术指导与督导

继续对国务院血防办综合治理的 5 个试点江西进贤、安徽贵池、湖南安乡、湖北汉川和四川普格进行技术指导和支持,并针对综合治理措施及其效果开展卫生学和经济学评价以及效益分析。同时,根据中央支持地方全国血吸虫病防治项目方案要求,开展项目的检查督导、技术指导和评估等,制订相关督导检查方案。

1.1.5 完善全国急性血吸虫病疫情报告机制

根据全国传染病网络直报系统,进一步完善急性血吸虫病疫情报告机制,健全急性血吸虫病个案追踪制度,定期制作疫情分析报告,同时加强突发疫情的预防控制工作。

1.2 疟疾

1.2.1 开展疟疾春季休止期根治

根据疟疾流行的特点,在 2006 年春季在全国范围内开展春季休止期根治工作,制订相关技术方案,根据方案要求进行技术指导和督导检查,最大限度的减少疟疾疫情的反复。 1.2.2 继续做好全国疟疾监测点工作

全面做好疟疾监测疫情数据的整理分析,建立并完善全国疟疾监测数据库,对疫情、环境和社会等因素进行实时、立体监测,全面掌握全国疟疾疫情动态变化,加强疟疾突发疫情的预警机制建设和现场督导。

1.2.3 高质量的做好全球基金疟疾项目

在新的起点上,高质量的全球基金疟疾项目,积极推动全国疟疾的防治,最大限度的减少突发疫情的发生,推进边境地区健康教育、诊断标准等工作,制定并完善疟疾相关技术方案,力争发挥最大的作用,推动全国疟疾防治,并带动我所国际合作与大型合作项目管理水平。

1.2.4 完善疟疾疫情的管理,加强重点地区疟疾防治工作督导

进一步规范疟疾疫情上报的机制,在流行季节定期制订疟疾疫情分析报告;完善疟疾 突发事件应急处理机制,重点关注安徽、西藏、云南等省(自治区)的疟疾疫情,加强上 述重点地区的督导检查,并根据中央支持地方疟疾防治项目的要求,开展技术指导、督导 检查等,积极推动重点地区的防治和突发疫情处理工作。

1.3 其他寄生虫病

1.3.1 做好我国消除丝虫病认证的各项准备工作

WHO 将于 2006 年对我国消除丝虫病工作进行认证,要精心做好各项准备,完成我国消除丝虫病的国家报告(中英文文件),建立全国丝虫病防治工作数据库,继续做好消除丝虫病后期的监测工作与慢性丝虫病治疗、关怀试点等工作。

1.3.2 加强包虫病、黑热病的防治与管理

做好国家包虫病防治示范县工作、开展黑热病的防治试点,规范包虫病、黑热病疫情报告与管理,重点加强全国包虫病防治试点的技术指导与督导,同时开展相关技术交流与培训。

1.3.3 继续做好全国土源性、食源性寄生虫病监测

建立土源性、食源性寄生虫病监测试点,为全国卫生城市评比提供技术理论支撑,做好技术培训、技术指导、工作质量督导与评价,制订重点寄生虫病的控制标准。

1.4 全面推进全国寄生虫病防治示范县的建立

积极推动建立全国寄生虫病防治示范县,为示范县全面开展工作进行各项准备,包括基线调查、收集基础资料、制定各类工作方案、编制防治操作规范、技术培训等。

1.5 完善突发公共卫生事件应急反应及处理机制

进一步完善突发公共卫生事件应急反应机制,增强处理突发疫情的处理能力,进一步加强专业人员的流行病学、应急处理技术的培训与学习,健全规章制度,做到科学管理,规范操作,能有效应对各类突发的寄生虫病疫情。

2 认真抓好科技项目管理,继续扩大国际合作与学术交流

发挥本所的整体优势,全力争取国家十一五项目的申请。同时要以提高科技项目质量 为抓手,加强对在研课题的管理,定期检查、评估项目执行情况。组织所学术委员会或所 外专家对课题、成果进行评价,并逐步形成机制。

要在加强薄弱学科,形成优势学科,培养特色学科等方面下功夫,使我所的功能更好 地得到体现与发挥。

新一轮的竞争将是平台的竞争,应加强科技与资源平台建设,包括寄生虫病病原与媒介标本资源平台建设、急性虫媒传染病与新发寄生虫病信息平台建设、寄生虫病诊断技术平台建设、开放型寄生虫病病原与媒介生物学重点实验室建设。

通过最近几年多次承办国际会议和培训班,开创了国际合作与交流的新局面,我们要再接再厉,做好 WHO 双年度计划中的培训任务,选派 2~3 名业务骨干参加亚网的培训,积极筹备"海峡两岸第二次学术研讨会",继续发展我所与 WHO、亚洲疟疾培训网络理事会等国际组织的合作关系,使我所有更多的机会参与国际交流和合作,更好地发挥 WHO合作中心的职能。

2006 年要举办"全国媒介生物防治学术讨论会"、"全国血吸虫病防治研究青年学术交流会"、"寄生虫虫种资源标准化整理培训班"等大型活动,旨在提高我所的整体水平和学术氛围,给青年防治和科技人员提供事业的舞台,增进与同行间的交流与学习,努力在寄生虫病防治的理论与技术水平上进一步提高。同时探索寄生虫病防治和科研的新思路,为我国的寄生虫病防治事业作出贡献。

3 完成急性虫媒传染病实验室改造工程

急性虫媒传染病实验室改造工程是目前制约我所各项工作的瓶颈,确保该工程顺利开展,将进一步推动所内环境优化工程、建设"职工之家"、清产核资等相关工作的完成。因此,我们要将此工作作为重点,鼓足干劲,全力以赴,破瓶颈、解难题,求突破,同时做好配套设施配置、工程质量监督、验收等工作,力争于5月底竣工,并且要以点带面,推动其他各项工作的开展。

4 做好人才培养和培训工作

树立人才资源是第一资源的观念,要加大人才引进和培养力度,通过招聘、兼职、借用等方式引进急需人才,把好进入关,挑选优秀硕、博士生,并注重在实践中培养和锻炼人才,以品德、知识、能力和业绩作为评价人才的标准,鼓励在职职工参加继续教育,不断地更新和拓宽知识,以适应时代发展的需要。

积极开展多层次、多途径、多形式的教育培训,要加强现场工作能力培训,把岗前培

训、在职培训、挂职锻炼、进修学习的作为制度,形成人员培养梯队,通过培训,提高各类人员的理论水平、工作技能和思想素质。我们还要加强对应用型和科研型研究生的培养,不断提高研究生质量和水平。

5 完成其他各项工作

- 5.1 立足当前,着眼长远,在新的起点上重新制定本所的中长期发展规划和人才发展规划,为事业的发展注入新的动力和活力。
- 5.2 加强期刊与网络建设,支持与加强《中国寄生虫学与寄生虫病杂志》保持国内同行领 先水平;支持《国际医学寄生虫病杂志》顺利更名并稳步夯实基础,争取快速发展;同时 加强网络、信息与数字化图书馆建设。
- 5.3 制作形式多样的寄生虫病防治宣传材料,包括 DVD,年画及生活日用品等,以提高人们对寄生虫病防治工作的认识,起到普及和教育的作用。逐步对大、中专院校师生开放人体寄生虫和媒介标本馆。
- 5.4 举办中层干部培训班,落实 2006 年的各项重点任务,明确责任人,提高干部的管理水平和能力。
- 5.5 加强规划,并严格按照疾控项目的目标完成各项工作任务。
- 5.6 抓好一类新药三苯双脒的开发工作,今后我所的科技开发将以成果的转让为重点,争取多出成果,多出效益。
- 5.7 认真做好《国家公共卫生应急反应体系建设第二期仪器设备配置》仪器设备的进口手续,并做好设备的接收、验收等工作。大型仪器设备将实行集中管理、开放使用,充分发挥各类设备的作用。
- 5.8 关心职工生活,美化工作环境,积极解决职工关心的热点问题,落实整改措施并推动各项工作,争取在上年的基础上继续提高职工待遇。

新的一年机遇和挑战并存,完成全年的各项任务,一定要有坚韧不拔、奋发有为的良好精神状态。我们将以同心同德,开拓进取的精神,巩固和发展先进性教育的成果,勇于面对难题,敢于迎接挑战,以改革促发展,用发展和改革的办法解决前进中的问题,努力开创寄生虫病防治事业的新局面。

§1. REPORT ON THE WORK IN THE YEAR 2005& KEY

POINTS OF THE WORKING PLAN FOR THE YEAR 2006

SUMMARY OF THE ADMINISTRATION WORK IN 2005

2005 was a pragmatic and pioneering year. Following the Spirit of the 16th CPC Congress sand the important thoughts of "Three Represents" and guided by the scientific concept of development, the Institute of Parasitic Diseases (IPD), Chinese Center for Disease Control and Prevention (China CDC), which paid high attention to the work of parasitic diseases control and prevention with great enthusiasm and full hearted devotion, fulfilled all the tasks assigned at the beginning of the year as planned.

Summary of the administration work in our institute in 2005 is as follows:

1 The work of parasite disease control and prevention stepping into a new era, the capacity of emergency response keeping strengthened

The prevalence of parasitic diseases in China has been increased in recent years, especially the prevalence of schistosomiasis and malaria. Following actions have been taken by IPD to control the transmission trend:

1.1 Technique guidance and technique training

The experts of IPD went to 16 provinces/autonomous regions including Hubei, Sichuan, Tibet, ect. to provide local personnel with technique supports and guidance so as to control the prevalence in those endemic areas.

In order to improve the knowledge of parasitic disease health workers, more than 30 working meetings/technical trainings on public health, reform of disease control, epidemiology, statistics and application of statistic software, and evaluation of health-economics were held throughout the country. Such kind of meetings/trainings provided a platform for information exchange and formed a solid foundation for the implementation of national malaria surveillance, national schistosomiasis surveillance, China Global Fund malaria project and national survey of important human parasitic diseases.

1.2 Technical supervision and investigation

In order to prevent repeated outbreaks and slackening supervision, experts of IPD, who were headed by MOH, went to endemic areas to supervise and investigate the implementation of national schistosomiasis control, China Global Fund malaria project, national filariasis surveillance and the prevalence of echinococcosis in western part of China. A total of 171 times of supervisions and investigations were conducted by IPD's personnel.

1.3 Trial study and health education

A series of prevention and health education work on schistosomiasis, malaria and echinococcosis were conducted by IPD's professionals in selected endemic areas while carrying

out disease control work, such as the application of arthemther, an anti-schistosomiasis drug, in lake areas of Jiangxi province; anti-schistosomiasis health education for school children, establishing surveillance spots of leishmaniasis, health care for chronic filariasis cases, and health education of soil borne and food borne transmitted diseases. All these work provided strong field evidence for parasitic diseases control and prevention.

1.4 Emergency response system

Regarding the characteristics of the prevalence of parasitic diseases in China, experts of IPD drew up "the draft plan of emergent schistosomiasis management" and "the draft plan of emergent malaria management", among which, "the draft plan of emergent schistosomiasis management" was formally issued by MOH.

1.5 Epidemic situation surveillance and information management

According to government's assignment of national disease surveillance, IPD is in response to the surveillance of malaria and schistosomiasis. "National Plan of Schistosomiasis surveillance", "National Plan of Malaria surveillance", "Operative Manual of National Plan of Schistosomiasis surveillance" and "Operative Manual of National Plan of Malaria surveillance" were drawn up by IPD's experts, among which, "National Plan of Schistosomiasis surveillance", "National Plan of Malaria surveillance" were among the first infectious disease surveillance plans that formally issued by Chinese government.

We have finished sorting and gathering the investigation graphs about schistosomiasis, malaria, filariasis and echinococcosis prevention, so that we knew clearly about the epidemic situation and the development of the work. At the same time, we carried on the monitoring of the flow point of schistosomiasis and the potential epidemic area in Henan Province and Shandong Province. These work have provided basic materials and scientific evidences for the prevention of the parasitic diseases in the country.

In addition, we had improved the weekly reporting system and direct network reporting system of schistosomiasis as well as conducted investigations on missing report of acute schistsomiasis cases, so that the epidemic situation of schistosomiasis could be analyzed and predicted timely. Emergent response countermeasures were put forward so that the epidemic situation of malaria and schistosomiasis could be controlled effectively. Also we gave reasonable predictions and reckoning on the tendency of the epidemic situation of malaria, as well as the accurate number of patients.

1.6 Accomplishing the tasks assigned by MOH and China CDC

The experts in the institute actively participated a number of activities organized by MOH and China CDC, such as policy studies, monitoring work, and the revision of technique standards. In addition, we provided technique supports to the MOH and China CDC, and took part in drafting and revising a batch of technique projects. We have drawn up "The Hygiene Evaluation Project Of The Important Hydraulic Engineering (draft)", as well as 40 technique documents including "Middle And Long-term Plan on the Prevention Of Important Parasitic

Diseases". We have corganised many national training projects and meetings. Such as, the re-election of consulting committee of schistosomiasis and other parasitic diseases, training for senior professionals on intergrated management of schistosomiasis, and the 100th anniversary of the finding of schistosomiasis in China, etc.

2 The great advancement of the research work and the more budget permitted than ever before

2.1 The performance of the program and the situation of the application

A total of 33 research projects were undertaken in 2005, among which 2 were supported by "863" National High-tech Program, 2 by "863" National High-tech Special Program, 5 by National "Tenth Five-year" Key Technologies R&D Program, 2 by National Natural Science Foundation of China, 4 by Special Fund of Ministry of Science and Technology, 3 by Science and Technology Committee of Shanghai Municipal Government, 11 were in collaboration with international communities, 3 were supported by IPD, and 1 was in collaboration with fraternal institute at home.

The professionals of IPD applied 17 new projects in 2005, 8 of which were approved. A total of about 8.6 million Yuan was gained.

Five projects have been fulfilled, they are:

- I The collection, arrangement and storage of human parasite and vector specimens (supported by Special Fund of the Ministry of Science & Technology of China)
- II Study on Gene Engineering Vaccine against Schistosoma Japonicum (supported by "863" National High-tech Program)
- III Study on Gene Engineering Multi-value Vaccine and DNA Vaccine against Schistosoma Japonicum (supported by "863" National High-tech Special Program)
- IV Rapid Diagnosis of Cryptosporidiosis and Identification of Cryptosporidum Strain (supported by National "Tenth Five-year" Key Technologies R&D Program)
- V Biological Study on Surveillance and Early Warning System of Emergent Parasitic Vectors (supported by National "Tenth Five-year" Key Technologies R&D Program)

Personnel of IPD awarded two third-medal of Chinese Medical Achievement

Study on Medication of Cystic Echinococcosis (headed by Prof. Xiao Shuhua)

Impact of Global Warming on Transmission of Schistosomiasis in China (headed by Prof. Zhou Xiaonong)

A collaborating project named "Study on Genome of Schistosoma Japonicum and Its Application", which is headed by Prof Feng Zheng and Prof Hu Wei Chinese National Human Genome Center at Shanghai, awarded second medal of Shanghai Science & Technology Achievement.

2.2 Highly regard the management and education of graduate students and endorse personnel for further education.

In the year of 2005, 9 fresh postgraduates were recruited, including 4 doctorial candidates. Up to

now, there are totally 28 postgraduates studying in IPD, of which 9 are doctorial candidates and 4 MPH candidates. Besides, there were 11 postgraduates graduated from IPD, of which 7 awarded master degree and 7 awarded PhD. With the educating method of presentation, practice and social practice, we held a one-month-long course of parasitology and special English for postgraduate students enrolled in 2004, phD students enrolled in 2005 and new staffs. In the training process, field work practice made students combine the knowledge with practical work. The training obtained satisfying effects.

In 2005, 5 phD students participated in the paper discussion of "The 3rd excellent phD students annual symposium" organized by China Science Association. Two phD students attended group discussion during the meeting. The total number of staff studying for certificate or receiving professional training is 26.

2.3 Continue to improve international communication

IPD cooperated with The Asian Collaborative Training Network for Malaria (ACTMalaria), successfully organized a 13-day-long training course named "International training program for policy development and implement of anti-malaria drug". 25 persons from 10 countries, such as Cambodia, Indonesia, Malaysia, Laos, Bangladesh, Myanmar, Thailand, the Philippines, Vietnam and China, attended this training course. The to experts, who gave lectures during the training course, were from WHO/WPRO, American Pharmacopoeia, drug management center of American Health management science, ACTMalaria, Ministry of Health development center of Philippines, Tropical medicine institute of Philippines, Ministry of Health of Malaysia and China.

Entrusted by WHO and Ministry of Health, IPD organized "Conference of malaria control technique for Korean peninsula". A total of 12 delegates and officials from DPRK, ROK and WHO attended this meeting.

By holding international conferences, IPD developed relationships with foreign counterparts, expanded its influences in international communities and gained more opportunities of international cooperations and exchanges. In the year of 2005, IPD applied three cooperating projects from WHO/TDR, Sweden, and Japan respectively and sent two professionals to Malaysia for Malaria training program organized by ACTMalaria.

In 2005, IPD received 30 groups of foreign guests inclusing 128 persons. And there were 24 groups of our employees including 30 persons visiting abroad.

2.4 Papers and other works

2.4.1 There have been 120 papers published on domestic or foreign journals with the first author, 11 of which have been embodied by SCI. There have also been 36 symposium papers and 16 articles for book chapters. Dr Hu Wei, associated professor's paper that named "Construction of cDNA libraries from male and female adult worms of Schistosoma japonicum and establishment of gene expression profile", appraised as China excellent doctoral dissertation of 2005 by Ministry of education and degree committee of State Department.

- 2.4.2 Chinese Journal of Parasitology and Parasitic Diseases which is sponsored by IPD has been appraised as the first prize of Chinese Preventive Medicine Association's a series of excellent journal, after receiving the first prize of Ministry of Health's first term excellent medical journal.
- 2.4.3 The academic committee of Ministry of Health's key laboratory were re-elected. There are new director and academic committee members of Ministry of Health's key laboratory for parasitic pathogen and vector biology. The constitution of academic committee was also revised and improved.
- 2.4.4 Completing China CDC's project of "report for strategy of preventing and treating new infectious diseases-the research for strategy of preventing and treating new parasitic disease". We also planed the project of scientific research on China new infectious diseases within the time of "11th five-year-project" for Ministry of Science and Technology and published instructions for public bidding.
- 2.4.5 In order to boost parasitology and science and technology for prevention and treatment of parasitic diseases, Chinese Preventive Medicine Association's parasite branch attached to IPD organized symposiums, professional training courses and national meeting for academic exchanges. The number of experts from Taiwan, Hongkong and other provinces or districts attended the conference was 800. And there were 331 papers for communication. Because of its achievement, parasite branch was appraised as Chinese Preventive Medicine Association's advanced branch.
- 2.4.6 Accomplishing the formulating of parasitic diseases criterion: modification of diagnosis of schistosomiasis, malaria, filariasis, visceral leishmaniasis and echinococcosis; the establishment of parasitic diseases criterion part of "health criterion system and its structure".
- 2.4.7 The Museum for Medical Parasitology, Entomology and Molluscology (established by IPD) not only met the need of academic level and the need of popular education but also was suitable for people with different background knowledge, such as, personnel working with prevention, treatment and research of parasitic diseases, medical school students and high school or elementary school students. There have been 460 persons visiting this specimen room this year. In 2005, 25 articles of health education and promulgating science about parasitic diseases were published on "Health-Fortune Weekly", which spread health education of parasitic diseases to society and communities.
- 2.4.8 There were 12 academic lectures organized by IPD in 2005. More than 270 persons attended these lectures.
- 2.4.9 "Emergency manual of parasitic diseases", "Practical theory of Oncomelania" and "Asian parasitology Vol.5-Asian parasitic diseases" compiled by the professionals of IPD were published.
- 2.5 Editing and publishing

The editors of "Chinese Journal of Parasitology and Parasitic Diseases" received 240 papers.

Among them, 70 treatises or experimental papers and 90 reviews or abstracts were published. The papers focused on research products of medical parasitology and experience of controlling diseases, and introduced new theories, new techniques and new developments.

A special volume of Chinese Journal of Parasitology and Parasitic Diseases, which contained comments, reviews and special topics, were issued to celebrate the 55th anniversary of IPD. The authors of these articles are all national famous experts in the field of parasitic diseases.

3 Deepening the reform of human resource system, rationalizing department setting and personnel allocation

In order to deepen the reform of human resource system and improve personnel management, according to CDC documents, we should set up positions where needed and decide respective responsibilities. We also need fair competition and choose best employee. Strict assess system and employ treaty should be used. According to the practical situation of our institute, we adjusted the function of key laboratory for parasitic pathogen and vector biology, new technique office, the center for information and training and so on. To acquire the nationwide distribution of vector population related to the transmission, to support field control work of vector and newly emerged parasitic diseases, we established vector control office, with which the organizing of department is more reasonable and the duties of each department are clearer.

At the same time, we hold a public election from some positions, including the positions of intermediate leaders. The principle of choosing employees is not possessing people but using people. With the method of dispatching, employee for project, visiting professor and re-employing advanced experts, we gradually change the static state of human resource system and form competing mechanism, which receives good results in improving efficiency of people working, choosing parasitological professional personnel and promoting proper mobility of people. Such changes also provide a stage of career for the people who want to work well and are able to work well.

4. Accomplishing other tasks besides the main tasks of IPD

- 4.1 Taking the opportunity of the Education Campaign to preserve the Advanced Nature of CPC members, we strengthened the thinking, organization, behavior and mechanism of the Communist Party from all round way; furthermore exerted the political center role of partisans, combat fortress role of branches and pioneer-model role of party members. Aiming at the hot issues employees caring, we established reforming measures, caught hold of keystone, given prominence to brightness, exhibited specificity resulting to promote all tasks, 100% employees thesatisfied with the advancing education action through a poll.
- 4.2 Though affected by the construction of Ruijin Hospital, "Laboratory for emergency parasite vector infectious diseases" rebuilding project was obliged to put off, and the verifying assets, 55th anniversary of our institute, environment optimization engineering, "family of employees" construction and all the related work were affected greatly, however, we managed to restart the

construction in September this year, thus getting the above-mentioned working plans carried out successfully.

- 4.3 "Symposium of Chinese Preventive Medicine Association on Medical Parasitology" was held, more than 180 fellows attended the conference from colleges countrywide, disease prevention and control institutions, scientific research institutions, etc. 118 academic articles were collected, 39 articles were discussed in the conference, covering many disciplines and fields, such as parasitic pathogenology, epidemiology, immunology, prevention and control, transmission vector. reflecting present advancing, dynamics, experience, achievement and developing tendency in parasitology study and parasitic disease control. The thesis discussed in the meeting are novel, academic level is high, academic atmosphere is dense. Academic communication and discussion improved mutral understanding, strengthend science and technology cooperation, and gave the chance for the young scientists. Additionally, we first chose excellent thesis in the branch academic meeting, awarded diploma to everyone whose article was discussed in the conference, which was approved and welcomed by leaders and colleagues attending the conference.
- 4.4 In order to standardize working procedure of our institute, improve management art and working efficiency, we modified and complemented institute rules, formed a compilation. As a result, what we did was suptemized and standardized.
- 4.5 We are actively the institute affairs, reporting assets purchase, personnel training and finance status to employee representatives and democratic parties, and will hold to it as a rule for the future.
- 4.6 In order to keep up with the steps of information era, improve working efficiency, we set up an information platform, built a computer apartment and a local area network (LAN) with 20M broadband special line and 300 ports, designed and completed the web page owning our institute's character, and replaced the telephone system of our institute.
- 4.7 Double-line power supply engineering facilities installation were completed, continuously insuring power supply to important instruments. At the same time, some sewage pipes and road surface were rebuilt.
- 4.8 Single employee and graduate's living condition got improved, dormitories were newly decorated, and equipped with air conditioner, hygienic conditions were improved, telephone was well equipped.

During the past year, all of the employees of our institute were of one heart and one mind, exploiting and making progress, getting over the difficulties due to the delay of the construction of No.2 building, initiating new working look, getting hard-earned achievement through communists advancing education action. We will keep the high spirit, making the work of our institute into a higher level directed by The Sixteenth Meeting spirit and the important thought of "Three Represents".

THE KEYS POINTS OF ADMINSTRATIVE AND PROFESSIONAL WORK IN 2006

The year of 2006 is not only the first year of "The Eleventh Five" layout, but also the year of IPD united to walk forward, innovating harmoniously. Directed by The Sixteenth Meeting spirit and the important thoughts of "Three Represents", we set our goal as constructing a troop of parasitic disease prevention, treatment and scientific research, which would be well-known internationally. We are going to look forward with great foresight, walk forward, make great progress, actually promote all works to operate and get real effect, contributing to ensure the health of the people and fully reach the goal to build well-to-do society.

1 Faithfully strengthen the prevention and treatment of parasitic disease

1.1 Schistosomiasis

1.1.1 Persist to reinforce China's schistosomiasis surveillance work

In the 82 state surveillance spots set up in the schistosomiasis epidemic area, we will construct and reinforce China schistosomiasis surveillance database, initiate all-around surveillance and analysis to epidemic factors such as epidemic situations, snail distribution, environment and society, etc, build flowing schistosomiasis surveillance spots in the 7 provinces where epidemic situation has not been controlled and 5 provinces that reach the transmission interruption standard, as a result, we could grasp the China schistosomiasis dynamic epidemic situation comprehensively.

Supplying technique instructions and assistance for the key surveillance area through investigation and training, meanwhile, we are going to initiate disease and snail situation investigation in Henan, Shandong, Chongqing and north area of Jiangsu, and surveillance in the potential epidemic areas.

1.1.2 Initiate China schistosomiasis health education with pertinence

In the schistosomiasis prevalent areas, we arrange to choose varied health education methods and measures, implement schistosomiasis health education intervention model to key crowds, explore optimal time and means in order to change the life style of the local inhabitants to the largest extent, decrease the frequency of inhabitants exposure to polluted water and morbidity of acute schistosomiasis, resulting in reaching the goal of protecting population healthy.

1.1.3 Build schistosomiasis diagnosis technology platform of China

In order to meet the demands of schistosomiasis japonicum immunology diagnosis study and development, we should extend the sampling of related diseases, build schistosomiasis diagnosis and technology platform based on the present serum database.

1.1.4 Strengthen schistosomiasis prevention and cure technology instruction and supervision

We will continue to provide technical guidance and support for integration management test spots of State Council Schistosomiasis Prevention Office, including Jingong of Jiangxi, Guici of Anhui, Anxiang of Hunan, Hanchuan of hubei and Puge of Sichuan, and we will initiate hygienic and economic estimation and effect-analysis regarding integrated administration

measures and its effect. At the same time, we will commence project investigation and instruction, technology direction and evaluation, etc, according to the demands of center assistance to district China schistosomiasis prevention and cure project.

1.1.5 Improving China's acute schistosomiasis epidemic reporting system

According to China infectious disease network direct reporting system, we should reinforce China acute schistosomiasis epidemic situation report mechanism, accomplish individual acute schistosomiasis case tracing system, write epidemic situation analysis report regularly, and strengthen emergency epidemic situation prevention and control.

1.2 Malaria

1.2.1 Initiate hypnozoite treatment of malaria completely in spring

According to malaria epidemic characteristic, we will initiate hypnozoite treatment of malaria completely during the year of 2006 spring in China, set up related technology project, and then in terms of the project, carry on technology direction, supervision and inspection in order to decrease the malaria epidemic situation relapse utmostly.

1.2.2 Continue reinforcing China malaria surveillance spots

We are going to complete malaria surveillance data summarization and analysis, build and complete China malaria surveillance database, go on real-time and comprehensive surveillance to epidemic situation, environment and social factors, etc, and fully grasp China malaria epidemic situation dynamics, strengthen malaria emergent epidemic situation precaution system construction and field supervising.

1.2.3 Accomplish global funds of malaria project with high quality

We should stand in fresh initiation spot, accomplish global funds of malaria project with high quality, actively promote China malaria prevention and treatment, decrease emergent situation incidence, promote health education in border areas and diagnosis standard et. al, build and complete malaria related technology scheme, in order to exert utmost effect, practically promote China malaria prevention and treatment, and enterprise advancing of our institute, elevating our institute international cooperation and large cooperation project administration level.

1.2.4 Reinforce malaria epidemic situation management, strengthen malaria prevention and treatment supervising in key areas

We will standardize malaria epidemic situation reporting mechanism, execute malaria epidemic situation analysis report regularly during the epidemic seasons, perfect malaria emergency dealing mechanism to outbreak affairs, pay more attention to malaria epidemic situation in Anhui, Tibet, Yunnan ,ect, and strengthen above key areas supervision and inspecting, meanwhile initiate technology direction, supervision and inspection, actively promote key areas prevention and treatment and emergent epidemic situation dealing.

3 Other parasitic diseases

3.1 Preparing for the authentication of filariasis elimination

Work hard to prepare for the authentication of filariasis elimination by WHO in 2006,

including finish the national report (in Chinese and English) on Chinese filariasis elimination. And to establish data-base of filariasis prevention and cure, pay emphasis on post-elimination monitoring, chronic filariasis treatment and pilot caring.

3.2 Enhancing the control and management of echinococcosis and leishmaniasis

Do a good job on national model county of echinococcosis prevention and cure, develop pilot spots for leishimaniasis prevention and cure, standardize epidemic situation reports and management of echinococcosis and leishimaniasis. Pay emphasis on the supervision of national echinococcosis pilot spots, and launch technical exchanges and trainings.

3.3 Improving national-wide soil-borne and food-borne parasitic diseases surveillance keeping

In order to provide technical and theoretical support for national sanitary city assessment, we established pilot monitoring spots for soil-borne and food-borne parasitic diseases. Reinforced technical training and direction, supervision and assessment on work quality, drew up controlling standards of major parasitic diseases.

4 Promoting the establishment of nation-wide parasitic diseases prevention and control experiment county comprehensively

Promote the establishment of nation-wide parasitic diseases experiment county actively, develop base-line investigation, basis data collection, all kinds of work plans, technical training ,compile operation criterion, and so on.

5 Perfecting quick response and treatment mechanism for acute public health incident

Improve the quick response and treatment mechanism for public health emergency events, enhance the ability to deal with sudden epidemic, develop further training and study on epidemiology and quick response ability, perfect rules to respond to the epidemic of parasitic diseases effectively.

2 Strengthening management of science and technology project, expanding international cooperation and academic exchange

Strive to gain 11th Five-year national program, improve project management by periodic inspection, headway assessment, ask for academic committee to evaluate scientific research production.

Work hard to improve weak subjects, form preponderant subjects, so as to bring into play our function better.

We should put high emphasis on the platform development of science technology and resources, including parasitic pathogen and vector specimen resource, acute anthophilous diseases and newly-discoved parasitic information, parasitic diseases diagnosis technology, on-limits pivot laboratory of parasitic pathogen and vector biology.

We have successfully undertaken many international conferences and training courses, initiated a new phase of international cooperation and exchange. We would like to undertake training task sponsored by WHO biyearly, designate 2 or 3 cadreman to participate in the training course sponsored by Asia Collaborative Training Network for Malaria, prepare the

second cross-straits academic proseminar, and continue to develop the symbiosis between WHO, the Council of Asia Collaborative Training Network for Malaria, and our institute. In order to improve the academic level and surroundings, provide exchange and learning platform for juniors, promote theoretical and technical level for parasitic diseases prevention and control, we plan to hold large-scale academic activities in 2006, including national vector biology prevention and control forum, national shistosomiasis prevention and control young professionals academic exchange meeting, parasite species resource standard management training course.

3 Accomplish the reform of acute anthophilous infection laboratory

Only after accomplishing the lab building reform, can we do environmental beautifulness, clerk-home construction and capital liquidation. So we should try to complete the lab building reform before the end of May 2006, Meanwhile impulse other work to go smoothly.

4 Talent cultivation and training

We should set up the concept that the human resource is the most important resource. Introduce into the urgently wanted talent through various means. Enroll excellent postgraduate and PhD candidates, put emphasis on talent cultivation and training in practice. Set moral character, knowledge, ability and achievement as the criterion for talent assessment. Enhance staff to learn continually to suit for the requirements of new situation and new position.

Perform multi-level, multi-approach and multi-form education actively. Enhance fieldwork ability training, so as to improve staffs' theoretic level, work ability and idealistic diathesis. We should heighten the quality of student cultivation.

5 Other tasks

- 5.1 Renew our medium and long-term develop layout according to the present situation, so as to add new motivation and vitality to development.
- 5.2 Improve periodical, network, information and digital library construction. Keep Chinese Journal of Parasitology and Parasitic Diseases the leading role in the nation, assist International Journal of Medical Parasitic Diseases rename successfully.
- 5.3 Making various propagandistic material, such as DVD, picture for Spring Festival and commodities, to enhance people' knowledge about work on parasitic diseases control, plan to open human parasite and vector species room to college and technical secondary school students.
- 5.4 Hold training course for middle-level cadre to assign main task of 2006, heighten management level and ability of cadres.
- 5.5 Strengthen layout and accomplish every task according to the aim of diseases control.
- 5.6 Intensify the exploiture of tribendimidine, the first rank new drug, and turn emphasis to the cession of production.
- 5.7 Accomplish equipment import according to national public health emergency response system for the allocation of Phase II equipment. And centralized management of large equipment, make good use of various equipment.
- 5.8 Pay attention to workers living, beautify work environment, resolve the hot issues of workers

actively, implement improvement measures and promote the work, improve the welfare of worker continually.

Opportunities and challenges coexist in 2006. We will show fortitudinous, enthusiastic spirits. All staffs should join hands and work with open mind to strive for the fully achievement of all the fixed goals, and blaze a new trail for parasitic diseases control.

§ 2. 疾病控制

疾病控制

2005年,中国疾病预防控制中心寄生虫病预防控制所在卫生部和中国疾病预防控制中心的领导下,坚持以全国寄生虫病防治工作为中心,以血吸虫病、疟疾防治为重点,积极拓展,扎实工作,开拓性地完成了各项防治工作,具体总结如下:

1 做好重点疾病的防治工作

近年来,由于全国寄生虫病疫情出现上升趋势,血吸虫、疟疾等寄生虫病的防治形势十分严峻。为进一步加强控制我国寄生虫病流行的趋势,我所主要开展了以下几个方面的 工作:

1.1 技术指导和技术支持

今年以来,我所专家先后赴湖南、湖北、江西、安徽、江苏、四川、云南、海南、河南、广西、福建、广东、浙江、甘肃、新疆、西藏等省(自治区)百余人次,为疫区提供技术支持指导与培训,和当地防治工作者共同开展防治、疫情处理等工作,有效遏制了突发疫情的蔓延,如我所首席专家郑江研究员先后赴四川、湖北指导血吸虫病突发疫情的处理工作,我所顾政诚副主任技师赴西藏自治区指导疟疾突发疫情的处理工作等。

1.2 技术交流与培训

为全面提高我国寄生虫病防治人员的技术水平,我所先后举办并协助举办了十余次各类培训班,包括血吸虫病血清学、病原学诊断技术、监测方案、血吸虫病突发疫情应急预案培训等;全球基金疟疾项目的管理、疟疾诊断及镜检培训、健康教育与健康促进培训、技术方案培训等;全国消除丝虫病资料整理分析培训、全国消除丝虫病报告框架起草、丝虫病监测技术、包虫病诊断技术以及食源性寄生虫病防治等全国性的培训班和研讨会。培训了数百名基层技术骨干人员,为全国血吸虫病、疟疾监测工作、疟疾全球基金项目、以及全国人体重要寄生虫病现状调查后续工作等的顺利开展奠定了良好的基础。

1.3 健康教育与健康促进

为提高居民自我防护意识,改进病人就医及服药的依从性,改善疫区群众的生活方式,加强传染源的管理,促进社区关怀政策的实施,在现场调研分析和多次论证的基础上,根据当地居民对防病知识的了解程度,民族特点,我所专家编制了多种形式宣传材料,并将有关内容印在一些方便实用的生活、学习用品上,发放到疫区的乡村诊所、农贸集市、学校、村头等公共场所以及当地群众、学生的手中,宣传寄生虫病防治基本知识。

在血吸虫病流行严重的安徽、湖南、云南、江西、江苏等省开展了土源性寄生虫病、食源性寄生虫病健康教育试点。

1.4 技术督导与调研

在防治工作进展的同时,为防止疫情反复、防治工作松懈,以及避免向病人乱收费等现象,在卫生部的领导下,我所专业人员多次赴疫区开展督导检查工作,如南水北调工程

对血吸虫病传播影响的现场调研工作、血吸虫病湖区五省联防督导,国务院血吸虫病防治联系点的技术指导;全国血吸虫病的明察暗访工作;全球基金疟疾项目的技术督导工作;丝虫病流动人口监测以及境外回国人员丝虫病监测等工作;西部地区包虫病流行现状调研等等。

1.5 开展防治试点工作

开展疾控工作的同时,我所组织了相关专家针对血吸虫病、疟疾、包虫病等寄生虫病 开展了相应的防治试点工作,如为进一步研究蒿甲醚在湖沼型血吸虫病重流行区对重点人 群的保护作用,选择江西省重疫区开展了蒿甲醚控制血吸虫病效果观察试点,为进一步推 广该药打下良好基础;为探索中小学生预防血吸虫病健康教育模式和材料,开展了相关健 教材料的预试验和血防健康教育试点工作、开展动物源性黑热病的防治与监测试点、慢性 丝虫病的治疗与关怀试点、土源性食源性寄生虫病防治试点等工作,为寄生虫病防治奠定 了一定的科学理论基础。

2 建立健全应急反应机制,提高应急反应能力

根据全国寄生虫病的流行特点,健全寄生虫病应急反应机制、预测预警系统,以便提高突发公共卫生事件应急反应处理能力,我所专家起草的血吸虫病、疟疾突发疫情应急处理预案经过多次研讨,并上报卫生部,血吸虫病突发疫情应急处理预案已由卫生部正式下发。同时,我所专家多次赴疫区对血吸虫病、疟疾、食源性寄生虫病的突发疫情处理工作进行技术指导和督导工作。

3 疫情监测与信息管理

根据全国疾病监测工作安排,我所承担了血吸虫病、疟疾监测工作的领导、组织工作。 我所专家组织编制了"全国血吸虫病监测方案"、"全国疟疾监测方案"和《全国血吸虫病监测方案操作手册》《全国疟疾监测方案操作手册》,其中,"全国血吸虫病监测方案"为全国首个正式下发的传染病监测方案。

完成 2004 年度全国血吸虫病、疟疾、丝虫病、包虫病防治工作调查表的整理、汇总工作,掌握全国疫情情况与防治工作进展,同时,积极参与全国血吸虫病监测点工作,开展了全国血吸虫病流动监测点试点工作、河南、山东等潜在流行区的监测工作、血吸虫病重疫区疾病负担现场监测工作,通过纵向监测,了解血吸虫病疫情动态,为全国寄生虫病防治工作提供基础资料与科学依据。

完善全国血吸虫病监测周报机制,及时汇总上报重点地区急性血吸虫病疫情周报,分析预测疫情趋势,及时进行急性血吸虫病疫情漏报情况调查 ,提出应急处理对策,有效控制了疫情。 同时对全国疟疾疫情发展趋势及全国疟疾实际发病人数进行了科学预测与推算。

4 认真完成卫生部,中国疾控中心的工作任务

在完成我所计划内各项工作和任务的同时,我所专家积极参加卫生部、中国疾控中心组织的政策调研、督导检查、技术标准编制等工作,为卫生部、中国疾控中心提供技术支持,以及多个技术方案的起草与修订工作,完成了《水利工程重大项目的卫生学评价方案(草稿)》的编制,组织了多次全国性大型培训项目和会议,如完成组织血吸虫病、寄生虫病专家咨询委员会换届会议、全国血吸虫病综合治理项目高级师资培训、纪念血吸虫病

在中国发现100周年大型学术会议等等。

通过一年来的工作,我们虽然在寄生虫病防治工作中取得了一定成绩和进展,但同时也发现在工作中存在着一定的不足,如规章制度不健全,疾病控制管理机制仍不完善等。 今后的工作中我们应进一步加快我所由科研型向防治型的转变,建立健全各项规章制度和 有效的工作机制,完善疾控经费的管理办法,加强应急反应机制和专家队伍的建设,为全 国寄生虫病防治做出更大的贡献。

科研工作

1 科研工作取得突破性进展, 获准经费再创新高

1.1 课题执行和申请情况

2005 年在研的课题 33 项(部级以上重点课题 18 项), 其中国家"863"计划 4 项; 国家"十五"科技攻关计划 5 项; 国家自然科学基金 2 项; 科技部中央研究院所专项基金 4 项; 上海市科委重大和重点科技攻关项目 3 项,国际合作课题 11 项,所中青年基金项目 3 项,其他来源 1 项(横向课题)。2005 年投入科研经费共 1205.00 万元。

2005年申报课题 17 项, 获准课题 8 项, 获得经费 860.35 万元。

我所承担的科技部基础性工作项目"中国人体寄生虫及媒介标本收集、整理和保存"等5个课题顺利通过了由科技部委托卫生部主持的专家验收。与国家人类基因组南方研究中心共同完成的"日本血吸虫功能基因组及其应用研究"获得了上海市科学技术进步二等奖。"囊型包虫病的药物治疗研究"和"全球气候变暖对中国血吸虫病传播影响的研究"2个课题均获得了中华医学科技进步二等奖。

1.2 重视研究生管理和人才培养,支持职工参加继续教育

2005 年共招收研究生 9 名, 其中博士研究生 4 名。在读研究生共 28 名, 其中博士研究生 5 名, 在读的公共卫生硕士 (MPH) 研究生 4 名。2005 年毕业研究生 11 名, 其中获得硕士学位的 7 名, 博士学位的 4 名。采用讲课、实习和社会实践三种教学形式,举办了为期 1 个月的"专业寄生虫学与专业英语班",对 2004 级在读硕士生、2005 级在读博士生和新职工进行了培训,通过增加现场实践活动,使学员能把理论知识和现场实践相结合,取得较为满意的效果。

全年有 5 名博士生参加中国科协主办"第三届优秀博士生学术年会"征文交流, 2 名博士生参加了会议交流。在职职工参加学历学习及业务培训共 26 人次。

1.3继续增进国际合作与交流

我所与亚洲疟疾培训网络(简称"亚网")基金会合作,成功举办了为期 13 天的"国际抗疟药政策发展与实施培训班",来自柬埔寨、印度尼西亚、马来西亚、老挝、孟加拉国、缅甸、泰国、菲律宾、越南及中国等 10 个国家的 25 名学员参加了培训。来自 WHO/WPRO、美国药典、美国卫生管理科学药物管理中心、亚网基金会、菲律宾卫生部卫生发展中心、菲律宾热带医学研究所、马来西亚卫生部和我国的 10 位专家为本次培训班学员授课。

受 WHO 和卫生部的委托,我所承办了"朝鲜半岛疟疾控制技术会议",来自朝鲜、韩国及 WHO 的代表和官员共 12 人参加会议。

通过承办各类国际会议,使我所保持和发展了与国际同行间的合作关系,扩大了我所

的影响,提高了我所在国际同行间的地位,也使我所有更多参与国际合作与交流的机会,今年共向 WHO/TDR、瑞典全球基金、日本合作课题等渠道申请国际合作课题 3 项。派出 2 名业务骨干赴马来西亚参加亚网基金会举办的"疟疾培训技术研讨班"。

本年度共接待外宾30批128人次,出访24批,30人次。

2 论文和其他工作

- 2.1 全年在国内外科技期刊以第一作者发表各类论文约 120 篇。其中被 SCI 收录的专业期刊 11 篇,学术会议交流 36 篇,参加著作部分章节撰写 16 篇。胡薇副研究员的《日本血吸虫雌虫、雄虫 cDNA 文库的构建及基因表达谱建立》被教育部、国务院学位委员会评为 2005年全国优秀博士学位论文。
- 2.2 本所主办的《中国寄生虫学与寄生虫病杂志》在去年荣获卫生部首届医药卫生优秀期刊一等奖的基础上,今年又获得中华预防医学会系列杂志优秀期刊一等奖。
- 2.3 完成卫生部重点实验室学术委员会的换届工作,产生了新一届卫生部寄生虫病病原与媒介生物学重点实验室主任和学术委员会委员,并对学术委员会章程进行了修改和完善。
- 2.4 完成由中心牵头的软课题"新发现传染病防治对策研究报告—新发寄生虫病防治对策研究",为科技部提供"十一五"期间我国新发传染病科学研究的课题计划,并为其发布招标指南做准备。
- 2.5 为促进寄生虫学与寄生虫病防治科技进步与繁荣,挂靠于我所的中华预防医学会医学寄生虫分会积极组织专题研讨会、专业技术培训班和全国性学术交流会,来自包括台湾、香港各省(区、市)的学者共有800余人次参加,交流论文331篇,由于工作成绩突出,被评为"中华预防医学会先进分会"。
- 2.6 完成了寄生虫病标准编写指南;完成了血吸虫病、疟疾、丝虫病、黑热病和包虫病诊断标准的修订以及"卫生标准体系框架及其构成研究"中的寄生虫病标准部分的制订工作。
- 2.7 我所的人体寄生虫和媒介标本馆,既有相当的学术水平,又有科普教育的内容,适合从事寄生虫病防治和科研人员、医学院校学生以及中小学生等不同层次的需要,今年共接待参观者 460 人次。全年有 25 篇寄生虫病健康教育科普文章刊登在《健康财富周刊》上,使寄生虫病健康教育走向社会和社区。
- 2.8 全年举办学术讲座 12 次, 共有 270 余人次参加。
- 2.9 我所主编的《寄生虫病应急处理手册》、《实用钉螺学》、《亚洲寄生虫学第5卷-亚洲寄生虫病》已出版。

3编辑出版工作

《中国寄生虫学与寄生虫病杂志》共收稿件 240 篇,刊登论著、实验报道等 70 篇, 综述及短文约 90 篇,重点报道医学寄生虫学的研究成果和疾病控制经验,交流介绍新理论、新技术和新进展。

为庆祝本所建所 55 周年,特增刊一期,内容为述评、综述和专题报告,均为我国寄 生虫病领域知名专家撰稿。

§2. DISEASE CONTROL

Disease control

Under the leadership of Ministry of Health and Chinese Center for Disease Control and Prevention (China CDC), staffs of National Institute of Parasitic Diseases (IPD) persists in the central work of nationwide control and prevention of parasitic diseases, emphasizes schistosomiasis and malaria, works energetically and steadfastly and accomplished all kinds of control and prevention work as planned. Summaries are as follows.

1 Putting high emphasis on parasitic diseases control and prevention

In recent years, due to the increasing tendency of parasitic diseases prevalence, the situation of controlling and preventing parasitic diseases, such as schistosomiasis and malaria, is getting more severe in China. Hence, the following activities were taken by IPD

1.1 Technical instructions and supports

During this year there are more than a hundred person-times of IPD's experts went to the provinces or municipalities such as Hunan, Hubei, Jiangxi, Anhui, Jiangsu, Sichuan, Yunnan, Hainan, Henan, Guangxi, Fujian, Guangdong, Zhejiang, Gansu, Xinjiang and Tibet etc. successively to provide technical instructions and trainings, and to work with local staff for control, epidemic situation, which prevented diseases spreading effectively. For example, Prof Zheng jiang, the chief expert of IPD, went to Sichuan and Hubei to deal with the emergency of schistosomiasis epidemic. And Mr. Gu Zhengcheng, chief technician of IPD, went to Tibet to deal with malaria breakout.

1.2 Technique communication and training

To improve the overall skills of personnel involved in disease control and prevention in China, various training program were initiated by IPD, such as 1) schistosomiasis serological, diagnostic technique of pathogen, surveillance training, and emergency response plan for urgent schistosomiasis epidemic; 2) national malaria training, including global fund malaria project management, microscopy diagnostic skills, health education and health promotion; 3) national filariasis elimination training, including data analysis, drawing up national report; 4) hydatidosis diagnosis skill train; and 5) soil borne transmitted parasitic diseases control and prevention training course. More than a hundred personnel receive the training, which establishes good foundation for surveillance of schistosomiasis and malaria, malaria control program supported by global funds, supplemental work for nationwide survey on important human parasitic diseases.

1.3 Health education and health promotion

In order to improve residents' awareness of self-protection, enhance compliance of patients for seeking for medical care and taking medicine, improve the living habits of residents in endemic areas, promote the implementation of community health care policy, experts of IPD

made various propaganda materials and sent out to local residents and students in public places, such as clinics, markets, entrances of the village to popularize basic knowledge of controlling and preventing schistosomiasis according to local people's recognition of disease and their racial habits.

1.4 Technique guidance and investigation

While working on control and prevention, under the leadership of Ministry of health, personnel of IPD went to epidemic areas for investigation many times to prevent epidemic situation from aggravating again, prevent controlling and preventing work from relaxing and prevent fromover charging patients. Such investigations and instructions include investigating the impact of south-to-north water diversion project on transmission of *Schistosomiasis japonica*, instruction for 5 provinces united to prevent schistosomiasis, technique instruction of the state council field sites for controlling and preventing schistosomiasis, investigating schistosomiasis in China in public and in private, technique instruction of global funds program, surveillance of migrant population and personnel returned from foreign countries and investigation of current situation of echinococcosis in western China.

1.5 Pilot study of disease control and prevention

A series of prevention and health education work on schistosomiasis, malaria and echinococcosis were conducted by IPD's professionals in selected endemic areas while carrying out disease control work, such as the application of arthemther, an anti-schistosomiasis drug, in lake areas of Jiangxi province; anti-schistosomiasis health education for school children, establishing surveillance spots of leishmaniasis, health care for chronic filariasis cases, and health education of soil borne and food borne transmitted diseases. All these work provided strong field evidence for parasitic diseases control and prevention.

2 Establishing sound emergency response system and strengthening the response ability

According to the epidemic character of parasitic diseases, improving emergency response system and early warning system may enhance the ability responding to public health emergency. The emergency management program of schistosomiasis and malaria drafted by IPD experts were discussed many times and reported to Ministry of Health. Then the emergency management program of schistosomiasis had been issued formally by Ministry of Health. Meanwhile, IPD experts went to epidemic foci many times to instruct techniques and supervise works for outbreaks of schistosomiasis, malaria and food-borne parasitic diseases.

3 Epidemic surveillance and information management

According to the work arrangement of diseases surveillance, we undertook the leading and organizing work of schistosomiasis and malaria surveillance. IPD experts organizing and compiling "surveillance program for schistosomiasis in China", "surveillance program for malaria in China", "operating manual of schistosomiasis surveillance program in China" and "operating manual of malaria surveillance program in China". Among them, "surveillance program for schistosomiasis in China" is the first infectious disease surveillance program

enacted formally in China.

We finished the organization and collection of questionnaire for controlling and preventing work for schistosomiasis, malaria, filariasis and echinococcosis of China in 2004, by which we realized the national epidemic situation and progress of prevention work. We also actively participated in national schistosomiasis surveillance and began the pilot points of national schistosomiasis floating surveillance point, surveillance of Henan, Shandong and other potential epidemic foci and field surveillance of disease burden in severe schistosomiasis epidemic areas. By lengthwise surveillance, we can find the dynamic situation of schistosomiasis epidemic and provide fundamental materials and theoretic foundation.

We improved the mechanism of weekly schistosomiasis report, reported acute schistosomiasis cases in severe areas in time, analyzed and forecasted the trend of epidemic situation, investigated missing acute schistosomiasis cases in time, proposed countermeasure to meet emergency and controlled the epidemic situation effectively.

4 Accomplishing the assignments of Ministry of Health and Chinese Center for Disease Control and Prevention

While finishing various planned work, experts of IPD actively participated in the investigation, supervision, inspection and establishing technique criteria launched by Ministry of Health and CCDC. They provided technical supports to Ministry of Health and CCDC, drafted and modified several technical plan, complied "hygienic evaluation plan of large water conservancy projects (draft)" and launched many big national training programs and conferences, such as re-election meeting of consulting expert committee in the field of schistosomiasis and other parasitic diseases, national advanced teacher training of synthesized control project of schistosomiasis, academic conference commemorating 100th years of discovering schistosome in China, etc.

After the one year work we obtain successes and progress to some extent, but find drawbacks in our work, such as distempered regulation system and imperfect managerial mechanism of disease control. So in future work we will accelerate the switch of IPD from research to disease control, establish and improve every regulation and working mechanism, improve the management of the fund of disease control and enhance the mechanism of emergency response and the organization of expert team, contributing further to the parasitic disease control in China.

§ 3. 外事工作

1 国际往来

- 1.1 来访 本年度共接待来自韩国、朝鲜、日本、美国、津巴布韦、澳大利亚、法国、瑞士、意大利、柬埔寨、印度尼西亚、马来西亚、老挝、孟加拉国、缅甸、泰国、菲律宾、越南等 18 个国家的外宾 31 批 128 人次。
- 1.2 出访 全年出访 24 批,30 人次。分赴日本、美国、马来西亚、英国、喀麦隆、瑞士、瑞典、丹麦、德国、泰国、越南、老挝等国家。
- 1.3 参加国际培训班 郑彬、黄芳于 6 月 20 日—7 月 19 日赴马来西亚参加亚洲疟疾培训 网络基金会举办的"疟疾技术传播研讨班"。郑彬还于 9 月 12-23 日参加在无锡举办的"国际抗疟药政策发展与实施培训班"。

2 国际会议与国际培训班

- 2.1 国际会议 受卫生部和 WHO 委托,2005 年 12 月 18-19 日我所承办了朝鲜半岛疟疾控制非正式技术磋商会议,会议有来自朝鲜、韩国及 WHO 的代表和官员 10 人参加。
- 2.2 培训班 我所与亚洲疟疾培训网络(简称"亚网")基金会合作,2005年9月12-23日,在江苏无锡举办了"国际抗疟药政策发展与实施培训班",为期12天,有来自柬埔寨、印度尼西亚、马来西亚、老挝、孟加拉国、缅甸、泰国、菲律宾、越南及中国等10个国家的25名学员参加了培训班。并有来自WHO/WPRO、美国药典、美国卫生管理科学药物管理中心、"亚网"基金会、菲律宾卫生部卫生发展中心、菲律宾热带医学研究所、马来西亚卫生部及我所的10位专家为本次培训班学员授课。

3 国际合作

3.1 在研项目

共8项,其中瑞典全球基金项目1项、美国2项、WHO/TDR4项及欧共体1项。

3.2 国际合作项目申请

本年度申请 WHO/TDR、中日合作研究项目等 3 项。

§ 3. FOREIGN AFFAIRS

1. International Exchanges

- 1.1 A total of 128 person-times in 31 batches of foreign guests respectively from 18 countries, including Korea, Democratic People's Republic of Korea, Japan, United States of American, Zimbabwe, Australia, France, Switzerland, Italy, Cambodia, Indonesia, Malaysia, Lao PDR, Bengladesh, Burma, Thailand, the Philippines and Vietnam visited the institute.
- 1.2 A total of 30 person-times of 24 batches of staffs respectively visited foreign countries, including Japan, United States of American, Malaysia, United Kingdom, Cameroon, Switzerland, Sweden, Denmark, Germany, Thailand, Vietnam and Lao PDR for attending meetings and advanced study.
- 1.3 Advanced Study: Dr Zheng Bin and Huang Fang completed "The Course on Transfer of Training Technology" held by ACTMalaria Foundation Inc from June 20 to July 19 2005, Malaysia. Dr. Zheng Bin also participated in "Training Course on Anti-Malarial Drug Policy Development and Implementation" Wuxi, P.R. China on September 12-23, 2005.

2. International conference and training course

2.1 Entrusted by WHO/WPRO, WHO/SEARO and China MOH, Technical Meeting About Malaria On The Korean Peninsula was held on December 18-19 2005, Shanghai. Eight participants from Democratic People's Republic of Korea, Korea, and two Officers from WHO/WPRO and WHO/SEARO attended the meeting.

2.2 International training course

Sponsored by Foundation, Inc. of Asian Collaborative Training Network for Malaria(ACTMalaria) and National Institute of Parasitic Diseases, China CDC, the "Training Course on Anti-Malarial Drug Policy Development and Implementation" was held in Wuxi City, P.R. China on September 12-23, 2005. The course was supported by The World Health Organization, U.S. Center for Disease Control and Prevention, The Malaria Consortium, UK and The Management Sciences for Health-RPM Plus. A total of 25 people from 10 countries, including Cambodia, Indonesia, Lao, Bangladesh, Myanmar, Thailand, the Philippines, Vietnam and China, attended the course. The ten experts giving lectures during this course were from WHO/WPRO, Malaria Consortium UK, Asia/Near East Center for Pharmaceutical Management Sciences for Health, Health Development Center, Philippines MOH, Filipine Institute of Tropical Medical Research, Malaysian MOH, ACTMalaria Foundation, Inc. and National Institute of Parasitic Diseases, China CDC.

3. International collaboration

3.1 On-going projects

A total of 8 international collaborative projects have been done/doing this year, of which, one was with Global Fund to Fight AIDS, Tuberculosis and Malaria, four with USA,

four with WHO/TDR, and one with European Economic Community (EEC).

3.2 To Apply the International Collaborating Projects

Three proposal papers were submitted to WHO/TDR, Sino-Japan cooperative project this year.

§4. 研究论文摘要

血吸虫病

水牛化疗控制鄱阳湖区血吸虫病传播的现场实验研究*

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[目的] 探索水牛治疗是否在湖沼地区血吸虫病传播中的作用,为制定防治策略提供依据。[方法] 将江西省鄱阳湖区 2 个血吸虫病重度流行村,分为实验(干预)组及对照组。实验组用吡喹酮治疗所有耕牛,以消灭可能血吸虫传染源;对照组,不治疗耕牛。两村居民按常规方法进行血吸虫病防治。[结果] 连续 5 年观察结果表明,实验组居民感染率比对照组下降 70%;3 岁以下水牛感染率为 2%~18%,3 岁以上水牛感染率为 0~2.9%。[结论]通过干预和对照组的研究表明,在血吸虫重度感染区,单纯对居民进行化疗是难以有效地控制血吸虫病的传播的,而通过化疗水牛在一定程度上能降低居民的再感染。本研究通过5 年的观察,证实了对水牛进行治疗对控制血吸虫病的传播的效果可达 70%,同时也证实了在感染的水牛中的大部分(89%)是小于3 岁的水牛,这对我们今后制定有效的控制湖沼地区的血吸虫病对策提供了依据。

日本血吸虫硫氧还蛋白编码基因的克隆和表达*

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[目的] 克隆和表达日本血吸虫大陆株硫氧还蛋白(SjcTrx)的编码基因。[方法] 根据日本血吸虫菲律宾株硫氧还蛋白基因序列设计一对引物,上游引物引入 BamHI 酶切位点和起始密码子 ATG,下游引物引入 Sal I 酶切位点和终止密码子 TAA。以日本血吸虫大陆株成虫总 RNA 为模板,经反转录-聚合酶链反应(RT-PCR)扩增 SjcTrx 基因。经双酶切并纯化的 PCR 产物与同样双酶切并纯化的 pET28a 质粒 DNA 片段用 T4DNA 连接酶连接,构建重组质粒 pET28a-SjcTrx,转化 BL21 感受态菌并大量扩增。重组质粒 DNA 经限制性内切酶双酶切、PCR、琼脂糖凝胶电泳和核苷酸序列测定进行鉴定。pET28a-SjcTrx/BL21用 IPTG 诱导表达。[结果] SjcTrx 编码基因 RT-PCR 产物约 334bp,构建的重组 pET28a-SjcTrx 表达质粒 DNA 经限制性内切酶酶切和 PCR 扩增产物于琼脂糖凝胶电泳均观察到相同大小基因片段。根据核苷酸序列测序结果推导的氨基酸序列与日本血吸虫菲律宾株和曼氏血吸虫 Trx 分别有 97%和 43%的同源性。表达的重组蛋白经 SDS-PAGE 分析,约 14kDa。Western blotting 显示该重组蛋白可被日本血吸虫感染图血清和重组抗原免疫小鼠血清所识别。[结

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论] SjcTrx 基因的表达获得成功,并获得纯化蛋白,为开展动物保护性免疫试验创造了条件。

湖沼地区日本血吸虫病家庭聚集性的研究*

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[目的] 通过对实验区感染病例家庭分布情况以及感染者亲属的感染情况分析,探讨日本血吸虫病家庭聚集性以及家庭在血吸虫病传播中的作用。[方法] 选择江西省九江市都昌县塘美行政村作为实验点,2002年对全村的1064人进行了病原学检查,并对其中的1015人进行了问卷调查和家庭人员调查。2003年对其中的两个高感染村418人进行追踪随访,12月份进行回顾性疫水接触调查。调查资料用ACCESS2002建立数据库,用SPSS做统计分析。[结果] 江西塘美村血吸虫感染病例呈现家庭聚集性现象,感染者的亲属更易感染血吸虫病,血缘关系越近,发病机会越大。[结论] 湖沼地区日本血吸虫病存在家庭聚集性,日本血吸虫感染不能排除受遗传因素影响。

上海市外来人口血吸虫病传播潜在危险性调查

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[目的] 进一步了解上海地区血吸虫病的潜在危险。[方法] 通过重点选择上海郊县有螺地区金山区廊下镇和外来人口相对集中地区青浦区赵巷镇 313 名外来人口的详细问卷调查,同时抽取血样采用胶体金免疫渗滤法(DIGFA)和快速 ELISA 法进行血清学筛查,然后对血清学阳性者采用 Kato-Katz 法粪检。[结果] 调查者中来自邻近的安徽省和江苏省最多,分别占 53.67%和 15.97%;女性占 74.44%,男性占 25.56%,女性明显多于男性;外来人口主要为青壮年,平均年龄 24 岁;64.86%接受过初中教育;74.76%采用租赁私房居住方式;少部分人有排野粪习惯(3.83%);51.44%平均每年回家 1 次,回家后接触水的方式主要是参加田间劳动,占 45.14%;92.01%接触水时并不防护;313 名外来人口都采用 DIGFA和快速 ELISA 法进行血清学筛查,查出 1 名两者都阳性的可疑病人,Kato-Katz 法粪检未查到虫卵。[结论] 上海郊县仍存在钉螺,当传染源输入时,有可能造成血吸虫病流行。

应用 GPS / GSM 对洲滩观测和同步监控的研究

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[**目的**] 利用全球定位系统(GPS)和全球无线移动通讯技术(GSM)相结合的方法,对洲滩进行精确定位、测量其面积,并实现同步报告、实时监控。[方法] 在鄱阳湖区内选择一32

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个退田还湖地区(无螺区),一块赣江边的洲滩(有螺区),利用手持 GPS 设备在现场进行航点、航迹的采集,将定位数据包以短消息的形式发回 GPS 监控服务中心内的 GPS 服务器,在控制中心数据库的支持下,实时检索短消息服务,并将检索到的以短消息形式存在的定位数据包转发给控制服务中心。控制服务中心解释获得的定位数据包中的信息,在强大的 GIS 地图上显示被监控终端设备的位置,实现实时监测。[结果] 手持 GPS 设备可以对现场行走的路线进行准确定位(自动保存为"航迹"),同时可以手动采集每个航点的经纬度。控制中心能够及时接收到 GPS 发回的短信息,在强大的 GIS 地图上显示被监控终端设备的每一个精确地理、位置,实现了实时监控。[结论] 通过 GPS 和 GSM 两种系统的有效结合,实现了通过短信方式进行位置信息传递与收集。中心控制系统同时接收终端信息,实现全面监控。将该系统应用于血防工作,不但能够及时将血吸虫病疫情发生的地点迅速上报给上级组织,而且能够通过该型 GPS 具备的移动通话功能指导现场采取处理措施。该系统将为血吸虫病防治工作创造一种具有技术含量高、预报速度快、相关统计数字精准等特点的、全新的监控模式。

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血吸虫病人群感染危险因素空间关系分析*

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[目的] 探讨影响安徽省当涂县血吸虫病人群感染的自然因素,为制定血吸虫病防治策略提供依据。[方法] 收集 2001-2004 年当涂县 114 个历史流行村血吸虫病人群感染、耕牛感染和钉螺分布资料,应用 PCI、ENVI、ArcGIS 软件从 SPOT5 卫星图像中提取当涂县水系分布矢量图并建立空间数据库,用秩回归分析变量间的空间分布关系。[结果] 90%的现有流行村分布于距水系距离<1 404m 的范围内。钉螺感染率(t1)、耕牛感染率(x2)、历史流行村距水系的距离(X₃)均与人群感染率(y)相关,用逐步秩回归法建立的方程为: y=42.190 79+0.290 26X₁ + 0.453 65X₂ — 0.477 65X₃ 个因素中对人群感染率的影响程度最大的为历史流行村距水系的距离,耕牛感染率的影响次之,钉螺感染率的影响最低。3 个因素可以解释人群感染率总变异的 60.5%。[结论] 应加强通江河道附近地区的预防控制措施,防止人群血吸虫感染。

我国急性血吸虫病疫情漏报原因的探讨

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[**目的**] 了解我国急性血吸虫病疫情漏报的主要原因。[方法] 利用头脑风暴法提出急性血吸虫病漏报的各种可能,经归纳列出急性血吸虫病疫情漏报的原因。通过专家咨询法对列出原因进行咨询,得出各个原因重要性的权重。[结果] 共归纳出急性血吸虫病疫情漏报

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原因 10 条,其中管理机制弊端的权重为 0.18,其他依次为个体行医 0.13、扩大化疗 0.13、报病意识不强 0.13、瞒报数据 0.09、病人就诊率低 0.09、流动人口 0.08、误诊 0.08、诊断水平低 0.07,另延迟报告的权重为 0.02。[结论] 急性血吸虫病疫情漏报的原因诸多,其中管理机制存在弊端、个体行医、扩大化疗、报病意识不强等可能是急性血吸虫病疫情漏报主要原因。

1 卫生部疾病控制司血吸虫病预防控制与管理处

我国几种日本血吸虫病免疫诊断试剂的综合测评

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[目的] 了解我国血吸虫病防治工作中使用的免疫诊断试剂的综合质量,为第三次全国血吸虫病流行病学抽样调查查病工具的筛选提供参考。[方法] 聘请血吸虫病免疫诊断及相关专家组成专家评估组,确定综合测评指标。采用单盲法,由各日本血吸虫病免疫诊断试剂的生产单位对 254 份血清统一进行测试。计算各试剂盒的敏感性、特异性、Youden 指数,收集其他测评指标的相关信息并进行分析。[结果] 参评的 8 个研究所(公司)的 9 种试剂盒总体上质量较好,大部分试剂盒的敏感性或特异性在 90%以上,其中 Youden 指数在 0.9以上的试剂盒有 3 个,但并殖吸虫病的交叉反应普遍存在,乙型肝炎的交叉反应在 0-30%之间。由于操作以及结果判断失误等其他原因,个别试剂盒的测试结果不够理想。[结论] 参加测评的绝大部分试剂盒的敏感性和特异性都达到了现场应用标准。

改良加藤法普查日本血吸虫病的效果评价

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[目的] 评价改良加藤法在血吸虫病大规模现场普查中的实施效果。[方法] 在湖北、江西、江苏、四川和云南 5 省流行区随机选择 8 个调查点,用 ELISA 法进行血清学筛查,对阳性反应者,同时采用尼龙绢集卵孵化法(粪孵法)和改良加藤法进行病原学检查。以尼龙绢集卵孵化法为金标准,估算改良加藤法漏检率。[结果] ELISA 法共筛查 9 853 人,阳性 2 824 人。采用改良加藤法和尼龙绢集卵孵化法共检查 3 853 人,调查点的感染率在 0.10%-11.77%之间,两法检出阳性 508 人,其中加藤阳性 355 人,粪孵阳性 456 人。改良加藤法的漏检率为 30.12%,粪孵法的漏检率为 10.24%。8 个调查点疫情分轻、重度两组,两组改良加藤法漏检率分别为 64.34%及 18.47%,差异有显著性(p<0.01)。[结论] 不同地区大规模现场查病,单一使用改良加藤法漏检率偏高,联合运用改良加藤法和粪孵检查可提高血吸虫卵的检出率。

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血吸虫硫氧还蛋白免疫原性研究 I 日本血吸虫硫氧还蛋白 DNA 疫苗的构建和鉴定*

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[目的] 构建日本血吸虫(大陆株)硫氧还蛋白(Trx)DNA 疫苗(pcDNA3-SjcTrx),并进行分子生物学鉴定。[方法] 根据血吸虫菲律宾株 Trx 基因序列设计一对引物,上游引物引入BAmH I 酶切位点和起始密码子 ATG,下游引物引入 EcoR I 酶切位点和终止密码子 TCA。以日本血吸虫大陆株成虫总 RNA 为模板,经反转录-聚合酶链反应(RT-PCR)扩增日本血吸虫大陆株 Trx (SjcTrx)编码基因。经双酶切并纯化的 PCR 产物与经双酶切纯化的 pcDNA3质粒 DNA 片段用 T4 DNA 连接酶连接,克隆人真核表达载体 pcDNA3,构建重组质粒pcDNA3-SjcTrx,并经限制性内切双酶切、琼脂糖凝胶电泳、PCR 检测和核苷酸序列测定进行鉴定。[结果] SjcTrx 编码基因 RT-PCR 产物约 334bp,构建的 pcDNA3-SjcTrx 重组质粒 DNA 经限制性内切酶双酶切和 PCR 扩增产物于琼脂糖凝胶电泳均观察到相同大小基因片段,根据核苷酸序列测定结果推导的氨基酸序列与日本血吸虫菲律宾株和曼氏血吸虫Trx 分别有 97%和 43%的同源性。[结论] 日本血吸虫(大陆株)硫氧还蛋白 DNA 疫苗构建成功,为开展动物保护性免疫试验创造了条件。

* 国家高技术研究发展计划(863 计划)(No. 2004AA215240、2004AA273520)、国家自然科学基金(No. 30371262)和上海市科委"十五"科技攻关重大计划(03DZ19231)

日本血吸虫肌球蛋白部分重链基因核酸疫苗的构建与小鼠保护性研究

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[目的] 研究日本血吸虫肌球蛋白部分重链基因核酸疫苗对小鼠的保护效果。[方法] 用致弱童虫免疫血清筛选日本血吸虫成虫 cDNA 文库,获得的阳性克隆之一与曼氏血吸虫肌球蛋白重链基因同源。PCR 法扩增该片断基因,产物克隆入真核表达载体 pcDNA3 中,构建成肌球蛋白部分重链基因核酸疫苗。将 50ug 肌球蛋白(myosin)核酸疫苗注射 C57BL/6小鼠的两侧股四头肌,免疫 3次,间隔 2周,末次免疫后 2周经腹部皮肤攻击感染尾蚴 30条/鼠,感染 6周后用门静脉灌注法收集成虫,计算核酸疫苗免疫组减虫率与空质粒对照组减虫率。[结果] 核酸疫苗免疫组获得 33.02%的减虫率,空质粒对照组获得了 24.50%的减虫率,经 t 检验,两组差异无显著性。[结论] 肌球蛋白部分重链基因核酸疫苗在小鼠中未能诱导出保护力。

血吸虫硫氧还蛋白免疫原性研究 II 日本血吸虫硫氧还蛋白 DNA 疫苗小鼠保护性免疫研究^{*}

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[**目的**] 观察日本血吸虫(大陆株)硫氧还蛋白 DNA 疫苗(pcDNA3-SjcTrx)在小鼠诱导抗血吸虫感染的免疫保护作用。[方法] 制备 pcDNA3-SjcTrx 重组质粒,将 30 只雌性 C57BL/6

小鼠随机分为 3 组,每组 10 只: pcDNA3-SjcTrx 核酸疫苗免疫组、pcDNA3 空质粒对照组和攻击感染对照组。核酸疫苗免疫组每只小鼠经股四头肌注射 100 / μg 核酸疫苗,共注射 3 次,间隔 2 周。空质粒对照组每只小鼠在相应时间经股四头肌注射 100μg pcDNA3 空质粒,感染对照组则不注射任何质粒。于末次免疫后 3 周,每只小鼠经腹部感染(30 ± 1)条日本血吸虫尾蚴。小鼠于攻击感染后 42 天剖杀,门脉灌注收集成虫,计数成虫数和肝内虫卵数。分别在免疫前、攻击感染前和小鼠剖杀前采血并分离血清,用 ELISA 检测血清中特异性 IgG 抗体。另取 6 只雌性 C57BL / 6 小鼠经股四头肌注射核酸疫苗,分别于注射后24、48 小时和 72 小时取肌肉注射部位局部组织制备冰冻切片,用免疫酶染色试验(IEST)检测注射局部组织抗原的表达情况,以注射 pcDNA3 空质粒者为对照。[结果] IEST 结果表明该 DNA 疫苗在小鼠肌肉组织内表达,ELISA 检测表明 DNA 疫苗免疫小鼠后产生明显的抗体(IgG)免疫应答,并诱导出对攻击感染的 45.7%的减虫率和 41.4%的肝组织减卵率(P<0.05)。[结论] 日本血吸虫(大陆株)硫氧还蛋白 DNA 疫苗具有较好的免疫原性,在小鼠诱导出明显的免疫保护作用,可作为疫苗候选分子作进一步的研究。

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日本血吸虫三磷酸甘油脱氧酶核酸疫苗小鼠体内的免疫应答特征

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[目的] 研究日本血吸虫大陆株三磷酸甘油醛脱氢酶(GAPDH)基因核酸疫苗免疫 C57BL/6 小鼠诱生的免疫应答特征和保护性。[方法] 将用免疫筛库得到的日本血吸虫大陆株 GAPDH 编码基因以 PCR 扩增,扩增产物 T-A 克隆至载体 pT-Adv 而后与真核表达载体 pcDNA3 连接,构建成核酸疫苗(pcDNA3-SjGAPDH)。将纯化的 pcDNA3-SjGAPDH 经后 腿胫前肌免疫 C57BL/6 小鼠。免疫荧光染色法研究 pcDNA3-SjGAPDH 在注射的局部肌肉 表达特性;用十二烷基硫酸钠-聚丙烯酰胺(SDS-PAGE)、蛋白质印迹法(Western blotting)、ELISA 等方法分析 pcDNA3-SjGAPDH 所诱导的特异性免疫应答特征。[结果] pcDNA3-SjGAPDH 免疫后 24 和 48 h 即可在荧光显微镜下看到 C57BL/6 小鼠小腿胫前肌的局部肌肉的冰冻切片发出淡绿色荧光,表明有 GAPDH 蛋白的表达。pcDNA3-SjGAPDH 免疫小鼠主要诱生 IgG2a、IgG2b 和 IgG3 亚类;免疫小鼠脾淋巴细胞体外经特异性抗原刺激主要诱生 Y -干扰素(IFN- Y)和白介素-2(IL-2)细胞因子,未检出 IL-4。另外,免疫鼠血清能够识别日本血吸虫 SWAP 中的天然 GAPDH 成分。[结论] pcDNA3-SjGAPDH 核酸疫苗免疫 C57BL/6 小鼠主要诱导 Th1 类型细胞免疫应答。

疟疾

海南恶性疟原虫分离株 pfcrt 和 Pfmdr1 基因点突变的研究

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[目的] 分析海南省恶性疟原虫分离株氯喹抗性转运蛋白编码基因(Pfcrt)及其 P-糖蛋白同系物 1(Pghl)编码基因(Pfmdrl)的点突变特征,为探讨抗性分子标记用于氯喹抗性监测提供参考。[方法] 采用巢式 PCR(nested-PCR)和限制性酶切片段长度多态性(RFLP)方法,检测 Pfcrt 基因编码第 76 位氨基酸的密码子和 Pfmdrl 基因编码第 86、1246 位氨基酸的密码子发生点突变情况。按世界卫生组织(WHO)推荐的体外微量法测定恶性疟原虫对氯喹的敏感性。[结果] 检测的 36 份血样中,28 份成功扩增 Pfcrt 基因,导致第 76 位氨基酸由赖氨酸(K)变为苏氨酸(T)的突变型占 64.3%,混合型占 14.3%,野生型占 21.4%;29 份成功扩增 Pfmdrl 基因,导致第 86 位氨基酸由天冬酰胺(N)变为酪氨酸(Y)的突变型占 3.4%,混合型占 6.9%,野生型占 89.7%。未发现编码第 1246 位氨基酸的密码子发生点突变。体外氯喹敏感试验结果显示,72.2%(26/36)分离株存在抗性。治疗前恶性疟原虫 Pfcrt 76T 突变发生率在体外微量测定法显示的氯喹抗性与敏感株中的差异有统计学意义(P<0.05),而 Pfmdrl 点突变发生率在氯喹抗性与敏感株中的差异无统计学意义(P>0.05)。 [结论] 恶性疟原虫 Pfcrt 基因76T 可以作为监测氯喹抗性的一个分子标记。

恶性疟原虫乳酸脱氢酶特异性单克隆抗体的制备*

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[目的] 制备恶性疟原虫乳酸脱氢酶特异性单克隆抗体。[方法] 克隆、表达恶性疟原虫乳酸脱氢酶基因,并以表达的重组蛋白免疫 BALB/c 小鼠,采用杂交瘤技术制备单克隆抗体,对所制备的单克隆抗体确定其亚类和效价,蛋白质印迹法(Western blotting) 分析其特异性。[结果] 成功克隆并表达了恶性疟原虫乳酸脱氢酶基因,以重组恶性疟原虫乳酸脱氢酶蛋白作为免疫源制备单克隆抗体,共筛选了 15 株能高效分泌效价在 1:6 400~1:51 200 特异抗体的细胞株,抗体亚类为 IgG1 或 IgG2。所有抗体均能唯一识别恶性疟原虫虫源蛋白 Mr 33 000 组分,而与疫区非疟疾发热病人的红细胞组分无交叉反应。[结论] 以重组恶性疟原虫乳酸脱氢酶蛋白为免疫源成功制备了能识别天然恶性疟原虫乳酸脱氢酶蛋白的特异性单克隆抗体。

我国恶性疟原虫对氯喹抗性的消长

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[**目的**] 监测停止或减少使用氯喹防治恶性疟后恶性疟原虫对氯喹抗性的变化。[**方法**] 采用世界卫生组织(WHO)制定的体外微量法和体内四周法,在停用氯喹后不同时间测

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定恶性疟原虫对氯喹的敏感性。**[结果]** 海南省乐东县抱由镇体外法测定抗性率由 1981 年的 97.9% 降至 1997 年的 26.7%,完全抑制裂殖体形成的平均药浓度由 10.46 ± 7.14 pmol/ μ 1 血 降至 1.63 ± 1.47 pmol/ μ 1 血,用较高药浓度(>6.4 pmol/ μ 1 血)才能完全抑制裂殖体形成的病例所占比例由 83.3% 降为 6.7% (P<0.01)。体内法测定抗性率由 1981 年的 84.2% 降为 1997 年的 18.4% (P<0.01),三级抗性 (RIII)占抗性病例的比例由 53.1% 降为 14.3% (P<0.01),血中无性体疟原虫平均消失时间由 72.0 ± 21.6 h 变为 50.7 ± 16.1 h。 2001 年三亚市雅亮乡体外法测定抗性率为 59.8%,平均抑制药浓度 3.56 ± 2.12 pmol/ μ 1 血。 2003 年乐东县福抱乡体内法测定抗性率为 62.5%,RI、RII和 RIII分别占抗性病例 50%、 30% 和 20%,无性体疟原虫平均消失时间 56.9 ± 17.2 h。云南省勐腊县体外法测定抗性率由 1981 年的 97.4% 降至 1999 年的 77.8% (P<0.01),完全抑制裂殖体形成的平均药物浓度由 17.2 ± 12.6 pmol/ μ 1 血 降至 4.4 ± 3.1 pmol/ μ 1 血(P<0.01)。 2002 年景洪县体外法测定抗性率为 70.4%,抑制裂殖体形成的平均药物浓度为 4.0 ± 3.3 pmol/ μ 1 血。 **[结论]** 减少或停止使用氯喹后,我国恶性疟原虫对氯喹抗性星降低趋势,逐渐恢复了对氯喹的敏感性。

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利什曼病

利什曼原虫-DNA 重复序列在虫种鉴定上的价值分析*

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[目的] 通过分析和比较我国利什曼原虫分离株与相应的利什曼原虫世界卫生组织(WHO)参照株在一种 DNA 重复序列上的同源性以考察这一 DNA 重复序列应用于鉴别我国利什曼原虫的价值。[方法] PCR 扩增各利什曼原虫分离株的 DNA 重复序列片段并测序,用 GENEDOC 软件比较扩增的各分离株 DNA 重复序列的同源性。[结果] 该 DNA 重复序列在中内各利什曼原虫分离株间完全同源或高度同源(99%~100%),且碱基变异具有高度稳定性,而在种间则显示相当的差异(一般同源性小于 90%)。[结论] 该 DNA 重复序列在我国利什曼原虫的鉴定上有较好的实用价值。

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螺类

不同发育期福寿螺对广州管圆线虫易感性的实验研究

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[目的] 探讨和了解广州管圆线虫幼虫对不同发育期福寿螺感染的差异。[方法] 将实验

室饲养的子1代福寿螺按体重分为4个等级,分别为螺苗级、仔苗级、中螺级和成螺级。应用福建同一来源并经实验室传代的广州管圆线虫I期幼虫分别感染4级螺,观察比较其感染率、感染死亡率、感染度、III期幼虫(感染期幼虫)大小和幼虫在螺体的发育速度及分布情况。[结果]4级螺均能被广州管圆线虫感染,其感染率在76%和100%之间,差异无显著性(P>0.05)。螺级越小感染死亡率越高。中螺级的感染度较高,体内超过100条幼虫的螺数也较多。螺级间螺体幼虫发育状态基本相似。各级螺中的III期幼虫大小及III期幼虫出现前期和盛期均无明显差异(P>0.05)。幼虫广泛分布于螺体各脏器与肌肉等处,但以肺与肌肉中居多。各级螺内III期幼虫均能成功感染人白鼠。[结论]不同发育期福寿螺对广州管圆线虫均易感而相容,螺级间螺体幼虫发育状态基本相似。螺苗级和仔苗级福寿螺在传播广州管圆线虫病中的潜在危害应予进一步认识。

手持全球定位设备 GPSMAP76 / CEC9680 在查螺中的初步应用

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[目的] 评价手持全球定位设备 GPSMAP76/CEC9680 对江湖洲滩地区有螺面积进行精确定位、测量、信息同步传送、实现信息数字化和实时监控的应用价值。[方法] 在鄱阳湖区选择退田还湖区及有螺洲滩各一块,以 3G 系统,即全球定位系统(GPS)、地理信息系统(GIS)和全球无线移动通讯技术(GSM)为平台,用 GPSMAP76 采集相关的航点、航迹,实地计算调查面积,记录地理位置;利用 CEC9680 手持设备在采集相关的航点、航迹的同时拥有的 GSM 短消息功能将定位数据包同步传至监控服务中心,控制服务中心解释获得的定位数据包中的信息,在强大的 GIS 地图上显示被监控终端设备的地理位置,实现实时查螺工作指导。[结果] GPSMAP76 手持设备对现场移动的路线进行准确定位且自动记录与保存移动轨迹(航迹),即时计算与保存面积;CEC9680 设备及时向控制中心发回移动位置信息,利用相关软件,结合传统查螺方法精确规划查螺范围并实现实时监控与指导。[结论]利用 GPSMAP76,CEC9680 手持全球定位设备可实现现场查螺的全面监控与指导。

其他

微小隐孢子虫卵囊 DNA 提取及用于 PCR 检测*

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[目的] 采用 3 种方法提取微小隐孢子虫卵囊 DNA,并用于 PCR 检测以进行比较。[方法] 微小隐孢子虫卵囊经多次冻融加热破壁后,采用螯合树脂(Chelex-100)、酚/氯仿和基因组 DNA 纯化系统试剂盒 3 种方法提取微小隐孢子虫卵囊 DNA,并根据微小隐孢子虫基因序列(L16996)设计一对寡核苷酸引物,分别对 3 种方法制备模板进行 PCR 扩增分析。Chelex-100 提取的 DNA 也用于观察 PCR 检测的敏感性。[结果] 3 种方法制备的微小隐孢

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子虫卵囊模板用于 PCR 检测均获得 1 条 446 bp 条带,Chelex-100 提取的 DNA 用于 PCR 检测的敏感性至少达 0.5 个卵囊。[结论] 3 种方法提取的微小隐孢子虫卵囊 DNA 均可用于 PCR 检测,Chelex-100 法是一种高效而快速的微量提取 DNA 方法,适用于对隐孢子虫 DNA 的检测。

* 国家"十五"科技攻关(No. 2003BA712A03-06)

气相色谱/质谱(GC/MS)联用测定麝香中甾体成分的研究

张皓冰、陶奕、洪筱坤1、王智华1

[**目的**] 旨在探索气相色谱/质谱联用技术对麝香中甾体成分的研究及其在麝香质量分析中的应用。[方法] 采用 GC/MS 联用法,对不同种类天然麝香中甾体成分加以比较分析。[结果] 通过谱库检索及结构解析确定了 19 中甾体成分的结构并提出了辨别麝香真伪的特征方法。[结论] 麝香样品中甾体激素的种类及含量,对麝香种类、质量优劣及真伪的鉴别尤其重要。辅以气相色谱/质谱联用技术,可高效准确地进行对麝香质量的分析。

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小学生手部清洁卫生对蛔虫再感染影响的进一步分析

陈颖丹, 许隆祺

[**目的**] 探讨手部清洁卫生对小学生蛔虫在感染的影响。[方法] 将基线调查中查出的蛔虫感染者给与驱蛔治疗,半月复查阴性者作为观察对象。实验组开展洗手活动,对照组不开展洗手活动,每 2 个月用 Kato 法复查 1 次,连续观察 1 年。比较实验组与对照组蛔虫累计在感染率,计算相对危险度(RR)及措施保护率(RR)。[结果] 小学生蛔虫累计在感染率从开展洗手活动后第 4 个月开始实验组低于对照组(P<0.001),手部清洁卫生防止蛔虫感染的效果指数 IE=2.25,保护率 PR=55.55%。[结论] 保持手部清洁卫生可减少小学生蛔虫再感染。

聚乳酸-聚乙二醇共聚物为载体的缓释疫苗微球的制备及特性研究

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[**目的**] 制备缓释疫苗微球。[**方法**] 以聚乳酸-聚乙二醇共聚物(PELA)为载体,醋酸乙酯为有机溶剂,采用 W/O/W 溶剂扩散法制备 PELA 疫苗微球。扫描电子显微镜观察微球的形态,激光散射技术测定其粒径分布;聚丙烯酰胺凝胶电泳(SDS-PAGE)研究微球包裹前后疫苗蛋白的稳定性;BCA 法测定疫苗微球的载药量和包封率,同时考察疫苗微球的体外释药性能。[**结果**] 所得微球呈类球形,平均粒径为 5.38μm,疫苗微球载药量为 5.12%,包封率达 75.25%;包裹前后疫苗蛋白的结构稳定;体外释药结果显示,疫苗微球前 3d 以Higuchi 方程(r=0.997 7)释放,3d 后则以零级恒速释放(r=0.9922),28d 累积释药量为 69.10%。

[结论] 以 PELA 为载体的疫苗微球具有较高的包封率、载药量和明显的缓释效果。

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3 种寄生虫病血清流行病学调查质量评价

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[**目的**] 对全国弓形虫、并殖吸虫病和旋毛虫病血清流行病学调查质量进行评价。[**方** 法] 用相同试剂盒,按统一的操作规范,对各地血清检测的全部阳性结果血清和随机抽取的部分阴性血清进行复测。[结果] 弓形虫病、并殖吸虫病和旋毛虫病 2 次检测阳性符合率分别为 79.17%, 78.08%和 69.25%,总符合率分别为 98.00%, 96.91%和 91.47%, 总符合率 98.14%, 97.21%和 92.84%, Kappe 值分别为 0.8738, 0.8611 和 0.7744。[结论] 弓形虫病、并殖吸虫病和旋毛虫病血清 2 次检测重现性极好,Kappe 统计量分析回代结果一致性差异有统计学意义(*P*<0.01)。

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云南微小按蚊 A 和 C 栖性的比较研究

郑彬, 汤林华, 马雅军1, 施文琦, 周水森, 王学忠2

[目的]对我国云南地区微小按蚊 A、C 栖息习性进行初步探讨。[方法] 在云南省勐腊县和元江县各选取一个自然村的人房和牛房,采用紫外灯通宵悬挂诱捕法采集蚊虫样本,将经形态学鉴定的微小按蚊的样本,分别取单蚊蚊腿,经多重 PCR 方法鉴别为微小按蚊 A或 C,统计其在人房和牛房的分布差异。对疑为微小按蚊 A/C 杂合子的,采用等位基因特异扩增法、PcR 产物酶切片段长度多态性分析和测定 D3 序列进行鉴定。[结果] 在人房中,微小按蚊 A 所占比例为 21.4%,微小按蚊 c 为 78.6%;牛房中,微小按蚊 A 所占比例为 18.5%,微小按蚊 c 为 81.5%,分布差异无统计学意义(x²=0.4157,P>0.05)。疑为微小按蚊 A/C 杂合子的样本,等位基因特异扩增法(PCR-ASA)、PCR 产物酶片段长度多态性分析(PCR-ASA)结果同时出现微小按蚊 A、C 的特征条带(PCR-ASA:376、294 和 112 bp,PCR-RFLP:108、268 和 376 bp),其 D3 序列在微小按蚊 A 与 C 的所有 5 个变异位点均出现杂合峰信号,即同时具有微小按蚊 A 和 C 相应碱基的峰信号。[结论] 尚未发现我国云南微小按蚊 A、C 在人房和牛房的栖息比例存在差异。在我国云南勐腊县首次发现微小按蚊 A/C 杂合子

微小按蚊 A、C 的 PCR 和同工酶鉴别比较研究

郑彬、汤林华、马雅军1、王学忠2,周水森、施文琦

[目的] 比较 PCR 和同工酶两种鉴别微小按蚊 A、C 亲缘种的方法。[方法] 将现场采

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集后经形态初步鉴定为微小按蚊的样本,经 PCR 产物酶切片段长度多态性分析(PCR-RFLP)与乌头按蚊和杰普尔按蚊区分,等位基因特异扩增法(PCR-ASA)进一步鉴别微小按蚊 A 和 C。再将用此方法鉴别后的微小按蚊羽化 24h 内单只虫体样本,采用垂直平板聚丙烯酰胺凝胶电泳,加以辨别区分。[结果] 经测序验证,PCR 方法可以简单明确地将微小按蚊 A、C 加以鉴别。几种用于鉴别的同工酶中,只有酯酶(EST)同工酶对微小按蚊 A、C 具鉴别意义。[结论] 对于微小按蚊 A、C 的鉴别,PCR 方法明显优于同工酶方法。

微小按蚊密度评价灰色模型研究

于国伟, 汤林华

[目的] 借助气象、环境与遥感监测指标建立微小按蚊密度评价模型。[方法] 以云南省 10 县 27 乡为研究现场,收集 1984-1993 年各乡气象、环境、遥感与蚊媒监测资料。对 18 项指标与微小按蚊密度的关系进行灰色关联度分析,按照灰色阈值筛选评价指标,合成变量 E,研究变量 E 与微小按蚊密度的关系,从而建立微小按蚊密度评价灰色模型。[结果] 以 0.70 灰色阈值筛选微小按蚊密度评价指标并排列灰色关联序: 干季月平均温度>干季最低温度>湿季最低温度>湿季归一化植被指数(NDVI)>湿季月平均温度>水田面积占耕地面积的比例>干季月最高温度>湿季月最高温度。微小按蚊密度灰色评价模型为

$$y=0.0578 \stackrel{\text{eo.}0780(8x '+7x '+6x '+5x '+4x '+3x '+2x '+1X ')}{10}$$

模型判定的正确率为92.0%,e0.5=18%,最大相对误差为一15%,最小相对误差为4%,平均相对误差为21%。[**结论**]借助微小按蚊密度评价模型可以对疟疾疫点微小按蚊密度进行拟合评价。

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§ 4. ABSTRACTS OF RESEARCH ARTICLES

SCHISTOSOMIASIS

THE FIELD TRIAL ON THE CONTRL OF SCHISTOSOMIASIS BY TREATMENT OF BUFFALOES WITH CHEMOTHERAPY IN THE POYANG LAKE REGION OF JIANGXI PROVINCE

GUO Jia-gang, NIN An¹, HU Guang-han¹, CHEN Hong-gen¹, DANG Hui, ZHU Rong, Gail williams², LI Yue-sheng², FENG Zheng, Don McManus²

To determine whether the treatment of buffaloes with chemotherapy could affect on the transmission of schistosomiasis in the lake region for the strategy of schistosomiasis control, two heavily infected administrative villages in the Poyang lake region of Jiangxi province were chosen for study in which one was taken as the experimental (intervention) area; and the other as the control area. In the experimental area, all the buffaloes were treated with chemotherapy, while in the control area no chemotherapy was given. In both area all the people were treated with praziquantel to eliminate the possible schistosome infection at the start. The results showed that a significant 70% reduction of prevalence of schistosomiasis in humans was found in the intervention village after 5 years follow-up studies in comparison with the village without intervention. This effect became evident by the end of three years' intervention, and was definitely confirmed at the end of fourth year. The prevalence in buffaloes under three years was 2%-18%, and that of buffaloes above 5 years was 0%-2.9%. From the result indicated in this study, it is evident that there would be no success to control the transmission of schistosomiasis when the population in the lake are were purely undergone treatment with chemotherapy; but the re-infection rate of residents in the heavily infected are was reduced to a certain degree when all the buffaloses were also treated with chemotherapy. The results in this study could provide the basis of researches to formulation for the effective control of schistosomiasis in the lake region.

CLONING AND EXPRESSION OF THE GENE ENCODING THIOREDOXIN OF SCHISTOSOMA JAPONICUM

HAN Hai-bo, CAO Jian-ping, LIU Shu-xian

To clone and express the gene encoding thioredoxin of *Schistosoma japonicum* (SjcTrx), according to cDNA sequence of thioredoxin in *S.japanicum* (Phillippine strain), a couple of primers was designed with Bam HI restriction endonuclease site introduced in forward primer

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with ATG as the start codon and SalI in reverse primer with TAA as the termination codon. Total RNA was extracted from adult worms of S. japonicum and the SjcTrx gene was amplified by RT-PCR. Meanwhile, the PCR products and the pET28a plasmid were digested with both BamHI and Sal I, and the target DNA fragments were purified and cloned properly into the prokaryotic expression vector pET28a. After identification by endonuclease digestion, PCR analysis and sequencing. The recombinant plasmid pET28a-SjcTrx was transformed into competent E.coli BL21 and expressed in the presence of IPTG. The experimental results showed that size of RT-PCR product as judged by agarose gel electrophoresis was around 334 bp, and the same fragments were obtained by restriction enzyme digestion from the recombinant plasmid pET28a-SjcTrx and PCR with the plasmid as a template. DNA of the recombinant plasmid pET28a-SjcTrx was sequenced and shown to be 97% and 43% identical to the deduced amino acid sequence to those of thioredoxin in S.japonicum Phillippine strain and S.mansoni respectively. Induced expression in E.coli BL21 could result in a constant level of the production of recombinant protein. The results of SDS-PAGE and Western blot analysis revealed that the expressed protein, which was around 14 kDA, could be recognized by sera from rabbit infected with S. japonicum and from mice immunized with recombinant reSjcTrx. It is concluded that the expression of gene encoding thioredoxin of S. japonicum was successful and the immunogenicity of the recombinant gene product to different animal models should be further investigated.

STUDY ON THE INTEGRATING GPS/GSM TECHNOLOGIES FOR MEASURING AND SUPERVISING MARSHLAND SIMULTANEOU

HE Zhan-ying, YU Qing, HU Fei¹, LIU Yue-min¹, CAO Chun-li, GUO Jia-gang

[Objective] Integrating the GPS/GSM not only recorded the geographic position of the marshland and measured the area, but also reported to the operations center and supervised the spots simultaneously. [Methods] Choosing a spot which was returned of agriculture to land (no snails), and another spot which was a marshland along the Kan River (snail habitats). The GPS was used to record the information of each dot position and the route which was transported to the operations center in short message by the GSM. The operations center received the messages and displayed them in the screen with the digital map (GIS). Accordingly, the operations center could grasp the information of the spot in time and supervise the work of the investigators. [Results] GPS could re -cord and save the route which the investigators walked in the spot, the longitude and latitude of each dot position could be collected consciously at the same time. The operations center received the short message and displayed each exact position of the supervised terminal in the screen. [Conclusion] Integration of the GPS and GSM technologies can exchange the position information by the short message. Operations center can receive the data at the same time and carry out the real-time tracking. Application of the kind of GPS in the Schistosomiasis control is convenient for reporting the emergency. With its mobile

communication, the operations center can command investigators to execute some measures. The integration will Offer a new supervising method which is high-tech, fast and accurate for Schistosomiasis.

1. Jiangxi Provincial Institute of Parasitic Diseases

FAMILIAL AGGREGATION OF PATIENTS INFECTED WITH SCHISTOSOMA JAPONICUM IN MARSHLAND AREA

ZHU Rong, LIN Dan-dan¹, CAO Chun-li, ZHU Hong-qi, HU Fei¹, ZHANG Hui-juan, GUO Jiang-gang

[Objective] To explore the distribution of patients infected with *Schistosoma japonicum* in the household, in order to determine the importance of common environmental effects in the transmission of *S. japonicum*. This would enable the identification of possible genetic effects controlling infection through distribution analysis using both pedigrees and housedholds. [Methods] The study population was condidted of 1 064 individuals from Tangmeri village in Jiangxi Province, China. In 2002, they were examined using the standard Kato-Katz thick smear technique to assess infection status. Of these, 1 015 completed a baseline questionnaire in 2002, 418 individuals were followed up in 2003. Pedigree data was obtained both in 2002 and 2003 and retrospective water contact was surveyed in December 2003 at the end of the study period. [Results] 1) Familial aggregation of infection showed to be non-ran-dom; 2) Relatives of infected individuals showed an increased infection risk and the closer the relationship between individuals, the further the increase in risk. [Conclusion] Familial aggregation is non-random and could be a result of genetic effects as well as other environmental components. Further investigation is required to establish the nature of these effects and their roles in transmission.

1 Jiangxi Provincial Institute of Parasitic Diseases

ANALYSIS OF SPATIAL RELATIONS OF RISK FACTORS TO INFECTION RATE OF SCHISTOSOMIASIS IN POPULATION

Chen Zhao, Zhou Xiao-nong, Yao Zhen-qi¹, Wang Tian-ping², Yang Ying-jin¹, Zhang Shi-qing², WU Xiao-hua, Wang Xian-hong, Jia Tie-wu, Wang Qiang

[Objective] To explore the risk factors of schistosomiasis and in order to provide the evidences for schistosomiasis centrol. [Methods] The data of infected population, infected cattle and infected snail distribution in 114 villages from 2001-2004 were collected, and the vector layer or water distributions in Dangtu County was extracted from SPOT5 satellite image by PCI and ENVI. Spatial dataset was created by ArcGIS, and the rank regression model was established by SAS to analyze the spatial relationship among variables. [Results] Ninety percent of the

epidemic villages(where the population infection rate was over 0)were located in areas where the distance to water sources was 1ess than 1 404 meters. The rank regression model between the population injected rate(v)and the snail infected rate(X_1), the cattle infected rate(x_2), the distance from villages to water sources(X_3) was: $y=42.190\ 79+0.290\ 26x1+0.453\ 65x2-0.477\ 65X_3$. Among the three lactors, the distance to water acted as the most important role on the population infection rate, and the second was the cattle infected rate, and the third was the snail infected rate. The three factors could explain 60.5% of the whole variation of the population infection rate. [Conclusion] More attention should be paid on the villages which were close to rivers to prevent people from infection.

INVESTIGATION ON REASONS OF MISSING CASES' REPORT FOR ACUTE SCHISTOSOMIASIS

XU Jing, WANG Li-ying¹, YANG Kun², WANG Ru-bo, GUO Jia-gang, ZHOU xiong-nong

[Objective] To understand the main reasons of the missing cases report for acute schistosomiasis. [Methods] By using the brainstorming method, the reasons of the missing cases report for acute schistosomiasis were proposed and then summarized. The importance of each reason was weighted by specialist consultation (Delphi) method. [Results] A total of 10 reasons for themissing cases report for acute schistosomiasis were summarized. The most important reason was the malpractice of management mechanism with a weight of 0.18. The importance of individual clinics, expanded chemotherapy, weak consciousness for cases reporting, hiding real cases, low rate of seeing a doctor, mobile population, misdiagnosis and low level of diagnosis for acute schistosomiasis were 0.13, 0.13, 0.13, 0.09, 0.09, 0.08, 0.08 and 0.07, respectively. Report delaying was weighted by only 0.02. [Conclusion] There are several reasons that account for the missing cases report for acute schistosomiasis. Malpractice Of management mechanism, individual chnics, expanded chemotherapy weak consciousness for cases reporting may be the main reasons for the missing cases report of acute schistosomiasis.

COMPREHENSIVE EVALUATION OF SEVERAL DIAGNOSIS AGENTS OF SCHISTOSOMIASIS JAPONICA IN CHINA

XU Jing, FENG Ting, GUO Jia-gang, ZHENG Hao, Wang Qiang, Wu Xiao-hua, Zhou Xiao-nong

[Objective] To evaluate the comprehensive quality of the immuno-diagnsosis reagents

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applied in schistosomiasis prevention and control in China and to supply information for selection of disease detection reagents in the third national schistosomiasis epidemiological sampling survey. [Methods] Seven relevant experts in immuno-diagnosis on schistosomiasis were invited as members of an evaluate on group, which determined comprehensive evaluation inexes. A total of 254 sera were examined with the single-blind method by the professionals from the immuno-diagnosis reagent producers. Specificity, sensitivity, Youden index and information of other relevant compre- hensive indexes were investigated and analyzed. [Results] The qualities of 9 reagents produced by 8 units were relatively good. The sensitivity or specificity was above 90% in most reagents, and Youden index was above 0.9 in 3 reagents. However, cross reactions with sera of paragonimiasis patients were general and 0-30% cross reaction with, sera of hepatitis B patients were present in some of reagents. [Conclusion] Most reagents tested in this evaluation can be used in schistosomiasis control and prevention.

EVALUATION OF EFFECTIVENESS OF MODIFIED KATO-KATZ TECHNIQUE FOR DIAGNOSIS OF SCHISTOSOMIASIS JAPNONICA

ZHU Hong-qing, CAO Chun-li, Gao Feng-hua¹, GUO Jia-gang, BAO Zi-ping, WANG Xian-hong, DANG Hui, ZHOU Xiao-nong

[Objective] To evaluate the effectiveness of modified Kato-Katz technique for the diagnosis of schistosomiasis to mass population. [Methods] Eight survey sites were selected at randomin Hubei, Jiangxi, Jiangsu, Sichuan and Yunnan provinces. The target population were screened by ELISA, then the serological positive cases were examined by the Hatching Test after Egg Concen-Kato-Katz technique was estimated with standardization of the Harching Test after Egg Concentra-tion with Nylon-tissue Bag. [Results] The total population were 9 853 with ELISA screening, and 2 824 were positive among the total population. A total of 3 853 were examined by the Hatching Test after Egg Concentration with Nylon-tissue Bag plus modified Kato-Katz technique. The infection rates of the survey sires were from 0.10% to 11.77%. The positive cases of the combined methods were 508, the positive of modified Kato-Katz technique were 355, and the positive of the Hatching Test after Egg Concentration with Nylon-tissue Bag were 456. The missing rate of modified Kato-Katz technique was 30.12%, the missing rate of the Hatching Test after Egg Concentration with Nylon-tissue Bag was 10.24%. When the eight sampling sites were divided into 2 group respectively; there was a significant difference between them (P<0.01). [Conclusion] When stoolexamination to mass population in different endemic areas, the missing rate of modified Kato-Katz technique is high. However, the examination rate is higher by the Hatching Test after Egg Concentration with Nylon-tissue Bag plus modified Kato-Katz technique.

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STUDIES ON IMMUNOGENICITY OF SCHISTOSOMA THIOREDOXIN I. CONSTRUCTION AND IDENTIFICATION OF DNA VACCINE OF SCHISTOSOMA JAPONICUM THIOREDOXIN*

CAO Jian-ping, HAN Hai-bo, LIU Shu-xian

[Objective] To construct and identify a DNA vaccine of Schistosoma japonicum (Chinese strain) thioredoxin. [Methods] According to a cDNA sequence of S. japonicum (Philippine strain) thioredoxin, a couple of primers was designed with the BamH I restriction endonuclease site introduced in forward primer with ATG as start condon and EcoR I in reverse primer with TCA as plified by RT-PCR. The gene encoding S. japonicum (Chinese strain) thioredoxin (SjcTrx) was amplified by RT-PCR using total RNA of schistosome as the template. The PCR products and the pcDNA3 plasmids were digested by restriction endonucleases BamH I and EcoR I. The target DNA fragment were purified and cloned properly into the eukaryotic expression vector of pcDNA3. The recombinant plasmids were then transformed into competent E. coli JM109 and identified by endonu-cleases digestion, PCR, agarose gel electrophoresis and sequencing. [Results] The RT-PCR product was around 334 bp judged by agarose gel electrophoresis. The same fragments were obtained by restriction enzyme digestion from the recombinant plasmid and PCR with the plasmid DNA as a template. The recombinant plasmid, designated pcDNA3-SjcTrx, was sequenced and shown to be 97% and 43% identical in deduced amino acid sequences to that of S. japonicum (Philippine strain) and S. mansoni thioredoxin, respectively. [Conclusion] The S.japonicum thioredoxin DNA vaccine had been constructed successfully, and further studies will be made in different animal models for its immunogenicity.

STUDIES ON IMMUNOGENICITY OF SCHISTOSOMA THIOREDOXIN II. STUDY ON PROTECTIVE EFFECT OF SCHISTOSOMA JAPONICUM THIOREDOXIN DNA VACCINE AGAINST CHALLENGING INFECTION IN MICE*

CAO Jian-ping, XU Yu-xin, Han Hai-bo, SONG Guang-cheng, LI Xiao-hong, LU Wei-yuan , SHEN Yu-juan, LIU Shu-xian

[Objective] To prepare DNA vaccine of *Schistosoma japonicum* (Chinese strain) thioredoxin (pcDNA3-SjcTrx) and investigate the protective immunity efficacy of the DNA vaccine against schistosomiasis in mice. [Methods] The recombinant plasmid pcDNA3-SjcTrx was prepared and used for immunization in mice. Thirty C57BL/6 female mice were divided into three groups, 10 mice in each group: pcDNA3-SjcTrx group, pcDNA3 control group and challenging group. In pcDNA3-SjcTrx group, each mouse was immunized intramuscularly with

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100ug pcDNA3-SjcTrx at week 0, 2 and 4. In pcDNA3 control group and challenging control group, each mouse was immunized with 100 µg pcDNA3 plasmid DNA and saline in the same immunized schedule, respectively. Three weeks after final injection, each mouse was challenged with (30 ± 1) cercariae of S. japonicum (Chinese strain). At 42 days after challenge, all mice were sacrificed and the worms were collected by perfusion. The number of recovered worms and eggs from hepatic tissue of mice were counted. The sera were collected from mice before immunization, before challenge and before killing. The anti-SjcTrx antibodies were detected with ELISA assay. Another six 6-week old C57BL/6 mice were immunized with pcDNA3-SjcTrx as above (i.m.), and the muscle tissue of injection area were treated for frozen section at the hours 24, 48, 72 after immunization. The antigen of pcDNA3-SjcTrx expressed in muscle of mice were detected by immunoenzymatic staining technique(IEST). [Results] IEST result showed that pcDNA3-SjcTrX were expressed in the muscle tissue injection area. ELISA results showed that specific antibodies against SjcTrx developed in mice. Compared with challenging control group, the worm reduction rate and egg reduction rate in liver tissues of pcDNA3-SjcTrx group were 45.7% and 41.4%, respectively (P<0.05). [Conclusion] The DNA vaccine of Schistosoma japonicum (Chinese strain)thioredoxin had good immunogenicity and reduced certain immunoprotective capacities against Schistosoma japonicum infection in mice. Further researches should be made for the DNA vaccine.

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IMMUNOGENICITY OF THE PLASMID DNA ENCODING SCHISTOSOMA JAPOMICUM MYOSIN HEAVY CHAIN

LI Xiao-hong, LIU Shu-xian, SONG Guang-cheng, XU Yu-xin, CAO Jian-ping, CHEN Jia-xi

[Objective] To study the efficacy of part myosin heavy chain DNA vaccine of *Schisotosoma japonicum* in mice. [Methods] The cDNA fragment encoding part-length heavy chain of myosin in *S.japonicum*, obtained by immuno-screen with the ultraviolet-attenuated schistosomula immunized sera, was cloned into the vector pcDNA3 to construct a DNA vaccine. Fifty microgram of this DNA vaccine was injected into C57BL/6 mouse quadriceps muscle of both sides. The procedure was three immunizations with 2 weeks interval, and a challenge with 30 cercariae/mouse two weeks post-immunization. Adult worms were harvested 6 weeks after the challenge through portal vein perfusion. Worm reduction rates were calculated. [Results] The mice immunized with the nucleic acid vaccine showed 33.02% reduction rate of worm, and immunized with only plasmid DNA was 24.05% reduction rate of worm compared with the blank vector and there was no significance in statistics between two groups. [Conclusion] The nucleic acid vaccine constructed in this experiment failed to induce significant protection against

the challenge of S.japonicum infection in mice.

SURVEILLANCE OF SCHISTOSOMIASIS IN FIVE PROVINCES OF CHINA WHICH HAVE REACHED THE NATIONAL CRITERIA FOR ELIMINATION OF THE DISEASE

WU Xiao-hua, CHEN Ming-gang, ZHENG Jiang

Surveillance of schistsomiasis consists mainly of surveys carried out in formerly endemic areas to observe infection and re-infection of resident and mobile human populations, and domestic animals (e.g.bovines) plus snail monitoring. Here, we focus on the schistosomiasis situation in the five Chinese provinces which have reached the national criteria form elimination of the disease, i.e. Fujian, Guangdong, Guangxi, Shanghai and Zhejiang. With the exception of three newly infected persons in Guangdong province, detected in 1992, repeated surveys in these provinces have not detected any new locally infected case in either humans or bovines. When the newly infected persons were discovered in Guangdong, residual snail habitats including *Schistosoma japonicum*-infected snails were found in the neighbourhood. These were destroyed and the infected persons treated before further spread could take place. The surveillance system in place has thus been successful in consolidating the results of the control effort. We conclude that rigorous surveillance for and control of schistosomiasis is the way to prevent resurgence of infection and disease in areas which have reached the national criteria for elimination or transmission interruption.

USE OF PRAZIQUANTEL FOR CLINICAL TREATMENT AND MORBIDITY CONTROL OF SCHISITOSOMIASIS JAPONICA IN CHINA: A REVIEW OF 30 YEARS' EXPERIENCE

CHEN Ming-gang

Chemotherapy is widely acknowledged as the most important, rapid and cost-effective method of reducing morbidity due to schistosome infections. The discovery of praziquantel in the 1970s has been a breakthrough for treatment of patients infected with schistosomes, including *Schistosoma japonicum* in China, and entire communities at risk of schistosomiasis. Praziquantel is usually administered in a single oral dose and has no or only mild and transient side effects. The drug is highly efficacious against *S. japonicum*, both in patients with acute and chronic stages of the infection, among subjects with extensive hepatosplenic involvement, and in patients with other complicated diseases. The cost of praziquantel has been reduced significantly over the past years. Hence, praziquantel has become the backbone of the national schistosomiasis control programme in China and in other countries where the disease remains endemic, most notably in sub-Saharan Africa. Chemotherapy with praziquantel also plays a role

in transmission control of schistosomiasis, although transmission interruption cannot be reached by chemotherapy alone. Here, I review 30 years' of experiences gained with the use of praziquantel for clinical treatment and larger-scale control of *Schistosomiasis japonica* in China.

DEVELOPMENT OF ANTISCHISTOSOMAL DRUGS IN CHINA, WITH PARTICULAR CONSIDERATION TO PRAZIQUANTEL AND THE ARTEMINSININS

XIAO Shu-hua

Remarkable achievements have been made in the control of Schistosomiasis in China, With chemotherapy playing a seminal role. From the early 1950s through the early 1980s, Chinese scientists made considerable progress in discovery and development of compounds with antischistosomal properties, including antimonials, non-antimonials and various effective principles stemming from traditional herbs. However, only few compounds entered clinical testing, while others were abandoned mainly due to their toxicity and poor efficacy. The advent of praziquantel in the 1970s changed the landscape of research and development of drugs for treatment and morbidity control of schistosomiasis. The main Chinese contributions to enhance the understanding of the antischistosomal drug praziquantel are reviewed here, including issues of metabolism, antibody-dependency, host immune factors, stage-specific susceptibility and resistance. Over the past 25 years, researchers from China successfully developed artemether and artesunate, two derivatives from the antimalarial artemisinin, as promising drugs against Schistosoma japonicum. Laboratory investigations showed that the arteminsinins display their highest activity against the juvenile stages of the parasite. These findings were consistently confirmed in randomized controlled trials; repeated oral administration of artemether or artesunate was sage and efficacious in the prevention of patent S. japonicum infections. The key findings are reviewed here, and emphasis is placed on how it stimulated research outside of China on other human schistosome species.

THE PUBLIC HEALTH SIGNIFICANCE AND CONTROL OF SCHISTOSOMIASIS IN CHINA-THEN AND NOW

ZHOU Xiao-nong, WANG Li-ying¹, CHNE Ming-gang, WU Xiao-hua, JIANG Qing-wu², CHEN Xian-yi¹, ZHENG Jiang, Jurg Utzinger

The description of schistosomiasis in China dates back more than two millennia. The disease caused social and economic hardship, and the rates of morbidity and mortality were high. In the mid 1950s, when China's population was approximately 600 million, an estimated 11.6 million people were infected with *Schistosoma japonicum*. Hence, a national control programme was launched, with an emphasis on intermediate host snail control by means of environmental

management. Over the past 50 years, the national control programme has made great progress and praziquantel-based morbidity control became the mainstay of control. In 2000, the number of infected people had been reduced to an estimated 694,788, the snail-infested area has been abridged by over 75%, and the disease had been eliminated in five of the 12 previously endemic provinces. Between the mid 1980s and 2003, the criteria of transmission interruption have been reached in 260 counties (60.0%), transmission control has been achieved in 63 counties (14.5%), but the disease was still endemic in the remaining 110 counties (25.4%). Comparison between the number of cases in 2000 and 2003 suggests that schistosomiasis has re-emerged; an estimated 843,011 people were infected with *S.japonicum* in 2003. Here, we provide a short historical account of the public health significance of schistosomiasis in China, highlight the progress made to date with the national control programme, and place particular emphasis on the most recent trends. Finally, we discuss remaining challenges for schistosomiasis control with the ultimate goal of disease elimination.

THE ROLE OF PASSIVE CHEMOTHERAPY PLUS HEALTH EDUCATION FOR SCHISTOSOMIASIS CONTROL IN CHINA DURING MAINTENANCE AND CONSOLIDATION PHASE

GUO Jiang-gang, Cao Chun-li, HU Guang-han¹, LIN Han¹, LI Dong¹, ZHU Rong, XU Jing

In order to explore the possibility of further optimizing schistosomiasis control during the maintenance and consolidation phase in China, two highly endemic villages were selected to compare the strategy of 'passtive chemotherapy' plus health education to that of mass chemotherapy singly. Emphasis was placed on treatment coverage with praziquental among individuals infected with Schistosoma japonicum and costs incurred for treating an infected person. The results show that the former strategy was almost as good as the latter producing treatment coverage rates among egg-positives of 96.2-97.1% during 2 years, while corresponding rates 100% were achieved in the village where mass chemotherapy was employed. Importantly, the cost of the former strategy was only about half that of mass chemotherapy, i.e. 49.0% in the first year and 54.9% in the following. Moreover, 'passtive chemotherapy' together with health education can conveniently be integrated into the primary health care system making it an attractive strategy for schistosomiasis control during the maintenance and consolidation phase.

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THE NATIONAL INSTITUTE OF PARASITIC DISEASES, CHINESE CENTER FOR DISEASE CONTROL AND PREVENTION: A NEW ADMINISTRATIVE STRUCTURE FOR SCHISTOSOMIASIS CONTROL

ZHOU Xiao-nong, CHEN Jia-xu, CHEN Ming-gang, Robert Bergquist¹

Since more than 5 decades, the overall responsibility for the national programme on schistosomiasis control in China resides at the government level, i.e. Ministry of Health. Day-to-day activities are carried out by independent provincial parasitic institutes situated in the endemic areas. Along with the general economic development and the steady progress in the medical sciences, successful developments in control and research of the parasitic diseases in the country were achieved. This necessitated a corresponding reorganization of the administrative structures which has taken place at several levels. In January 2002, the Chinese Centre for Disease Control and Prevention was reorganized and the Institute of Parasitic Diseases in Shanghai became part of this new organization under the name of the National Institute of Parasitic Diseases to better reflect its new role. By assigning all administrative task force for epidemiological surveys and direction of parasitic control programmes is well suited to respond to the daunting challenges of the future. The new institution has only exited for a few years but has already become a well-functioning force with a broad contact net of national and international experts on research and control of parasitic diseases.

AN ECONOMIC EVALUATION OF THE NATIONAL SCHISTOSOMIASIS CONTROL PROGRAMME IN CHINA FROM 1992 TO 2000

ZHOU Xiao-nong, WANG Li-ying¹, CHNE Ming-gang, WANG Tian-ping2, GUO Jia-gang, WU Xiao-hua, JIANG Qing-wu³, ZHENG Jiang, CHEN Xian-yi¹

The World Bank Loan Project, by far the largest effort in China for schistosomiasis control since control activities were initiated in the mid 1950s, was carried out for a 9-year period commencing in 1992 in the 8 provinces there Schistosoma japonicum remained endemic when the project started. To evaluate its impact, a retrospective economic evaluation was done in 2001. Six representative counties, i.e. Huarong in Hunan province, Qianjiang in Hubei province, Yagan in Jiangxi province, Tongling in Anhui province, Xichang in Sichuan province and Dali in Yunnan province, were selected for the study. The total financial input in these counties from 1992 to 2000 was RMB Yuan 90.334 million with the World Bank loan accounting for 40.9%. Control efforts resulted in reduction of human prevalence rates in the six counties from 0.7-0.9% in 1992 to 0.1-2.7% in 2000. With regard to S. japonicum infection in bovines, a high reduction was observed in Qianjiang, and smaller decreases were noted in four counties, while there was an increase in Dali. In general, the areas infested by the intermediate host snail fluctuated around the initial level. The net benefit-cost ratio was 6.20, which means that this project gained

US\$6.20 for every dollar spent. The correlation coefficients of the net benefit-cost ration to the human and bovine infection rates at the beginning of the project were 0.55 and 0.66, respectively. It is conceivable that further progress in schistosomiasis control is an important feature for sustained growth of the local economy, particularly in areas where control of the disease has been most challenging.

SCHISTOSOMIASIS CONTROL IN CHINA: THE IMPACT OF A 10-YEAR WORLD BANK LOAN PROJECT (1992-2001)

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China has been carrying out large-scale schistosomiasis control since the mid-1950s, but in the early 1990s, schistosomiasis was still endemic in eight provinces. A World Bank Loan Project enabled further significant progress to be made during the period 1992-2001. The control strategy was focused on the large-scale use of chemotherapy-primarily to reinforce morbidity control – while at the same time acting on transmission with the ultimate goal of interrupting it. Chemotherapy was complemented by health education, chemical control of snails and environmental modification where appropriate. A final evaluation in 2002 showed that infection rates in humans and livestock had decreased by 55% and 50%, respectively. The number of acute infections and of individuals with advanced disease had also significantly decreased. Although snail infection rates continued to fluctuate at a low level, the densities of infected snails had decreased by more than 75% in all endemic areas. The original objectives of the China World Bank Loan Project for schistosomiasis control had all been met. One province, Zhejiang, had already fulfilled the criteria for elimination of schistosomiasis by 1995. The project was therefore a success and had provided China with a sound basis for further control.

IMMUNOLOGICAL CHARACTERISTIC INDUCED IN MICE BY NUCLEIC AVID VACCINE HARBORING THE GENE ENCODING GAPDH IN SCHISTOSOMA JAPONICUM

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[Objective] To study the immunological characteristics induced in C57BL/6 mice by nucleic

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acid vaccine harboring the gene encoding glyceraldehydes-3-phosphate dehydrogenase (GAPDH) of *Schistosoma japonicum*. [Methods] The gene encoding GAPDH of *S. japonicum* from screening of cDNA library was amplified using universal primer T3 promoter and T7 promoter, the PCR product was cloned into the T-A library was amplified using university primer T3 promoter and T7 promoter, the PCR product was cloned into the T-A vector pT-Adv. GAPDH-pT-Adv and eukaryotic expression vector pcDNA3 were digested by restriction endonucleases *HindIII* and *Xho I*, and the nucleic acid vaccine harboring the gene encoding GAPDH was then constructed by ligating the digested products. C57BL/6 mice were immunized using the purified pcDNA3-SjGAPDH. The expression induced by pcDNA3-SjGAPDH were analyzed using SDS-PAGE, Western blotting, and ELISA respectively. [Result] Light green fluorescence was observed in local muscle cell under the fluoroscope 24 and 48 hours after immunization, which indicated the expression of GAPDH. The recombinant plasmid induced specific anti-GAPDH IgG, predominantly IgG2a, IgG2b and IgG3. Cytokines IFN- y, IL-2 but IL-4 were detected in C57BL/6 mice vaccinated with the vaccine. [Conclusion] The DNA vaccine, pcDNA3-SjGAPDH induces Th1 type immune response in mice.

MALARIA

FLUCTUATION IN THE RESISTANCE OF *PLASMODIUM FALCIPARUM*TO CHLOROQUINE IN CHINA

LIU De-quan, FENG Xiao-ping, YANG Heng-lin¹, LIN Shi-gan², CHEN Wen-jiang², YANG Pin-fang 1

[Objective] To investigate whether chloroquine resistance of *Plasmodium falciparum* had changed after stopping or reducing the use of chloroquine as an antimalarial in Hainan and Yunnan provinces. **[Methods]** WHO standard in vitro microtest and 4-week *in vivo* test were used, assays were carried out in different time after stopping or reducing the use of chloroquine. **[Results]** *In vitro* test in Hainan indicated that the rate of chloroquine resistant *P.falciparum* was 97.9% in 1981, and dropped to 26.7% in 1997(P < 0.01). The mean concentration of chloroquine for complete inhibition of schizont formation was 10.46 ± 7.14 pmol/µl blood in 1981, decreased to 1.63 ± 1.47 pmol/µl blood in 1997(P < 0.01). The proportion of samples taken from malaria cases that required high concentration (>6.4 pmol/µl blood) of chloroquine for complete inhibition of schizont formation was 83.3% in 1981 and only 6.7% in 1997(P < 0.01). In the 4-week in vivo test, the rate of chloroquine resistant *P.falciparum* decreased from 84.2% in 1981 to 18.4% in 1997(P < 0.01). RIII cases accounted for 53.1% of the total resistant cases in 1981, and for 14.3% in 1997(P < 0.01). In vitro test in Yunnan revealed that the rate of chloroquine resistant *P.falciparum*, the mean concentration of chloroquine for complete inhibition of schizont formation and the proportion of samples taken from malaria

cases that required>6.4 pmol/ μ l blood of chloroquine for complete inhibition of schizont formation were 97.4%, 17.2±12.6 pmol/ μ l blood and 58.9% in 1981 respectively, and dropped to 70.4%(P<0.01), 4.0±3.3 pmol/ μ l blood(P<0.01) and 16.6%(P<0.01) in 2002 respectively. [Conclusion] The resistance of P-falciparum to chloroquine declined progressively after its use had been stopped or reduced in Hainan and Yunnan provinces.

PREPARATION OF MONOCLONAL ANTIBODIES SPECIFIC TO LACTATE DEHYDROGENASE OF *PLASMODIUN FALCIPARUM**

WANG Jun-yun, BAO Yi-fang, YANG Yue-tao, TANG Lin-hua

[Objective] To prepare monoclonal antibodies specific to lactate dehydrogenase of Plasmodiun falciparum. [Methods] The *Plasmodium falciparum* lactate dehydrogenase (pLDH) gene was amplified from whole blood of malaria patients by PCR and cloned into expression vector pGEX-3X. Recombinant pLDH protein was expressed and purified, and used for immunizing mice to prepare monoclonal antibodies (McAbs). The McAbs were characterized by Western blotting analysis. [Results] The *Plasmodium falciparum* lactate dehydrogenase gene was amplified and cloned into expression vector pGEX-3X. The recombinant pLDH plasmid was expressed in *E.coli* BL-21 cells. 15 cell lines of McAbs with high titer against pLDH were obtained using the recombinant pLDH as immunogen. Western blotting analysis showed that these McAbs recognized a Mr 33 000 of native *Plasmodium falciparum* protein without cross-reaction with constituents of red blood cell of febrile patients from endemic area of malaria. [Conclusion] Fifteen hybridoma cell lines secreting high titer of McAb specific to *Plasmodium falciparum* LDH were established based on the recombinant pLDH.

THE POINT PLASMODIUM MUTATIONS IN PFCRT AND PFMDRL GENES INFALCIPARUM ISOLATED FROM HAINAN PROVINCE

GUAN Ya-yi, TANG Lin-hua, HU Ling, FENC Xiao-ping, LIU De-quan

[**Objective**] To evaluate the point mutations in Pfcrt and Pfmdrl genes in *Plasmodium falciparum* isolated from Hainan Province. [**Methods**] Nested polymerase chain reaction and restriction fragment length polymorphism were used to detect the point mutations at codon 76 of Pfcrt and at codon 86, 1246 of Pfmdrl in *P.falciparum* isolates. Chloroquine resistance was measured by the in vitro microtest recommended by WHO. [**Results**] In 36 samples tested, 28 were successfully amplified for Pfcrt, 64.3% of them carried mutant allele at codon 76, 21.4% with wild allele K76 and14.3% with mixed allele mutation. While for Pfmdrl, 3.4% isolates displayed the 86Y mutation, 89.7% with wild allele N86 and 6.9% with the mixed alleles in 29 isolates which were amplified successfully for N86Y. No point mutation in Pfmdrl at codon 56

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1246 was found in 13 isolates from the total 36 samples. By the in vitro test, 72.2% (26/36) showed resistance chloroquine. The 76T and 86Y mutant alleles were present in both in vitro susceptible and resistant isolates. There was significant difference between susceptible and resistant isolates carrying 76T mutant codon (P<0.05), but no significant difference was found in Pfmdrl (P>0.05). [Conclusion] There is a significant difference of the 76T prevalence in Pfcrt gene between the susceptible isolate and resistant one of *P.falciparum* to chloroquine in vitro. The Pfcrt 76T may be used as a predictive marker for chloroquine resistance surveillance. LEISHMANIASIS

EVAKUATION OF A REPETITIVE DNA SEQUENCE OF LEISHMANIA ON THE IDENTIFICATION OF LEISHMANIA ISOALTES IN CHINA

WANG Jun-yun, GAO Chun-hua, YANG Yue-tao, BAO Yu-fang

The homologies between the *Leishmania* isolates in China and the reference strain of WHO were analysed on the basis of determination of a repetitive sequence of *Leishmania*. The repetitive DNA fragments of the *Leishmania* isolates were amplified by PCR and their sequences were determined by suing the PCR products. Homology of the amplified repetitive sequences of the isolated strains were then compared with GENEDOC software program. It was found that alignment of sequences showed a complete or higher homologies (99%~100%) among the different strains of species with a considerable difference between different species (usually less than 90%). These results prove the practical value of this repetitive DNA fragment on the identification of the *Leishmania* isolates in China.

SNAILS

A GEOGRAPHIC INFORMATION AND REMOTE SENSING BASED MODEL FOR PREDICTION OF *ONCOMELANIA HUPENSIS* HABITATS IN THE POYANG LAKE AREA, CHINA

GUO Jia-gang, P. Vounatsou¹, CAO Chun-li, ZHU Hong-qing, ZHU Rong, HE Zhan-ying, LI Dong², HU Fei², CHEN Ming-gang, M Tanner¹

A model was development using remote sensing and geographic information system technologies for habitat identification of *Oncomelania hupensis*, the intermediate host snail of *Schistosoma japonicum*, in the Poyang Lake area, China. In a first step, two multi-temporal Landsat TM5 satellite images, one from the wet and the second from the dry season, were visually classified into different land-use types. Next, the normalized difference vegetation index was extracted from the images and the tasseled-cap transformation was employed to derive the wetness feature. Our model predicted an estimated 709km2 of the marshlands in Poyang Lake as potential habitats form *O. hupensis*. Near-ground temperature measurements in April and August

yielded a range of 22.8-24.2°C, and pH values of 6.0-8.5 were derived from existing records. Both climatic features represent suitable breeding conditions for the snails. Preliminary validation of the model at 10 sites around Poyang Lake revealed an excellent accuracy for predicting the presence of *O.hupensis*. We used the predicted snail habitats as centroids and established buffer zones around them. Villages with an overall prevalence of *S. japonicum* below 3% were located more than 1200 m away from the centroids. Furthermore, a gradient of high-to-low prevalence was observed with increasing distance from the centroids. In conclusion, the model holds promise form identifying high risk areas of schistosomiasis japonica and may become an important tool for the ongoing national schistosomiasis control programme. The model is of particular relevance for schistosome-affected regions that lack accurate surveillance capabilities and are large enough to be detected at most commercially available remote sensing scales.

APPLICATION OF PORTABLE GPS RECEIVER MAP76/CEC9680 IN INVESTIGATION OF ONCOMELANIA HUPENSIS

YU Qing, HE Zhan-ying, BAO Zi-ping, NIU Hong-feng, GUO Jia-gang

[objective] To evaluate the practical value of the portable Global postioning System(GPSMAP76/CEC9680) in making precise positioning and measurement of the snail-infested areas in the beaches and islets of rivers and lakes, carrying out synchronous information transmission and achieving information digitization and real-time monitoring. [Methods] One piece of lake area which returned from former cultivated land and one snail-infested islet were selected in Poyang Lake region, with the 3G system, namely global positioning system(GPS), geographical information system(GIS) and global system for mobile communication (GSM) as a platform, GPSMAP76 was used for collecting relevant way points and track, making on-the-spot calculation of the area surveyed and recording its geographical position. The positioning data package was sent back synchronously in the form of short message of GSM to the monitoring service center by using portable GPS CEC9680 information from the data package interpreted at the monitoring center, and the geographical position of the terminal receiver monitored was displayed on the GIS map to time supervision of snail survey. [Results] The portable GPS receiver made accurate positioning of the walking route in the held, automatic recording and saving the mobile track(navigation track), and making real-time calculation and saving of the area surveyed, The CEC9680 receiver sent back moving position to the monitoring center in time, and made accurate planning of snail survey in the areas and got real-time monitoring and supervision by using relevant software integrated with traditional snail-survey methods. [Conclusion] The portable GPS receiver GPSMAP76 and CEC9680 can

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make overall monitoring and supervision of field snail survey.

STUDIES ON SUSCEPTIBILITY OF POMACEA CANALICULATA OF DIFFERENT DEVELOPMENTAL STAGES TO INFECTION WITH ANGIOSTRONGYLUS CANTONENSIS

LIU He-xiang, ZHANG Yi, ZHOU Xiao-nong, LV Shan, ZHU Dan, LIN Jin-qiang¹, LI Li-sha¹, LI You-song¹, YIN Wei-gang²

[Objective] To study the sussceptiblity of Pomacea canaliculata of different developmental stages to Angiostrongylus cantonensis infection. [Methods] P.canaliculata snails breeding at laboratory were divided into four rank (I-IV) according to the weight, and infected with the first stage larvae of A. cantonesis from Fujian Province. Their mortality, infection rate, worm burden, and the size, development and distribution of larvae in snails were examined. [Results] snails at different developmental stages were readily infected with A. cantonesis. The infection rate was between 76% and 100%, with no significant difference among the groups (P>0.05). Snails at earlier developmental stage showed higher mortality. The heaviest from worm burden and the largest number of snails harboring more than 100 larvae were found in snails of rank III. In general the larvae in snails showed a synchronous development in the groups. Sizes of the third stage larvae in snails of various ranks were homogeneous. The period before the third stage larva emergence and the time for a peak percentage of the larvae exhibited no significant difference among the four ranks. The larvae widely distributed in various parts of snails, with more in the lung and foot, and larvae from snails of different ranks could all infect rats successfully. [Conclusion] P. canaliculata of the four ranks can all be infected by the first stage larvae of A. cantonesis. Rank III snails may be better for studying the relationship between P. cancliculata and A.cantonensis. The potential role of young role of young snails in angiostrongyliasis transmission should be recognized.

THE OTHERS

PREPARATION OF DNA FROM *CRYPTOSPORIDIUM PARVUM* OOCYSTS FOR PCR DETECTION*

SHEN Yu-juan, CAO Jian-ping, LU Wei-yuan, LI Xiao-hong, LIU Hai-peng, XU Yu-xin, ZHOU Xiao-nong, TANG Lin-hua, LIU Shu-xian

[**Objective**] To establish three methods of DNA extraction from *Cryptosporidium parvum* oocysts and test by PCR. [**Methods**] After three freeze-thaw cycles, three kinds of templates were extracted from the oocysts by Chelex-100, phenol/chloroform or genomic DNA purification system kit, and used for PCR detection. According to the sequence of a *C.parvum* gene (L16996), a pair of primers was designed and synthesized, and used for PCR. The

sensitivity of the template by Chelex-100 method was also tested by PCR. [**Results**] One 446 bp PCR product was observed by agarose gel electrophoresis for all three kinds of templates. The PCR sensitivity by Chelex-100 extracted DNA reached for detection of a specimen containing only 1/2 oocyst. [**Conclusion**] The three kinds of extraction can all be served as templates for PCR detection of *C.parvum* oocysts, while Chelex-100 method is simpler, quicker and more reliable for DNA extraction of the parasite.

STERIODS IN MUSK BY GAS CHROMATOGRAPHY/MASS SPECTROMETRY

ZHANG Hao-bing, TAO Yi, HONG Xiao-kun¹, WANG Zhi-hua¹

[Objective] This study was designed to investigate the application of gas chromatography/mass spectrometry on steroids of musk and its quality control. [Methods] Compared and analyzed the steroidal components in natural muck gas chromatography/mass spectrometry. [Results] 19 kinds of steroids in natural muck samples were illustrated by library searching or structure elucidation. And the characteristic method of telling the true from the false is proposed. [Conclusion] The kinds and the contents of steroids in samples are the key to distinguish the genuine natural muck from the sham or adulterant and to evaluate the grade of muck. With the help of gas chromatography/mass spectrometry, the quality of muck samples can be analyzed quickly and accurately.

THE IMPACT OF HANDS CLEANLINESS ON DIMINUTION OF ASCARIA LUMBRICOIDES REINFECTION IN PUPILS

CHEN Ying-dan, XU Long-qi

[Objective] To approach the impact of hands cleanliness on diminution of *Ascaris lumbricoides* reinfection in pupils. **[Methods]** The pupils who infected *A. lumbricoides* in basic survey and then turned to negative in half month after treated by albendazole were selected as observation group. Hand-washing activity was conducted in experimental group, but not in control group. The Kato method was done once every two months for one year to compare the reinfection rates in pupils of two groups, then to calculate the index effectiveness (IE) and protective rate (PR). **[Results]** From the 4^{th} month after starting of hand-washing activity, the reinfection rates of experimental group were lower than that of control group (P < 0.001). The IE of preventing ingection of *A. lumbricoides* was 2.25, PR was 5.55%. **[Conclusion]** Keeping hands clean and hygiene will reduce the reinfection of *A.limbricoides*.

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EVALUATION OF SEROEPIDEMIOLOGICAL SURVEY QUALITY ON TOXOPLASMOSIS PARAGONIMIASIS AND TRICHINELLIASIS IN CHINA

CHEN Ying-dan, WANG Ju-jun, YUAN Zhong-ying, ZHOU Chang-hai, SUN Feng-hua¹, QIAN Yi-xin¹, YE Bo, XU Long-qi

[Objective] To evaluate the quality of the seroepidemiological survey which was used in toxoplasmosis paragonimiasis and trichinelliasis in China. [Methods] To re-exam the samples with were positive and part of samples which were negative by means of random sampling, according to the method which used the same kits and fellowed the same procedures in this survey. [Reaults] Two examinations showed that the positive agreement rate were 79.17%, 78.08% and 69.25%; the negative agreement rate were 98.00%, 96.91% and 91.47%; total agreement rate were 98.14%, 97.21% and 92.84%; Kappe value were 0.8738, 0.8611 and 0.7744. [Conclusion] The reproducibility of toxoplasmosis, paragonimiasis and trichineliasis was excellent by two examination of the samples. The lonsistency (identity) of result of Kappe test had significant difference.

TEIBENDIMINDINE: A PROMISING, SAFE AND BROAD-SPECTRUM ANTHELMINTIC AGENT FROM CHINA

XIAO Shu-hua, WU Hui-ming, Marcel Tanner, Jurg Utzinger, WANG Chong

We review, for the first time, a 20-year Chinese story of research and development pertaining to tribendimidine, a promising anthelmintic agent that is safe and exhibits a broad spectrum of activity. Tribendimidine was first synthesized at the National Institute of Parasitic Diseases in Shanghai in the mid 1980s. In laboratory studies, tribendimidine showed high efficacy against Nippostrongylus braziliensis in rats, Necator americanus in hamsters, Ancylostoma caninum and Toxocara canis in dogs, and Syphacia mesocriceti in mice. Activity was also found against several species of cestodes in chicken. In clinical trials, a single oral dose of 400 mg tribendimidine, administered to patients infected only with *N. americanus*, or with N.americanus and Ancylostoma duodenalis, resulted in cure rates of 85.7% (132/154) and 89.8% (53/59), respectively. In comparison, a single oral dose of 400 mg albendazole resulted in significantly lower cure rates, namely 65.5% (91/139; X2=16.47, P<0.001) and equally effective against Ascaris lumbricoides infections, cure rates were 96.0% (97/101) and 98.1% (101/103), respectively. In 5-14-year-old children with an Enterobius vermicularis infection, treated with a single oral dose of 200 mg tribendimidine, a cure rate 81.6% (93/114) was observed. Tribendimidine was well-tolerated as only mild and transient side effects were observed. It would be of great public health significance if these findings are confirmed in other epidemiological settings, as more than one-quarter of the world population is currently affected by intestinal nematodes, with only very few drugs currently available on the marker.

IDENTIFICATION OF THE IMMUNODOMINANT REGIONS OF THE EM18 ANTIGEN AND IMPROVED SERODIAGNOSTIC SPECIFICITY FOR ALVEOLAR ECHINOCOCCOSIS

JIANG Li, XU Xue-nian, LI Xiong¹, XUE Hai-chou, FENG Zheng

The aim of this work was to identify the immunodominant regions of the Em18 antigen to improve the specificity in diagnosis of alveolar echinococcosis (AE). Two recombinant antigens ReEm18-1 and ReEm18-2, which have the same sequence except that nine amino acid residues are absent in ReEm18-2, were tested by ELISA and Western Blot (WB) for their diagnostic efficiency. Serological evaluation of the two antigens demonstrated that the sensitivity of both antigens was 95.5% in ELISA and WB, and the specificity was 93.6% and 95.7% in ELISA, and 81.4% and 82.9% in WB, respectively. Five more expression clones (EmS1-EmS5), which contain different regions of the Em18 sequence, were constructed for defining the immunodominant regions of the antigen. Fourteen monoclonal antibodies (mAbs) against ReEm18-2 antigen and the sera from different groups of patients were used to identify the epitope regions of the five antigen fragments. Results showed that the epitopes recognized by the mAbs are located in the N-terminal third of the sequence, but the mAbs are located in the N-terminal third of the sequence, but the immunodominant area recognized by native serum antibodies may be located further downstream (C-terminal) in the sequence. The nonspecific cross-reactivity is due to epitopes present in the C-terminal third of the sequence. The antigen fragments that contain the first two-thirds of the sequence have the same sensitivity to AE area as those of the ReEm18-1 and ReEm18-2 antigens, but removal of the C-terminal third of the sequence improved the specificity of the assay from 93.6% to 99.3% (ELISA) and 81./4% to 90.7% (WB). We conclude that the necessary part of the ReEm18 antigen sequence for AE diagnosis is the N-terminal half to two-thirds of the entire sequence.

NECATOR AMERICANUS: OPTIMIZATION OF THE GOLDEN HAMSTER MODEL FOR TESTING ANTHELMINTIC DRUGS

 $\textit{XUE Jian, QIANG Hui-qing, YAO Jun-ming, Ricardo Fujiwara}^{l}, \textit{ZHAN Bin}^{l}, \textit{Peter Hotez}^{l}$

Laboratory golden hamsters (Mesocricetus auratus) were infected with Nacator americanus under several different parasite and host conditions to optimize the model for testing anthelminthic durgs. The results confirmed that male hamsters were more susceptible to infection than females. Host age in the range of 5-15 weeks was not a factor that impacted on adult worm burden, and similar worm burdens were achieved using doses of 150,250 or 500 N. americanus L3(NaL3). The largest numbers of adult hookworms were recovered on days 21-28

post-infection, with a significant decrease at days 40-50 post-infection. Therefore adult worm recovery is maximal approximately 11-18 days prior to patency and host blood loss. From these studies a drug evaluation protocol was developed using 150 NaL3 as in infectious dose and then evaluating the anthelminthic effects of the drugs albendazole, tribendimidine, and pyrantel pamoate on days 21-28 post-infection. The model confirms the anthelminthic activity of albendazole, tribendimidine, and pyrantel pamoate and has the potential as a laboratory animal model to detect emerging drug resistance.

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PREPARATION AND CHARACTERISTICS OF PELA-MICROSPHERES FOR VACCINE SUSTAINED RELEASE

XU Xi-ming¹, SHEN Yu-ping¹, YU Jiang-nan¹, GAO Gu-yun¹, CAO Jian-ping

[Objective] To prepare the microspheres for vaccine sustained release. [Methods] Microspheres containing vaccine were Prepared by a modified W/O/W double emulsion-solvent diffusion method with poly-D, L-lactide-co-poly (ethylene glycol)(PELA)as carrier materials and ethyl acetate as organic solvent. Scanning electron microscopy was used observation of microspheres. Size distribution was determined by laser scattering technique. The stability of protein was evaluated by SDS-PAGE. The loading capacity and efficiency of vaccine in the microspheres were determined by BCA kits, which was also performed for the release of vaccine from microspheres in vitro. [Results] Scanning electron micrographs showed that microspheres were almost spherical and the average diameter was about 5.38 um. The loading capacity and encapsulation efficiency of vaccine in the microspheres was 5.12% and 75.25%, respectively. SDS-PAGE experiment suggested the protein was stable after being incorporated. In vitro release data were described with the following kinetic models: the release profile followed Higuchi equation in 0-3 day (r=0.9977), the release profile followed zero-order kinetic in 4-28 day (r=0.9922). 69.10% Encapsulated vaccine was released over a period of 28 d. [Conclusion] The vaccine-loaded PELA microspheres were found to own a good loading capacity and efficiency, a remarkably sustained release of vaccine.

1 School of Pharmacy, Jiangsu University

COMPARATIVE STUDY ON THE RESTING HABIT OF ANOPHELES MINIMUS A AND ANOPHELES MINIMUS C IN YUNNAN PROVINCE

ZHENG Bin, TANG lin-hua, MA Ya-jun¹, SHI Wen-qi, ZHOU Shui-sen, WANG Xue-zhong²

[Objective] To compare the difference of resting habitat between *Anopheles minimus* A and *An.minimus* C in Yunnan Province. [**Methods**] A Village was selected in Mengla and Yuanjiang

County respectively to collect mosquitoes by hanging ultraviolet lamps inside the cattle pen and human dwellings. The samples were identified by multiplex-PCR after morphological examination. Suspicious *An.minimus* A/C hybrid samples were identified by PCR-ASA, PCR-RFLP and D3 region sequence. [Results] In human dwellings, the proportion of *An.minimus* A and C was 21.35% and 78.65%, and in cattle pen, 28.54% and 71.46% respectively. As for the *An.minimus* A/C hybrid, the result of PCR-ASA displayed the pattern of both *An.minimus* A and *An.minimus* C (PCR-ASA: 376, 294 and 112 bp, PCR-RPIP: 108, 268 and 376 bp), the D3 sequence displayed heterozygosis in the variation place of *An.minimus* A and *An.minimus* C, which means that the hybrid possesses the signal of both *An.minimus* A and *An.minimus* C in Yunnan Province. In Mengla County, 5 *An.minimus* A/C hybrids have been found for the first time.

COMPARISON OF PCR AND ISOENZYME ANALYSIS IN IDENTIFICATION OF ANOPHELES MINIMUS A AND C

[Objective] To compare the PCR and isoenzyme methods in identification of Anopheles minimus and C. [Methods] Samples of An. minimus collected in the field were identified from An.aconitus and An.jeyporiensis by PCR-RFLP after morphological examination, then classified by PCR-ASA. The mosquitoes identified by this method were further analyzed forisoenzyme to observe the difference, which was previously used as a technique to classify An.minimus A and C. [Result] PCR method can differentiate An.minimus A and C simply and quickly. For Isoenzyme method, only EST allozyme pattern displayed difference. [Conclusion] PCR method is better than isoenzyme analysis differentiating An.minimus A and C.

STUDY ON A GREY MODEL FOR EVALUATION OF ANOPHELES MINIMUS DENSITY

Yu Guo-wei, YANG Lin-hua

[Objective] To establish *Anopheles minimus* density evaluation model based on climate, environmental and remote sensing data. [Methods] 27 townships in 10 counties of Yunnan Province were chosen as field spots. Data on climate, environment, remote sensing and *An.minimus* density were collected from 1984 to 1993. Grey correlation analysis was carried out to study the relationship of 18 indices with *An.minimus* density. E variable was developed and its relation to the *An.minimus* density was analyzed to establish an evaluation model. [Results] Eight indices were selected based on a grey threshold 0.70: Dry season average temperature>day season temperature_{min}>wet season temperature_{min}>wet season average temperature-were season average temperature.

 $temperature_{max}$. The *An.minimus* density evaluation model was derived as follows:

$$y=0.0578 = 0.0780(8x_{10}^{+7x_{13}^{+6x_{13}^{+6x_{13}^{+4x_{13}^{+4x_{13}^{+3x_{13}^{+2x_{13}^{+12x_1^{+12x_1$$

The correct rate of evaluation by the model was $92.0\%.e_{0.5}=18\%$, with an average relative error of 21%. [Conclusion] A quasi-evaluation on the *An.minmus* density can be made by applying grey models.

§ 5. 获奖项目介绍

囊形包虫病药物治疗的研究

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完成单位: 1 新疆维吾尔自治区疾病预防控制中心

- 2 中国疾病预防控制中心寄生虫病预防控制所
- 3 巴音郭楞蒙古自治州疾病预防控制中心
- 4 伊黎哈萨克自治州疾病预防控制中心

本项目系用阿苯达唑乳剂新剂型治疗囊型包虫病的研究。近二十余年,国内、外用阿苯达唑片剂治疗囊形包虫病的治愈率为 20%-40%。药理学和药代动力学的研究结果表明,口服阿苯达唑片剂后,药物吸收差,个体间的血药浓度差别大,这也是其疗效差和不稳定的主要原因。为了提高阿苯达唑的生物利用度,我们用阿苯达唑和不同的植物油制备成乳剂,发现小鼠口服含 30%豆油的阿苯达唑乳剂后,其血浆的有效代谢物阿苯达唑亚砜的浓度较口服相同剂量的阿苯达唑混悬剂高约 1 倍,用以治疗感染细粒棘球蚴的小鼠,其囊重抑制率明显。感染小鼠一次口服相同剂量的阿苯达唑乳剂或阿苯达唑混悬剂后 4 小时,前者的囊壁阿苯达唑亚砜含量较后者的高 2 倍。进一步的观察结果显示,7 名男性包虫病患者于相隔 2 周分别一次口服阿苯达唑片剂 12.5 mg/kg(按阿苯达唑基质计算,下同)或阿苯达唑乳剂 12.5 mg/kg 后,两者的血浆药峰浓度分别为 1.06±0.38 mg/l 和 1.71±0.47 mg/l;药时曲线下面积(AUC)各为 13.2±4.93mg ·h/l 和 21.01±7.54 mg·h/l,而相对生物利用度FFlu=1.59,即阿苯达唑乳剂的生物利用度较阿苯达唑片剂的为高。

临床上用阿苯达唑乳剂治疗 264 例肝囊型包虫病患者,其中 71 例每天口服阿苯达唑乳剂 10 mg/kg,共 6个月至 1年以上,治毕后影像评价的总有效率为 97.2%(治愈率 60.6%,无效率 2.8%)。62 例于治后追踪观察 3-4年,总有效率为 92%(治愈率 83.9%,无效率 1.5%和复发率 6.5%)。在每天用阿苯达唑乳剂 12.5 mg/kg治疗肝囊型包虫病患者 193 例,共 3个月至 1年时,总有效率为 97.9%(治愈率 75.1%,无效率 2.1%)。 其中 139 例于治后追踪观察 2-4年,总有效率为 89.2%(治愈率 84.2%,复发率 10.8%)。此外,14.4%的患者于用阿苯达唑乳剂治疗后有轻微和可逆的不良反应。结果表明,阿苯达唑乳剂对肝囊型包虫病的临床疗效超过现用的阿苯达唑片剂或胶囊,而且治愈率较高,不良反应轻微,可以成为治疗包虫病的首选药物。

项目来源:国家"九五"科技攻关项目(96-906-04-09)

获奖等级: 中华医学科技奖三等奖

全球气候变暖对中国血吸虫病传播影响的研究

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本项目系国家自然科学基金资助项目,项目批准号为 30070684,项目执行期自 2001年 1 月起到 2003年 12 月止,课题组在规定的时间内完成了各项研究任务,经国家自然科学基金委员会生命科学部审核,于 2004年 8 月准予结题;2004年 11 月 19 日通过了由江苏省科学技术厅组织的成果鉴定。

针对近一个多世纪以来全球气候逐渐变暖的现象,综合运用多学科技术,如医学、生物学、天文地理学、气象学、计算机应用技术等,开展了气候变暖对血吸虫病传播的影响范围、程度和机制等方面的研究,对血吸虫中间宿主-钉螺的适生性、血吸虫在钉螺体内生长发育的生理学指标进行了定量研究,建立了温度-钉螺适生性、气候-血吸虫传播等模型,利用 NADPH-d 酶组织化学及 RT-PCR 方法,研究了温度对钉螺体内 NOS 活性影响、NOS 活性与钉螺代谢之间的定量关系,探索了气候变暖可能对钉螺北移的影响机制,并再运用地理信息系统和卫星遥感技术预测了血吸虫病流行扩散趋势,对全球气候变暖是否导致血吸虫病北移做出了定量回答,画出了潜在扩散趋势图。

通过实验室和现场研究,获得了钉螺和血吸虫受环境温度影响的多项关键性生理指标,包括钉螺的越冬冬眠温度为 5.87℃,钉螺完成世代发育(从螺卵发育至成熟产卵)的平均有效积温为(3846.28±32.59)日度,日本血吸虫毛蚴感染钉螺的最低临界温度为 3.24℃,日本血吸虫在钉螺体内的发育起点温度为(15.17±0.43)℃,日本血吸虫幼虫在钉螺体内发育成熟至尾蚴开放的平均有效积温常数为(842.91±143.63)日度。这些生理性指标的获得为定量预测气候变暖对血吸虫病传播的影响程度及血吸虫病流行区的北移提供了理论参数。

首次将一氧化氮酶(NOS)酶组织化学技术引入钉螺生殖生理机制的研究,并发现了钉螺神经节 NOS 的活性随着温度变化而变化,钉螺生殖腺 NOS mRNA 的表达量与温度升高呈相关。证实了冬、春两季温度升高时,可通过钉螺体内 NOS 的基因调节或酶活性变化,促使钉螺的繁殖力增强,有利于钉螺在这一地区内的生存与繁殖。本研究还构建了血吸虫病气候-传播模型,分析得出了 2030 年和 2050 年我国钉螺分布北界预测图,预测到江苏北部洪泽湖地区为气候变暖引起血吸虫病流行区北移的主要潜在危险区。提出了我国今后在全球气候继续变暖的情况下,应加强中国东部地区血吸虫病扩散的监测工作。

研究发现的多项钉螺和血吸虫受环境温度影响的关键性生理指标,在血吸虫病的流行程度预测和趋势分析中有着广泛的意义和重要的作用;研究所建立的许多方法,不仅可推广应用于不同地区疾病控制的研究,而且还可应用于其他相关生物领域研究,并为评估和研究我国南水北调工程对血吸虫病潜在影响提供了方法和理论依据。

成果鉴定日期: 2004 年 11 月 19 日 **组织鉴定部门**: 江苏省科学技术厅

评审或验收结论:

本研究项目设计合理,方法科学,数据准确,论证充分,结论可靠,在理论上丰富了钉螺生态学认识,在实践上,综合运用多学科技术,对今后气候变暖可能造成血吸虫病北移的远期影响进行了预测,并绘制了血吸虫病北移的潜在流行区范围,为加强我国东部地区血吸虫病北移扩散监测的未来决策提供了科学依据。研究成果达国内领先,国际先进水平。

项目来源: 国家自然科学基金

获奖等级: 中华医学科技进步三等奖

§ 5. AWARDED PROJECTS

STUDIES ON THE DRUG AGAINST CYSTIC ECHINOCOCCOSIS

CHAI Jun-jie¹ XIAO Shu-hua² GAO Fang-hua² JIAO Wei¹ Menghebat¹ WANG Yi² YOU Ji-qing² MAO Yiding¹

Accomplishment units

- 1. Xinjiang Centers for Disease Control and prevention
- 2. National Institute of Parasitic Diseases, Chinese CDC
- 3. Bayinguolengmenggu Autonomy Centers for Disease Control and Prevention
- 4. Yilihasake Autonomy Centers for Disease Control and Prevention

The efficacy of albendazole emulsion (a new formulation) in treatment of patients with cystic echinococcosis has been studied. In recent years, a review dealing with the therapeutic effect of albendazole tablet (AbzT) in treatment of human cystic echinococcosis in different countries indicated that the mean cure rate was merely 30%. Pharmacological and pharmacokinetics studies showed that absorption of AbzT after oral administration is rather poor. Meanwhile, higher differences in blood concentration of effective metabolite, albendazole sulfoxide (AbzSOX), were seen in different individuals. These are the major causes related to unstable effect and lower cure rate. In order to enhance the bioavailability of albendazole, several albendazole emulsions formulated with different kinds of vegetable oil were tested and one of the best foundation, e.g. Albendazole emulsion with final soybean concentration of 30% (v/v) (AbzE) was selected. When mice were treated orally with the AbzE or albendazole suspension (AbzS), the circulating plasma concentrations of the major bioactive metabolite, AbzSOX, was about 1-fold higher in AbzE relative to AbzS. When mice infected with Echinococcus granulosus were treated orally with AbzE, the effect evaluated by cyst weight inhibition rate relative to AbzS was significant. Four hours post-treatment of mice with either AbzE or AbzS at a same single oral dose, the concentration of AbzSOX in the cyst walls was 2-fold higher in AbzE relative to AbzS. Further studies indicated that a single 12.5 mg/kg dose of AbzT followed 2 weeks later by an equivalent dose of AbzE was administered orally to 7 male adult patients with cystic echinococcosis caused by E. granulosus, the mean plasma peak concentrations of AbzSOX (Cmax) for AbzT and AbzE were 1.06±0.38 mg/l and 1.71±0.47 mg/l, respectively; the area under the concentration-time curves (AUC) were 13.2±4.93mg·h/l and 21.01±7.54mg·h/l, respectively. The relative bioavailability of AbzE was FFlu=1.59, e.g. the bioavailiability of AbzE was greater than AbzT.

In clinical trials, a total of 264 patients with hepatic cystic echinococcosis were treated with AbzE. Among them, 71 patients received AbzE at a daily dose of 10 mg/kg for 6 months to over 1 year. Imaging evaluation at the end of courses showed overall efficacy in 97.2% (cure rate

60.6% and inefficacy rate 2.8%). Sixty-two patients, followed up for 3-4 years post-treatment, showed overall efficacy in 92.0% (cure rate 83.9%, inefficacy rate 1.5% and recurrence rate 6.5%). Other 193 patients received AbzE at a daily dose of 12.5 mg/kg for 3 months to over 1 year resulted in an overall efficacy of 97.9% (cure rate 75.1% and inefficacy rate 2.1%). The follow-up study in 139 patients 2-4 years post treatment revealed in an overall efficacy of 89.2% (cure rate 84.2% and recurrence rate 10.8%). In AbzE treatment, 14.4% of the patients showed mild and reversible side effects. The results demonstrate that AbzE is considered to be superior to AbzT or albendazole capsule foundations with higher cure rate and mild side effects. Thus, AbzE could be recommended as a drug of choice in the treatment of cystic echinococcosis.

Funding of the project: Supported by the Ninth National Five-year Plan Key Research Project (96-906-04-09)

Reward: The Third Award of Scientific Research from Chinese Medicine Association in 2005

IMPACT OF GLOBAL WARMING ON TRANSMISSION OF SCHISTOSOMIASIS IN CHINA

Zhou Xiao-Nong^{1,2}, Hoang Qing-Biao¹, Sun Lu-Ping¹, Yang Guo-Jing¹, Yang Kun¹, Liang You-Sheng¹, Huang Yi-Xing¹, Hang De-Rong¹

Accomplishment units

- 1. Jiangsu Institute of Parasitic Diseases
- 2. National Institute of Parasitic Diseases, Chinese Center for Disease Control and Prevention

This project was supported by the National Natural Science Foundation of China (No. 30070684) and completed all research activities during January 2001 to December 2003. After assessment from the Department of Life Sciences of he National Natural Science Foundation in August 2004, the project passed the evaluation on its achievement organized by Jiangsu Science and Technology Department, Jiangsu Government in November 19, 2004.

In order to understand the phenomena of global warming during the past century, the project applied the multi-disciplinary approach in combination with the techniques on medicine, biology, geography, meteorology and computer science, to investigate the impact of global warming on schistosomiasis transmission in terms of impact extension, degree and mechanism. In the project, several experiments and analysis were conducted, e.g. 1) quantitative study on the survival suitability of *Oncomelania* snails, 2) physiology parameters which influence the growth of *Schistosome* inside *Oncomelania* snails, 3) development of temperature-suitability model for snails and climate-transmission model for schistosomiasis, 4) study on impact of temperature change on activity of nitric oxide synthase (NOS) of *Oncomelania* snail, 5) quantitative

relationship analysis between activity of NOS and metabolism of snails using enzyme-histochemistry and reverse transcription polymerase chain reaction(RT-PCR) technology, 6)exploration on the mechanism of expansion northward of snails, 7) predication on the expansion of schistosomiasis using geographical information system(GIS) and remote sensing(RS), 8) development of quantitative response whether a northward expansion of transmission area may occur, and 9) producing maps on expansion of potential area of schistosomiasis transmission.

Both in laboratory and field study, we had got a series of key physiological parameters about the impact of temperature on *Oncomelania* snail and *Schistosoma japonicum*, including the hibernation temperature of snails was 5.87° C, the average effective accumulated temperature was 3846.28 ± 32.59 degree days during the period of development for a generation of snail, the lowest critical temperature for infection of snails was 3.24° C, the initial temperature for the development of schistosome was $15.17\pm0.43^{\circ}$ C within the snails, the average effective accumulated temperature was 842.91 ± 143.63 degree days for cercaria developing maturely. These physiological parameters provided theory parameters about quantitative predication of impact of global warming on degree and northward expansion of transmission of schistosomaisis.

We firstly introduced the enzyme-histochemistry of NOS into mechanism study of reproduction of snails and we hand found the activity of NOS in centric ganglion changed with the temperature change, and there was some relationship between expression of NOS mRNS in gonad and temperature increase, this approved the assume that climate warming in winter and spring will improve reproduction of snail by altering expression of NOS mRNA and activity of enzyme, as a result, it will be advantaged to the survival and reproduction of snails. We had developed a climate-transmission of schistosomiasis models, and the prediction maps on potential distribution of schistosomiasis in 2030 and 2050, respectively. Those maps showed the fact that Hongze Lake in northern Jiangsu province will become potential transmission area, the expanded potential area for schistosomiasis transmission is urgent to take future surveillance to monitor the impact of global warming.

we had got many key physiological parameters about impact of temperature on *Oncomelania* snail and *Schistosoma japonicum*, and this parameters are important variables in the process of prediction and trend analysis of schistosomiasis transmission, those innovative methods we had developed not only can be used in disease control and surveillance, but also can be used in biology study, which provide approaches and theories to evaluate the impact of South North Water Transfer Project on transmission of schistosomiasis in China

Assessment Date: November 19, 2004.

Organized by: Science and Technology Department of Jiangsu Government

Conclusions:

Both design and approaches of the project was reasonably and scientifically used with

demonstrated by accurate data and sufficient facts in the results, together with reliable conclusions, which enriched the biology knowledge of snail. In a practice, the project used synthetically multi-disciplinary approaches to predicated northward expansion of schistosomiasis transmission area in China, produced the prediction maps for schistosomiasis distribution, which provided the scientific basis of strengthening the surveillance in the eastern China to prevent from schistosomiasis transmission. The achievement of project had reached the top level both at domestic and international level.

The project funded by: National Natural Science Foundation of China

Awarded with: The Third Rank Award of Chinese Medical Science and Technology

§ 6. 研究生毕业论文研究报告摘要

地理信息系统和遥感技术在某一 血吸虫病流行县防治策略研究中的应用

陈朝(硕士研究生) 导师: 周晓农

血吸虫病是一种严重危害人民群众身体健康和生命安全,阻碍疫区经济发展和社会进步的人畜共患寄生虫病。血吸虫病是与地理及气候因素密切相关的疾病,因此血吸虫病的流行与当地自然环境密切关联,找出血吸虫病流行与自然环境因素的内在联系是控制血吸虫病流行的关键; 钉螺是血吸虫唯一的中间宿主,钉螺的分布从一定意义上决定着血吸虫病的分布。钉螺的分布同样也受自然环境因素的影响,因此摸清钉螺的分布对血吸虫病的防治同样具有重要意义。近几年来,遥感(Remote Sensing)技术和地理信息系统(Geographic Information System)的应用为探讨血吸虫病及钉螺的分布和自然环境因素之间的关系提供了一种新的有效方法,可以更方便更迅速的揭示出血吸虫病和钉螺的分布情况,对血吸虫病的防治有重要的意义。

首先,本研究从中间宿主钉螺孳生地着手,利用 SP0T5 卫星图像非监督分类结合判别分析对钉螺孳生地进行监测;其次,本研究进一步探讨了影响安徽省当涂县血吸虫病人群感染率的自然因素;最后,本研究从整个当涂县疫情分布出发,探讨了普通克里格法在血吸虫病人群感染率空间分布预测中的应用。

本研究为制定当涂县钉螺及血吸虫病的防治策略提供了科学依据,并为进一步利用遥感及地理信息系统对钉螺分布和血吸虫病人群感染率的监测及预测提供了理论依据。

中国婴儿利什曼原虫无症状感染检测方法的研究

高春花(硕士研究生) 导师: 汪俊云

动物源性内脏利什曼病是由婴儿利什曼原虫引起的一种人兽共患寄生虫病。婴儿利什曼原虫无症状感染的犬和人已证明或推测在疾病传播中起作用。因此,准确估计婴儿利什曼原虫无症状感染者/犬的数量在流行病学上具有重要意义,而研究一种敏感、特异的检测无症状感染的方法是当务之急。本课题选择了6种常用于诊断内脏利什曼病的PCR引物,以培养的甘肃人株利什曼原虫前鞭毛体种植人抗凝全血抽提的DNA为模板,确定了这6种PCR引物检测中国婴儿利什曼原虫的最适条件并比较了它们检测的敏感性和特异性。结果显示,6种PCR引物检测的特异性都达到100%,而检测的敏感性各异,敏感性最高的能检出0.1个原虫/ml血(RV1-RV2),而敏感性低的只能检出1x103个原虫/ml血。选用敏感性最高的两对引物RV1-RV2和K13A-K13B对采自黑热病疫区269份无黑热病症状居民的静脉血,无症状犬静脉血和骨髓样本各100份进行了检测。结果用引物RV1-RV2和K13A-K13B检测人血样的阳性率分别为33.83%(91/269)和30.86%(83/269);引物RV1-RV2对大血样本和骨髓样本检测的阳性率分别为46%(46/100)和57%(57/100);引物K13A-K13B对犬血样本和骨髓样本检测的阳性率分别为40%(40/100)和51%

(51/100)。建立了以利什曼原虫前鞭毛体可溶性抗原检测特异抗体的 ELISA 方法。以此方法检测疫区无疾病症状的人、犬血清,阳性率分别为 20.45% (55/269) 和 25% (25/100)。同时用试条对这些样本进行了检测,结果试条对 269 份人血样本检测的阳性率为 0,而对犬样本检测的阳性率为 33% (33/100)。2 种 PCR 引物、ELISA 法和试条法对 269 份黑热病疫区无症状居民血样检测的总阳性数为 103 份,总阳性率为 38.29% (103/269);各种检测方法对犬样本检测总阳性数为 67 份,总阳性率为 67% (67/100)。结果比较表明 3 种检测方法检测我国婴儿利什曼原虫无症状感染以 PCR 法的阳性检出率最高,而 PCR 法中以引物 RV1-RV2 检测的阳性率最高。对于犬样本的检测以引物 RV1-RV2 检测骨髓样本的阳性率最高;本研究结果同时也表明我国动物源性黑热病疫区人和犬利什曼原虫无症状感染率相当高。本研究结果将为选择合适的方法检测我国婴儿利什曼原虫无症状感染提供借鉴,为制订我国动物源性黑热病防制策略提供参考。

遥感技术监测鄱阳湖新生草滩钉螺孳生地的研究

郭巍(硕士研究生) 导师: 伍卫平

钉螺是日本血吸虫病的唯一中间宿主,对日本血吸虫病的分布、发生和传播起到了关键作用。由于钉螺的分布面积广,孳生环境复杂,随着环境的不断变化,钉螺孳生地的分布范围可发生较大的变化。长期以来,对钉螺时、空分布的监测是血吸虫病防治工作中一项繁重而艰巨的任务。遥感技术通过辨别和监测钉螺的孳生地,为及时有效地更新钉螺分布信息提供了便利条件,利用高分辨率卫星图像可以清晰地分辨出适合钉螺生长的草滩,及时掌握钉螺孳生地的消长,可为适时适当的采取有效措施提供依据,从而提高血吸虫病防治工作的效率。

本项目收集了 1999 年、2001 年和 2004 年鄱阳湖区的水位数据、降水数据、枯水期的卫星图像,运用非监督分类方法对卫星图像进行分类,判断钉螺孳生地的消长情况,并在其新出现的草滩收集钉螺分布及各种环境因素资料。根据掌握的钉螺分布环境因素资料,利用广义线性模型对新生草滩钉螺的空间分布特征进行判断,进而建立钉螺密度数学模型。

结果表明,从 1999 至 2004 年间,鄱阳湖区年降水量不断减少,特别是在 2002 年以后下降更为明显,到 2004 年全年降水量仅为 100mm 左右。2004 年鄱阳湖丰水季节的水位 虽与 2001 年水位基本持平,但是枯水季节水位有较大幅度的下降。遥感图像分类结果显示 2004 年鄱阳湖区草滩的面积比 2001 年同期增加了 157 平方公里。经地面调查,在江西省永修县荷溪村新出现的草滩中查获了钉螺,钉螺密度中位数为 10.625 只/m²,有螺框出现率达到 97.14%。根据地面调查中收集的草滩环境数据和钉螺数据,运用负二项分布和正态分布的广义线性模型(generalized linear model)对新生草滩钉螺的空间分布情况进行拟合,结果显示该地区钉螺的空间分布虽然符合负二项分布,但是表现出的空间聚集性却不

强,聚集系数 k=0.5161。经过对数转换的钉螺密分布与正态分布的拟合效果较好, \boldsymbol{x}^2 值与自由度(DF)的比值为 0.5704。进一步利用多元线性回归模型探讨钉螺密度与环境因素的关系,令高程为 X_1 ,地表降水为 X_2 ,植被指数(SAVI)为 X_3 ,水淹时间为 X_4 ,建立回

归方程 $Y=log^{-1}(15.806-0.05783X_1^2-0.06816X_2+0.00172X_1X_3-000108X_3X_4)$,决定系数 R^2 为 0.5341,P<0.0001。

日本血吸虫硫氧还蛋白编码基因的克隆表达及其免疫原性研究

韩海勃(硕士研究生) 导师: 曹建平

尽管近 50 年来我国在血吸虫病防治方面取得了令人瞩目的成就,然而日本血吸虫病仍是我国一个重要的公共卫生问题。目前控制血吸虫病的措施仍以灭螺和吡喹酮化疗为主。治愈病人再感染情况严重、血吸虫抗药虫株的出现及家畜和野生哺乳动物作为重要传染源是我国血吸虫病防治工作面临的主要问题。积极开展血吸虫病疫苗研究,寻找更加持续有效的防治手段十分重要。日本血吸虫病疫苗的研制作为一项血吸虫病防治的重要措施,已纳入 WHO 和我国主要疾病防治规划范畴。世界卫生组织(WHO)曾推荐的六种曼氏血吸虫病疫苗的候选抗原中,谷胱甘肽 S-转移酶(GST)、副肌球蛋白(paramyosin)和磷酸丙糖异构酶(TPI)已进入 II 期临床试验。而我国日本血吸虫病疫苗候选抗原的研究基本还处在实验研究阶段,基因工程疫苗单个抗原的保护效果尚不理想,除了研制多价疫苗外,寻找新的能诱导较好保护性的疫苗候选分子仍是目前血吸虫病疫苗研究的工作重点之一。

导师课题组曾在日本血吸虫蛋白质组研究中发现硫氧还蛋白(thioredoxin, Trx)是日本血吸虫的高丰度蛋白。为探讨该蛋白是否具有免疫保护作用或免疫诊断价值等,本研究对日本血吸虫大陆株硫氧还蛋白(SjcTrx)编码基因进行了克隆和表达,并构建了 DNA 疫苗,开展了动物免疫试验。

1. 日本血吸虫硫氧还蛋白基因克隆和表达

依据公布的日本血吸虫菲律宾株硫氧还蛋白基因序列设计一对引物,上游引物引入 BamHI 酶切位点,下游引物引入 SalI 酶切位点。以日本血吸虫大陆株成虫总 RNA 为模板,经反转录 PCR(RT-PCR)扩增目的基因。PCR 产物经双酶切并纯化目的基因酶切片段,与 pET28a 质粒 DNA 双酶切纯化片段用 T4 DNA 连接酶连接,构建重组质粒 pET28a-SjcTrx,转化 BL21 感受态菌并大量扩增。重组质粒 DNA 经限制性双酶切、PCR 和测序鉴定后,用 IPTG 诱导表达。根据测序结果推导的氨基酸序列与日本血吸虫菲律宾株硫氧还蛋白有 97%同源性。经 SDS-PAGE 分析,表达的蛋白分子量约 14kDa。Western blot 显示日本血吸虫感染兔血清和重组抗原免疫小鼠血清能识别该重组蛋白。日本血吸虫硫氧还蛋白基因的克隆表达获得成功,并得到纯化重组蛋白(reSjcTrx),为开展动物保护性试验等研究创造了条件。

2. 日本血吸虫硫氧还蛋白核酸疫苗的构建

同上设计一对引物,上游引物引入 BamHI 酶切位点和起始密码子,下游引物引入 EcoRI 酶切位点和终止密码子。以日本血吸虫大陆株成虫总 RNA 为模板,经 RT-PCR 扩增目的基因。经双酶切并纯化的 PCR 产物与双酶切纯化的 pcDNA3 质粒 DNA 片段用 T4 DNA 连接酶连接,构建核酸疫苗重组质粒 pcDNA3-SjcTrx,并转化 JM109 感受态菌大量扩增,重组质粒 DNA 经限制性双酶切、PCR 和测序鉴定。目的基因的核苷酸序列与上述扩增的日本血吸虫大陆株硫氧还蛋白一致。日本血吸虫硫氧还蛋白基因核酸疫苗构建获得成功,

为开展动物保护性免疫试验创造了条件。

3. 日本血吸虫硫氧还蛋白重组抗原免疫小鼠试验

将 50 只 6 周龄雌性 C57BL/6 小鼠随机分为 5 组,每组 10 只: 日本血吸虫大陆株硫氧还蛋白重组抗原(reSjcTrx)加福氏佐剂免疫组、reSjcTrx 加 ISA720 佐剂免疫组、两种佐剂对照组和感染对照组。两免疫组小鼠每只经背部多点皮下注射乳化的 15 μg 重组抗原和福氏或 ISA720 佐剂,两种佐剂对照组小鼠注射乳化的生理盐水加福氏或 ISA720 佐剂,感染对照组不注射任何抗原和佐剂,共免疫 3 次,间隔 2 周。其中使用福氏佐剂组第一次注射使用福氏完全佐剂(FCA),后 2 次加强免疫用福氏不完全佐剂(FIA)。于末次免疫后 3 周每只小鼠经腹部皮肤感染 30±1 条日本血吸虫尾蚴,攻击感染后 6 周剖杀小鼠,计数成虫数和肝内虫卵数。在免疫前、攻击感染前和小鼠剖杀前采血并分离血清,用 ELISA检测特异性 IgG 抗体。结果,ELISA 检测表明,重组抗原加佐剂免疫的两组小鼠均产生较高滴度特异性 IgG 抗体,滴度可达 1:2 560,明显高于佐剂对照组(P < 0.05)。重组抗原加ISA720 佐剂免疫组小鼠攻击感染后的减虫率和肝组织减卵率分别为 22.8%和 29.5%,与感染对照组和 ISA720 佐剂对照组相比差异均有显著的统计学意义(P < 0.05)。重组抗原加福氏佐剂免疫组小鼠攻击感染后的减虫率和肝组织减卵率分别为 14.7%和 15.1%,与感染对照组和福氏佐剂对照组相比差异均无统计学意义(P > 0.05)。结果表明日本血吸虫硫氧还蛋白重组抗原能诱导小鼠产生一定水平的抗日本血吸虫感染的保护作用。

4. 日本血吸虫硫氧还蛋白核酸疫苗免疫小鼠试验

将 40 只 6 周龄雌性 C57BL/6 小鼠随机分为 4 组,每组 10 只:日本血吸虫硫氧还蛋 白核酸疫苗(pcDNA3-SjcTrx)免疫组、重组抗原(reSjcTrx)和核酸疫苗联合免疫组、pcDNA3 空质粒对照组和感染对照组。核酸疫苗免疫组每只小鼠经两侧股四头肌注射 100 μg pcDNA3-SjcTrx 质粒 DNA, 共注射 3 次, 间隔 2 周; 联合免疫组小鼠第一次免疫每只小鼠 经股四头肌注射 100 μg pcDNA3-SjcTrx 质粒 DNA,加强免疫时每只小鼠背部皮下多点注 射乳化的 15μg reSjcTrx 分别加 FCA 和 FIA,间隔 2 周;空质粒对照组每只小鼠在相应时 间经股四头肌注射 100 μg pcDNA3;感染对照组则不注射任何抗原或质粒。末次免疫后 3 周,每只小鼠经腹部感染30±1条日本血吸虫尾蚴。于攻击感染后6周剖杀小鼠,计数成 虫数和肝内虫卵数。分别于在免疫前、攻击感染前和小鼠剖杀前采血并分离血清,用 ELISA 检测血清中特异性 IgG 抗体。另取 6 只 6 周龄雌性 C57BL/6 小鼠经股四头肌注射核酸疫苗, 分别于注射后 24h、48h 和 72h 取肌肉注射部位局部组织做冰冻切片,用间接酶染色试验 检测注射局部抗原体内的表达情况,以注射 pcDNA3 空质粒者为对照。结果, ELISA 检测 表明核酸疫苗免疫后小鼠产生较高滴度特异性 IgG 抗体。核酸疫苗免疫组减虫率和肝组织 减卵率分别为 45.7%和 41.4%,核酸疫苗和蛋白疫苗联合免疫组减虫率和肝组织减卵率分 别为 37.0%和 31.6%,与感染对照组相比均有统计学意义(P < 0.05)。间接酶染色试验检测 显示核酸疫苗肌肉注射局部组织有硫氧还蛋白表达。可见, DNA 疫苗能诱导小鼠产生一 定水平的抗日本血吸虫感染保护作用,但 DNA 疫苗和蛋白疫苗联合免疫效果尚需进行进 一步的验证。

棘球蚴病特异性诊断抗原的分子克隆及应用评价

江 莉 (博士研究生) 导师: 冯 正

[**目的**] (1)从我国棘球绦虫分离株克隆具有较高敏感性和特异性的诊断抗原 Em18 和 AgB 基因,重组表达并评价其诊断价值,为用于我国棘球蚴病的诊断提供依据;(2)筛选、克隆和表达细粒棘球蚴新抗原基因并对其诊断价值作初步评估。

[方法](1)分子克隆技术: cDNA 文库的构建、聚合酶链式反应体外扩增 DNA (PCR)、质粒载体中克隆外源 DNA、重组质粒的鉴定和分析、DNA 凝胶电泳、DNA 序列测定、克隆化基因的表达和重组蛋白的纯化;(2)生物信息学技术: 核酸序列同源性分析、蛋白序列同源性分析、蛋白质结构和功能的预测分析、生物信息公共数据库;(3)免疫学检测分析技术: 特异性单克隆和多克隆抗体的制备、酶联免疫吸附试验(ELISA)、蛋白质的凝胶电泳(SDS-PAGE)和免疫印迹分析(WB)。

[结果] 从中国多房棘球绦虫四川分离株克隆了Em18 抗原全长基因并获得了重组蛋白 (ReEm18); 血清评价显示 ReEm18 抗原对 AE 血清具有特异性诊断价值, 其敏感性为 95.5%、特异性为 93.6%; 检测的抗体水平在早期与病程有一定的相关性; 分别克隆了 5 个含不同表位区域的 Em18 片段抗原, 通过对不同片段的分析研究, 明确了 Em18 抗原表位免疫优势区域位于序列的前 1/2-2/3。含免疫优势表位区域的片段抗原对 AE 诊断的敏感性不变, 特异性从 93.6%提高到 99.3% (ELISA), 81.4%提高到 90.7% (WB); 获得抗 Em18重组抗原的特异性多克隆抗体和 14 株单克隆抗体; 建立单克隆抗体十多克隆抗体的混合双夹心 ELISA 方法, 检测 ReEm18 抗原的灵敏度达 3 ng/ml, 在 54.45%的 AE 患者血清中可检测到循环抗原。

克隆表达了中国细粒棘球绦虫新疆和甘肃分离株的 AgB1 和 AgB2 抗原亚单位基因,并将 AgB1 和 AgB2 两个抗原亚单位基因进行联合表达; 血清学评价表明,联合表达抗原 AgBs 对 CE 血清的敏感性为 84.4%,高于 AgB2 的 57.8%,与 AgB1 的 75.6%无显著差异。特异性为 80.5%,高于 AgB1 的 72.6%,与 AgB2 的 91.2%无显著差异。AgB1 与 AgB2 之间比较,敏感性无显著性差异,但 AgB2 的特异性优于 AgB1。总体评价,联合表达的重组抗原诊断效果优于 AgB1 或 AgB2 单独表达的重组抗原;用联合表达的 AgBs 抗原检测分别来源于我国新疆、青海、甘肃和四川 4 个不同流行区经手术或临床确诊的 CE 患者血清,结果表明检测敏感性在不同省区间有显著差异。提示我国不同流行区的虫株之间存在一定程度的差异。

用细粒棘球蚴(虫卵和原头节)感染的鼠混合血清对细粒棘球蚴新疆源和甘肃源的原头节 cDNA 文库进行筛选,共获得阳性克隆 92 个;选择 15 个克隆进行了测序,获得了 10 种蛋白质基因信息,其中 5 种为细粒棘球绦虫新基因。本研究向 GenBank 登录我国棘球绦虫的基因序列信息共计 16 条。

通过对 cDNA 文库筛选获得的 10 个蛋白编码基因已有研究工作的综合分析,选择了一个新基因 (钙网蛋白,克隆 G10) 和一个已发现的抗原基因 (EpC1,克隆 X25) 进行表达。表达的重组蛋白用 WB 法进行初步的血清学分析表明,G10 和 X25 重组抗原对 CE 血

清有高特异反应性。

[结论] (1)克隆了我国多房棘球绦虫分离株的 Em18 抗原全长基因,表达重组蛋白并进行了血清学评价,其诊断敏感性为 95.5%、特异性为 93.6%; 2)通过对 Em18 抗原表位免疫优势区域的分析研究,确定了 Em18 抗原表位免疫优势区域位于序列的前 1/2-2/3,获得的 Em18 片段抗原诊断的敏感性不变,特异性从 93.6%提高到 99.3%(ELISA)。 Em18 片段抗原(EmS1 或 EmS2)ELISA 法已可进入现场应用评估及快速诊断试剂的研制; 3)获得的 Em18 单克隆抗体检测 Em18 重组抗原的灵敏度达 3 ng/ml,可检测到 AE 患者血清中的循环抗原。4)克隆我国细粒棘球绦虫分离株的 AgB1 和 AgB2 抗原亚单位基因,并将AgB1 和 AgB2 两个抗原亚单位基因进行联合表达。血清学评价表明联合表达的重组抗原诊断效果优于单基因表达的重组抗原,但敏感性受到不同地域虫株遗传变异的限制; 5)获得的细粒棘球蚴新抗原基因 (G10),具有较好的特异性,经过进一步的优化表达,具有诊断应用的前景。本研究为棘球蚴病特异性诊断抗原的重组、表达技术和相应诊断技术的转化和推广应用奠定了科学基础。

苏云金杆菌乳剂对嗜人按蚊和中华按蚊幼虫的毒效评价

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[**目的**] 综合评价苏云金杆菌(*Bti*)乳剂杀灭传疟媒介嗜人按蚊和中华按蚊幼虫的效果, 为将来应用于大规模现场防制提供科学依据。

[方法] (1) 采用实验室生物测定方法,以实验室驯养及野外采集的嗜人按蚊和中华按蚊为受试蚊虫,确定 Bti 乳剂的 24 小时半数致死浓度(LC₅₀)、95%致死浓度(LC₉₅)。(2) 在湖北和广东现场选择合适的孳生地,投放野外采集的嗜人按蚊和中华按蚊的子一代幼虫,观察不同剂量的 Bti 乳剂对按蚊幼虫的杀灭效果。(3) 通过查阅既往文献资料,利用统计学分析方法,找出温度与按蚊幼虫发育时间之间的定量关系。(4) 采用成本估算方法,对 Bti 乳剂现场杀灭按蚊幼虫所需成本进行初步估算。

[结果] (1) Bti 乳剂对嗜人按蚊(珠海分离株)III龄幼虫的 24 小时 LC_{50} 为 1.50 ppm, LC_{95} 为 4.90 ppm。Bti 乳剂对中华按蚊(珠海分离株)III龄幼虫的 24 小时 LC_{50} 为 0.90 ppm, LC_{95} 为 2.62 ppm。(2) 在湖北枣阳现场的稻田型孳生环境,选择 0.3 ml/m^2 、1.5 ml/m^2 、3.0 ml/m^2 三组剂量,连续 3 天观察 Bti 乳剂对嗜人按蚊幼虫的现场即时杀灭效果和持效。在施药后第 1 天、第 2 天、第 3 天,0.3 ml/m^2 剂量组平均幼虫死亡率分别为 79.2%、14.4%、5.6%;1.5 ml/m^2 剂量组平均幼虫死亡率依次为 98.0%、96.0%、18.4%;3.0 ml/m^2 剂量组的平均幼虫死亡率依次为 100.0%、97.2%、90.8%。选择 0.2 ml/m^2 、1.0 ml/m^2 、2.0 ml/m^2 三组剂量,观察 Bti 乳剂对中华按蚊幼虫的现场即时杀灭效果和持效。在施药后第 1 天、第 2 天、第 3 天,0.2 ml/m^2 剂量组平均幼虫死亡率依次为 69.2%、60.8%、3.2%;1.0 ml/m^2 剂量组平均幼虫死亡率依次为 98.4%、89.6%、67.6%;2.0 ml/m^2 剂量组平均幼虫死亡率依次为 100.0%、99.2%、86.0%。在广东珠海现场的溪沟型孳生环境,选择 0.4 ml/m^2 、0.8 ml/m^2 、1.6 ml/m^2 三组剂量,分别对 Bti 乳剂杀灭嗜人按蚊和中华按蚊幼虫的现场效果进行观察。在 1 周观察期内,三剂量组之间的幼虫密度下降率差异无统计意义(F=0.26,P=0.77)。(3) 当平均温度为 200~~23℃时,成蚊前期发育历期需要 16 天以上,因此,隔 14 天施用 1 次

即可达到抑制蚊虫种群密度的目的;当平均温度在 24 \mathbb{C} \sim 27 \mathbb{C} 之间时,成蚊前期发育历期 需 12 天以上,故每隔 10 天喷洒 1 次较为理想;当平均温度在 28 \mathbb{C} 以上时,成蚊前期发育 历期需 9 天以上,每 7 天重复喷洒 1 次才能有效控制蚊虫。(4) 以 Bti 乳剂现场施用剂量 0.5 ml/m^2 计算,该项防制措施的单位成本为 175.73 元/公顷。

[**结论**] (1) 传疟媒介嗜人按蚊和中华按蚊幼虫对 Bti 乳剂非常敏感。(2) 现场应用 Bti 乳剂,推荐施用剂量为 $0.4\sim0.8\,\,\text{ml/m}^2$,对按蚊幼虫的持效期为 $1\sim2\,\,\text{天}$ 。(3) 可根据媒介生态特点、气候条件等综合因素确定最佳施药时机,施药间隔期一般为 $1\sim2\,\,\text{周}$ 。

鄱阳湖地区退田还湖对血吸虫病传播的影响

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我国现有钉螺面积 38.5 亿平方米,其中湖沼型占 95%以上。国家实施退田还湖政策后,是否导致钉螺孳生地扩大,引起社会关注。本研究选择鄱阳湖退田还湖区,对其血吸虫病流行情况、外迁居民的感染率变化及影响因素、以及如何利用遥感技术监测该类地区等三个方面进行了探索和研究。为退田还湖、移民建镇后的防治工作提供监测手段和科学依据。

第一部分: 永修县东风圩地区面积 5481319.6m², 1997 年垸外洲滩钉螺感染率 0.5%, 活螺密度 1.27 只/0.11m², 感染螺密度 0.0039 只/0.11m², 垸内没有钉螺; 居民感染率高达 13.4%。1999 年底实行"退田还湖、移民建镇"措施。2001 年垸内草洲化并发现活螺。2002-2003 年垸外螺情有所下降,垸内没有再发现钉螺。

南昌县五洲头地区,1973年因赣江整支而平垸。原有圩堤被冲刷得很低,圩堤内全部草洲化,2002年发现圩内普遍有螺,面积66万平方米;圩外尚有无螺面积将近70万平方米。因此本研究中将整个五洲头地区作为两个试区即五洲头—有螺区和五洲头—无螺区进行分析。2003年-2004年春季查螺,活螺密度分别是0.63只/0.11m²、0.55只/0.11m²;感染螺密度分别是0.1254只/0.11m²、0.0042只/0.11m²。距离该洲滩最近的是五丰村(150米),因放牧和割草去此洲滩,2002年居民感染率1.5%。

第二部分:为了解"移民建镇"对人群血吸虫病感染率的影响,对河东村居民感染率及外迁前后生产、生活用水、接触疫水等情况进行问卷调查。结果显示外迁到非疫区的居民由于距离易感洲滩远,无生产或生活性疫水接触,居民感染率显著下降,由外迁前的 13.4%下降到 1.6%。而外迁至疫区的居民,虽然生活用水、饮用水得到改善,但仍处疫区,所以居民感染率与外迁前相近。从总的来看,永修县河东村部分居民由于外迁到非疫区,感染率下降显著,对血防工作是有积极意义的。

第三部分:鄱阳湖地区退田还湖面积880平方公里,虽然目前没有出现钉螺的大面积扩散,但是随着洲垸居民的迁出,部分土地的抛荒或再遇洪灾,造成钉螺扩散,血吸虫病疫情回升的潜在危险极大。正如南昌县五洲头地区在退耕之后出现了钉螺的孳生和蔓延,而且由于发现时已有大面积钉螺孳生,给血防工作带来了一定的难度。因此加强对该类地区的监测工作是非常有必要的。

本文通过地面资料和遥感信息的结合,计算植被指数和地表温度两个指标,评价退田还湖区域的环境状况。除分析东风圩、五洲头两个"退田还湖"区域外,选择了一个对照区:余干县的长江洲。该洲滩面积大约 2862 亩,自 1953 年发现钉螺以来,居民感染率和钉螺

阳性率都很高。2004 年春季查螺结果: 活螺密度 0.63 只/0.11m², 感染螺密度 0.0083 只/0.11m²; 居民感染率 11.0%。

长江洲、五洲头—有螺区、五洲头—无螺区、东风圩植被指数总体分布有差异,进一步统计分析显示,前三个试区的植被指数高于东风圩地区。对四个试区的地表温度分析,长江洲与五洲头—有螺区的地表温度分布基本相同,而五洲头—有螺区和五洲头—无螺区的地表温度存在显著性差异,无螺区地表温度高于有螺区,地表温度可以间接反映土壤的含水量状况,因此认为无螺区土壤含水量低于有螺区,估计这也是钉螺没有孳生的原因。四个试区中,东风圩的地表温度明显高于前三个区域,且该地区的土地利用形式主要是水产养殖,一定程度上限制了钉螺的扩散和孳生。

遥感数据能够提供大范围瞬间的静态图像,实现大面积重复观测。将植被指数(NDVI)用于钉螺孳生地的研究已经取得了很多的成果,本文首次引用地表温度(LST)和 NDVI两个参数来评价一个区域的环境是否适合钉螺孳生,提高了监测的准确性。随着遥感技术的发展,在将来的工作中必将应用更多类型的影像、更多参数达到对地面环境进行监测的目的。

微小按蚊 A、C 的分类、群体遗传结构和生态习性的研究

郑彬(博士研究生) 导 师:汤林华

[**目的**] ①在微小按蚊复合体精确分类的基础上,系统比较微小按蚊 A、C 形态、同工酶和染色体差异。②对云南不同地区微小按蚊 A、C 进行群体遗传结构的研究。③比较研究微小按蚊 A、C 生态习性。

[方法] ①收集云南不同地区微小按蚊的现场标本,采用 PCR-RFLP 和 PCR-ASA 或复合 PCR 方法进行分子鉴别。②对经复合 PCR 鉴别,疑为微小按蚊杂合子的样本,以 PCR-ASA、PCR-RFLP 和 D3 序列的测定进行验证。③应用解剖镜、光学显微镜和扫描电镜对已分子鉴别的子一代标本加以形态学检视;垂直平板聚丙烯酰胺凝胶电泳进行同工酶检测;制备染色体核型标本并观察。④对不同地理来源的现场标本采用 SSR-PCR 方法非特异扩增,根据扩增条带,运用 BIOSIS、RAPDFST、RAPDDIST、PHILIP 等软件计算基因位点多态性, F_{ST} 、 θ 、迁移率以及遗传距离,构建系统树;以 EXCEL 对地理距离与种群遗传距离的相关系数进行统计分析。⑤比较微小按蚊 A、C 在人房和牛房的栖息比例;抽样检测,推导微小按蚊 A、C 的种群密度高峰;ELISA 和环状沉淀实验检测现场吸血蚊的胃血来源。

[结果] ①微小按蚊 A 和 C 的形态学差异主要表现为蚊翅是否存在膊白斑、V2.1 白斑 及喙腹面白斑,尤其是 V2.1 白斑和喙腹面白斑,微小按蚊 A 不出现或出现率极低,微小按蚊 C 则有很高的出现率,具有稳定差异。光学显微镜和扫描电镜下微小按蚊 A、C 翅前缘脉、V2.1 及翅繸处鳞片、翅目上小钩均未见差异。同工酶中,仅酯酶同工酶对微小按蚊 A、C 具鉴别意义,碱性磷酸酶存在种内多态性,乳酸脱氢酶在微小按蚊 A 与 C 之间无差异。微小按蚊 A、C 的常染色体着丝点指数和相对长度均无明显差异,性染色体核型略有不同。微小按蚊 A 的 X 染色体显示或长或短的近中着丝粒核型,短臂与长臂之比在 1:2 者为 X₁,短臂与长臂之比在 1:2.5-3 之间者为 X₂。 Y 染色体显示为亚端着丝粒核型,短臂与

长臂之比在 1:3 左右,为 Y_1 。微小按蚊 C 的 X 染色体显示为近中着丝粒核型,短臂与长 臂之比约为 1:2, 为 X3。Y 染色体显示为近中着丝粒核型,短臂与长臂之比在 1:1.5-2, 为 Y2。G 带染色显示异染色质在常染色体和性染色体的分布均有所不同。疑为微小按蚊 A/C 杂合子的样本,复合 PCR、等位基因特异扩增法、PCR 产物酶切片段长度多态性分析结果 同时出现微小按蚊 A、C 的特征条带, 其 D3 序列在微小按蚊 A 与 C 的所有 5 个变异位点 均出现杂合峰信号,即同时具有微小按蚊 A 和 C 相应碱基的峰信号。②以多态位点比例 衡量各种群的遗传多态性,云南不同地区微小按蚊均共享较高多态性,其中元江地区的微 小按蚊 C 变异程度最低,为 43.28%,潞西地区的微小按蚊 A 变异程度最高,为 78.57%。 固定指数分析 $(F_{ST} \cap \theta)$ 提示微小按蚊的遗传变异主要存在于种群内部,其种群间的迁移 率(Nm)无论是将微小按蚊 A、C 分开还是合并分析均大于 1。聚类分析所得系统树图主 要分为两支,元江、大关和勐腊的微小按蚊 C 聚为一支,另一支既有微小按蚊 A 又有微 小接蚊 C,分别为元江微小接蚊 C 与勐腊微小接蚊 A,新平微小接蚊 A 和临沧微小接蚊 C 聚类, 然后与潞西的微小按蚊 A 聚类。地理距离与遗传距离相关性分析, P>0.05。③在人 房中,微小按蚊 A 所占比例为 21.4%,微小按蚊 C 为 78.6%; 牛房中,微小按蚊 A 所占比 例为 18.5%,微小按蚊 C 为 81.5%,人房与牛房的分布差异无统计学意义(χ^2 =0.4157, P>0.05)。微小按蚊 A 的密度高峰出现在 9 月,微小按蚊 C 的密度高峰出现在 7 月,二者 高峰的出现均可引起当地疟疾病例上升。微小按蚊 A 的吸人血率(19.1%)略高于微小按 蚊 C (12.5%), 经 χ^2 检验,其 χ^2 值为 0.8129,d.f=1,差异无显著性,尚不能认为微小按蚊 吸人血的比例高于微小按蚊 C。

[结论] 我国微小按蚊 A、C 的形态、同工酶和染色体核型均存在一定差异,在自然群体中存在杂合子。云南不同地区微小按蚊遗传距离与复合体分类部分相关,未发现与地理距离相关。除种群密度高峰出现时间不一外,尚未发现微小按蚊 A、C 生态习性有差异。

云南疟疾疫情与蚊媒评价体系及地理信息系统研究

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[**目的**] ①建立疟疾疫情与蚊媒评价预测多因素复合模型;②构建云南疟疾疫情与蚊媒评价地理信息系统;③研究遥感植被指标 NDVI 在疟疾疫情与蚊媒评价中的应用;④发展云南省疟疾蚊媒疫情危险性地图。

[方法] ①以云南省 14 个疟疾流行县 33 乡为研究现场, 收集 1984—2000 年疟疾疫情、蚊媒、防蚊防疟、气象、地理环境、人口与遥感生态学资料。疟疾疫情资料为疟疾发病率与死亡率; 27 个以微小按蚊为主要传播媒介的乡蚊媒资料为微小按蚊与中华按蚊人工每小时密度、滇东北 6 个以嗜人按蚊为主要传播媒介的乡蚊媒资料为中华按蚊与嗜人按蚊叮人率; 防蚊防疟措施资料为室内滞留喷洒与蚊帐使用比例; 气象资料为月平均温度、月平均最高温度、月平均最低温度、月平均降雨量、月平均日照量; 地理环境资料为经度、纬度、海拔与水田面积占耕地面积比例; 人口资料为人口密度、农业人口密度、农业人口比例。从亚洲医学微型数据库空间决策系统中截取云南省 1:1,000,000 电子地图。借助Arcview与 Erdas软件提取 33 个乡的经度、纬度与高程信息。由http://eosdata.gsfc.nasa.gov下载NOAA/AVHRR NDVI遥感生态学资料, 其分辨率为 8km×8km。NDVI=(Ch2-Ch1)/

(Ch2+Ch1)。②采用主成分分析与因子分析法研究气象、环境、遥感生态指标与蚊媒密度 的关系, 筛选蚊媒密度评价的主要因素: ③采用层次分析法构建微小按蚊密度评价层次结 构模型: ④选择 27 个以微小按蚊为主要传播媒介的乡中的 15 个乡 1984—1993 年相关数 据作为建模的基础数据。以合计蚊媒密度为主导因子,采用灰色关联度分析方法研究 18 项 气象、环境、遥感NDVI指标与合计蚊媒密度的灰色关联关系,依据灰色阈值筛选合计蚊 媒密度的评价指标。以灰色关联序为评价指标赋权,采用加权方法合成变量E,研究E与合 计蚊媒密度Y的定量关系,从而建立合计蚊媒密度与微小按蚊密度拟合评价模型。⑤以合 计蚊媒密度为第一主导因子、以微小按蚊密度为第二主导因子,分别求评价指标与合计蚊 媒密度和微小按蚊密度的灰色关联度,依据平均灰色关联度排列灰色关联序。为平均关联 度最小的评价指标给定权重 10 n (n =0), 并以此基本单位为公差依次呈等差级数向关联 度增大的方向递增评价指标的权重。以平均关联度最大的评价指标权数为基数,以2为公 比呈等比级数递增主导因子的权重,从而构建蚊媒密度综合评价模型。⑥求各评价指标与 微小按蚊密度和合计蚊媒密度的平均灰色关联度,将依据灰色阈值筛选出的主要评价指标 与合计蚊媒密度、微小按蚊密度、人口密度、农业人口比例等指标均作为疟疾疫情综合评 价的候选指标,依据前述方法建立疟疾疫情综合评价模型。⑦模型检验方法:依据蚊媒密 度拟合评价模型对其余 12 个乡的蚊媒密度进行拟合评价,对蚊媒密度拟合值与实际蚊媒 密度标准化值进行相关分析并计算中值误差、最大误差与最小误差。对 1994 年、1999 年 与 2000 年景洪县、勐腊县、孟连县、思茅县、镇远县、元江县 6 县的蚊媒密度进行拟合 并对疟疾疫情进行综合评价与预测,采用拟合优度检验对模型进行评价。⑧以ArcView3.0a 及Erdas8.6 软件为开发平台,以Visual Basic 与MapObjects 为开发软件,采用地理信息系 统二次开发方法建立云南省疟疾疫情与蚊媒评价地理信息系统。

[结果] ①27 个乡中有 4 个乡遥感 NDVI 指标与微小按蚊密度和合计蚊媒密度相关性显著,其余 23 个乡相关性不显著。将勐腊县芒果树乡与孟捧乡合分析结果显示: 遥感 NDVI 指标与合计蚊媒密度的相关系数为: r=0.6190, P<0.05。②主成分分析结果显示: 主成分 Z₁, Z₂, Z₃ 的累计贡献率超过 80%,第一主成分 Z₁在 NDVI、干季 NDVI、湿季 NDVI 有较大的载荷,因此遥感 NDVI 指标可以反映主要趋势。采用 Quartimax 旋转方法进行因子分析结果显示: 第 1 公因子在日照量、遥感 NDVI 指标上有较大的载荷; 第 2 公因子在月平均温度、月最高温度、月最低温度上有较大的载荷; 第 3 公因子在月降雨量指标上载荷较大。③微小按蚊密度评价层次分析模型分析结果显示: 月最低温度、月平均温度与月降雨量指标对微小按蚊密度的影响具有显著意义。气候指标的累计权重为 87.5%。对 27 个乡1984 年—1993 年微小按蚊密度评价结果显示: 其中 10 个乡微小按蚊密度指数>0.6,主要分布于边境与元江地区。④合计蚊媒密度拟合评价模型为:

 $Y = 0.2146 X_{10}{}^{\prime} + 0.1878 X_{12}{}^{\prime} + 0.1610 X_{4}{}^{\prime} + 0.1342 X_{11}{}^{\prime} + 0.1073 X_{9}{}^{\prime} + 0.0805 X_{15}{}^{\prime} + 0.0537 X_{7}{}^{\prime} + 0.0268 X_{8}{}^{\prime}$

模型的检验结果显示: $e^{0.5}=21\%$, 平均相对误差为 19%。合计蚊媒密度预测值与实际标准化的相关系数 r=0.810, P<0.05。⑤微小按蚊密度拟合评价模型为:

$$Y = 0.0578 e^{0.0780 (8X_{10} + 7X_{11} + 6X_{12} + 5X_{15} + 4X_{9} + 3X_{4} + 2X_{8} + 1X_{7})}$$

⑥蚊媒密度综合评价模型为:

$$R_1$$
=0.2353 L' +0.2353 L_1' +0.1176 X_{12}' +0.1029 X_{10}' +0.0882 X_9' +0.0735 X_4' + 0.0588 X_{11}' +0.0441 X_{15}' +0.0294 X_8' +0.0147 X_7'

(7)疟疾疫情综合评价模型为:

$$R_2$$
=0.2857Y' +0.1429X₁₀' +0.1270L' +0.1111X₉' +0.0952X₁₂' +0.0794X₈' + 0.0635X₁₅' +0.0476X₁₁' +0.0317 X₇' +0.0159L₁'

⑧嗜人按蚊密度综合评价模型为:

够实现对疟疾疫情与蚊媒的综合评价与预测。

$$R_3$$
=0.0192 X_{15}' +0.0385 X_{1}' +0.0577 X_{14}' +0.0769 X_{4}' +0.0962 X_{13}' +0.1154 X_{17}' + 0.1346 X' +0.1538 T' +0.3077 T'

⑨对景洪县、勐腊县、孟连县、思茅县、元江县、镇远县 6 县 1994 年、1999 年与 2000 年 蛟媒密度进行拟合评价,其拟合优度检验的结果为: $\chi^2=2.30$, P>0.995,故蛟媒密度拟合评价模型拟合效果良好。疟疾疫情评价预测结果显示: 位于边境地区的景洪县、勐腊县疟疾疫情有增高趋势,元江县疟疾疫情有降低趋势,其余县无显著变化。⑩云南疟疾疫情与蚊媒评价地理信息系统由疟疾疫情监测数据库、蚊媒监测数据库、气象数据库、地理环境数据库、遥感资料数据库、人口数据库、防蚊防疟数据库 7 个数据库所组成。该系统可以实现文件管理、数据库建立、地图创建、信息查询等地理信息系统的基本功能,同时能

[结论] ①借助地理信息系统与遥感技术可以建立疟疾疫情与蚊媒评价地理信息系统与评价模型体系。②借助蚊媒密度拟合评价模型可以由气象、环境、遥感生态学指标对蚊媒密度进行拟合评价;借助疟疾疫情与蚊媒综合评价模型可以对区域疟疾疫情与蚊媒进行综合评价与预测。③云南疟疾疫情与蚊媒评价地理信息系统为云南疟疾疫情与蚊媒监测资料的科学化管理和疟疾早期预警系统的建立提供了技术支持。④遥感植被NDVI指标是疟疾疫情与蚊媒多指标评价体系中的一个良好指标。

疟原虫抗药性相关分子标志的研究及消减 cDNA 文库的构建

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[**目的**] (1)建立检测恶性疟原虫 *Pfcrt* 基因 K76T 及 *Pfmdr1* 基因 N86Y 和 D1246Y 的点突变的方法; (2)了解我国恶性疟原虫分离株 *Pfcrt* 基因 K76T 及 *Pfmdr1* 基因 N86Y 和 D1246Y 的点突变特征及发生率; (3) 了解我国恶性疟原虫分离株 *Pfcrt* 基因 K76T 及 *Pfmdr1* 基因 N86Y 和 D1246Y 的点突变发生率与恶性疟原虫对氯喹敏感性的关系,为这些分子标志用于氯喹抗性监测提供依据; (4)应用消减杂交技术,以伯氏疟原虫咯萘啶抗性 RP 株与敏感的 ANKA 株分别互为检测方和驱动方,构建消减 cDNA 文库,为进一步深入开展咯萘啶抗药机制及其应对策略与技术的研究提供可靠的依据和可行的途径。

[方法] (1) 本研究自我国恶性疟流行区云南和海南省采集恶性疟现症患者血样,根据恶性疟原虫 *Pfcrt* 基因和 *Pfmdr1* 基因序列设计巢式 PCR 引物,以血样中的恶性疟原虫

DNA 为模板,进行巢式 PCR—RFLP 分析,并对部分 PCR 产物进行纯化、测序及同源性分析。(2) 采用世界卫生组织(WHO)制定的体外微量法测定同一批血样中恶性疟原虫对氯喹的敏感性。(3)为获得咯萘啶抗性株(RP 株)或敏感株(ANKA 株)高表达或特异表达的基因,以 RP 株和 ANKA 株互为检测方和驱动方,进行正向或反向抑制性消减杂交,并经两轮 PCR,获得正、反向消减杂交产物。杂交产物纯化后,经克隆、转化和 PCR 扩增,观察插入片段大小,获得消减 cDNA 文库。

[结果] (1) 云南、海南省恶性疟原虫 Pfcrt 基因 K76T 的突变发生率分别为 86.7%和 64.3%, 野生型 K76 等位基因发生率为 8.9%和 21.4%, 突变、野生型混合等位基因发生率 分别为 4.4%, 14.3%; (2) 云南、海南省恶性疟原虫 Pfcrt 基因第 72-76 位编码的氨基酸 单元型在氯喹敏感株均为 CVMNK, 氯喹抗性株则可为 CVIET (非洲、东南亚)、CVIKT(巴 布亚新几内亚)和 SVMNT (南美洲)。其中海南的氯喹抗性株 Pfcrt 基因第 72-76 位编码 的氨基酸为单一的 CVIET 单元型, 云南氯喹抗性株中除一株为 CVIKT, 另一株为 SVMNT 外,均为 CVIET 单元型。(3)云南、海南省恶性疟原虫 Pfmdrl N86Y 突变发生率分别为 46.5%和 3.4%, 野生型 N86 等位基因发生率分别为 41.9%, 89.7%, 野生型和突变型混合 等位基因发生率分别为 11.6%和 6.9%。首次报道在海南的一恶性疟原虫分离株中存在 Pfmdr1 86Y 基因型,该虫株与东南亚的氯喹抗性分离株 FCR3 有 100%的一致性。(4) 本 研究未发现云南、海南省恶性疟原虫分离株存在 Pfmdr1 D1246Y 突变。(5) 体外微量法测 定云南血样 54 份,其中对氯喹有抗性的 40 份(74.1 %),敏感的 14 份(25.9%); 体外微量法检 测海南血样 36 份,其中对氯喹有抗性的 26 份(72.2%),敏感的 10 份(27.8%)。(6)*Pfcrt* 76T 等位基因分别存在于云南、海南省 94.3%和 80.9%的抗性株中,而敏感株中分别为 60.0% 和 14.3%。Pfcrt 76T 突变发生率在体外微量测定法显示的氯喹抗性株与敏感株间的差异在 统计学上有意义(云南: χ^2 =14.55, P< 0.001; 海南: χ^2 = 14.51, P< 0.001)。(7) 等级相关分析 结果显示, Pfcrt K76T 等位基因点突变率与恶性疟原虫抗性程度间呈高度正相关(等级相关 系数 r_s =0.93, P<0.001)。(8) Pfmdr1 N86Y 突变发生率在体外微量测定法显示的氯喹抗性株 与敏感株分别为云南 45.5%(15/33)和 50%(5/10),海南 4.4%(1/23)和 0, 二者之间的差异在统 计学上无意义(云南: χ^2 =0.18,P = 0.91;海南: χ^2 =1.34,P = 0.52);但在云南和海南,该突变发 生率分别为 45.5%和 4.4%, 其差异在统计学上有意义 $(\gamma^2=15.5, P=0.025)$ 。(9) 本研究共向 GenBank 递交序列 43 个。(10) 经正、反向抑制性消减杂交后, 分别获得有 416 个和 309 个重组子的正、反向差减文库。插入片段大小约在 300-1 000bp 之间,提示伯氏疟原虫对 咯萘啶的抗性可能涉及的是多个基因而不是个别基因; 抗性表型不仅受抗性基因控制, 也 可能受敏感基因的影响。

[结论] (1) 巢式 PCR-RFLP 法可以快速检测恶性疟原虫 Pfcrt 和 Pfmdrl 中的点突变,具有用于我国药物抗性研究与监测的前景。(2) 我国云南、海南省恶性疟原虫氯喹抗性株具有 Pfcrt 76T 突变的特点,其发生率与抗性程度呈正相关,显示 Pfcrt K76T 作为分子标志在我国恶性疟原虫氯喹抗性监测中具有进一步应用的价值。(3) 首次报道了我国云南、海南省抗氯喹恶性疟原虫 Pfcrt 基因第 72-76 位编码的氨基酸单元型有 CVIET (非洲、东南亚)、CVIKT(巴布亚新几内亚)和 SVMNT (南美洲) 三种单元型及其在地域间的差异。(4) 我国抗氯喹恶性疟原虫的 Pfmdrl N86Y 突变发生率与敏感株间未显示出差异;但具有

地域差别,其意义及应用价值尚待进一步研究。(5)发现海南一抗氯喹恶性疟原虫现场分离株中存在 *Pfmdr1* 86Y 基因型,该虫株与东南亚的氯喹抗性分离株 FCR3 有 100%的一致性。(6) 本研究未发现云南、海南省恶性疟原虫株存在 *Pfmdr1* D1246Y 点突变。(7) 本研究共向 GenBank 递交序列 43 个。(8) 首次构建了咯萘啶抗性 RP 株与敏感的 ANKA 株的消减 cDNA 文库,为进一步分离、鉴定、克隆抗性相关基因,开展我国创制抗疟药物咯萘啶防治、策略与技术研究的奠定了重要基础。

§ 6. ABSTRACTS OF GRADUATE STUDENT DISSERTATIONS RESEARCH REPROT

APPLICATION OF GIS/RS ON THE STUDY OF SCHISTOSOMIASIS CONTROL STRATEGIES IN AN EPIDEMIC COUNTY.

CHEN Zhao (MSc student) TUTOR:ZHOU Xiao-nong

Schistosomiasis is a kind of zoonosis, which does great harm to physical health and life safety of populations and prevents the economy of endemic area from developing. There is a close relationship between Schistosomiasis and geographical and meteorologic factors, so it is very important for us to find this relationship to control schistosomiasis. Oncomelania hupensis is the only host of *schistosoma japonicum*, and to some degree, the distribution of schistosomiasis is determined by snail distribution which is also influenced by the natural environment, so it has significant sense to make the snail distribution clear. In recent years, the development of Remote Sensing (RS) techniques and Geographic Information System (GIS) techniques has provided a new effective method to explore the relationship between the natural environmental factors and the distribution of schistosomiasis or snail, which could help us get the distribution situation of schistosomiasis or snail quickly and conveniently.

First of all, the surveillance of the snail habitats was performed by application of unsupervised classification of SPOT5 image combined with discriminant analysis. Secondly, the risk factors of schistosomiasis were explored. Thirdly, the prediction of spatial distribution of population infection rate of schistosoma was explored by Ordinary Kriging.

This study was to provide the scientific evidence for the tactic constitution of snail and schistosomiasis control in Dangtu County, and to give the theoretic base for further study of GIS/RS used in the surveillance or prediction of snail habitats and the infection rate of schistosoma.

STUDY ON METHODS FOR DETECTING LEISHMANIA INFANTUM ASYMPTOMATIC INFECTION IN CHINA

CAO Chun-hua (MSc student) TUTOR:WANG Jun-yun

Zoonotic visceral leishmaniasis (ZVL) is an important human and animal disease caused by infection with the protozoan *Leishmania infantum*. Humans and dogs with *L. infantum* asymptomatic infection exists and they are potentially infectious to sandfly. For epidemiological purposes there is a need for a precise estimation of the number of asymptomatic carriers to calculate the real extent of infection. A sensitive and specific detecting tool would be highly desirable. In this study, six primer pairs were established for detecting Chinese strain of *L*.

infantum by optimizing conditions which affect amplification, and their sensitivity and specificity were compared using DNAs extracted from human bloods seeded with cultured L. infantum promastigotes (MHOM/CN/86/GS) as template. Results showed the sensitivity varied among different primer pairs $(1x10^3 \text{ parasites} \sim 1 \text{ parasites/ml blood})$. Enzyme-linked immunosorbent assay (ELISA) for detecting L. infantum specific antibodies was also established. Samples of humans and dogs without visceral leishmaniasis symptoms from endemic area were analyzed with two selected primer pairs, ELISA and immunochromatographic dipstick test. The Leishmania DNA was detected from 33.83% (91/269) and 30.86% (83/269) human blood samples by RV1-RV2 and K13A-K13B primer pairs, respectively, and the seroprevalence by ELISA and dipstick was 20.45% (55/269) and zero, respectively. The prevalence of the infection was 38.29%(103/269) by adding all persons that were seropositive and/or positive for PCR with blood samples. For canine samples, the seroprevalence by ELISA and dipstick test was 25% (25/100) and 33% (33/100), respectively. The results of positive PCR in the bone marrow and blood samples were 57% (57/100) and 46% (46/100) respectively by RV1-RV2 primer pair, 51% (51/100) and 40%(40/100) by K13A-K13B primer pair. The prevalence of the infection in dog was 67% (67/100) by adding all animals that were seropositive (ELISA and dipstick test) and/or positive for PCR with any tissue samples. The prevalence of PCR is the highest among these detecting methods, especially for RV1-RV2 primer pair. The prevalence of RV1-RV2 primer pair in the bone marrow is the highest for canine samples. This study suggests that the prevalence of the asymptomatic infection of L. infantum is very high in our country. This study will help select proper detecting methods for asymptomatic infection of L. infantum and will provide references for formulating strategies of control and prevention of the disease.

APPLICATION OF REMOTE SENSING TO SURVEILLANCE SNAIL HABITATS IN NEW MARSHLANDS NEAR POYANG LAKE

GUO Wei (MSc student) TUTOR:WU Wei-ping

Oncomelania hupensis, the intermediate host of Schistosoma japonicum, plays an important role in the dispersion and transmission of Schistosomiasis japonicum. With the changes of environment, the distribution of snail habitats may also change a lot due to complicated factors. For a long time, surveillance for spatial and temporal distribution of snail habitats is a hard and arduous work for Schistosomiasis control. Remotely sensed technique offers a new method to renew the information of snail distribution more easily by using satellite image to identify the grass land suitable for snail. With remote sensing, people can acknowledge themselves with the changes of snail habitats and put forward a more efficient method to control Schistosomiasis more effectively.

This project collected several materials, including water level, rainfall and the several satellite images of Poyang Lake in 1999, 2001 and 2004. By ISODATA classify method, we identify and calculate the change of marsh land area near Poyang lake. At the same time, this

project also concerning about the character of snail distribution and the relationship between snail density and some environment factors in the marsh land. According to the information we collected, we build a mathematic model of snail density by the means of generalized linear model and multi-linear regression.

Result shows that, in the last several years, the annual rainfall of Poyang lake reduced dramaticly from 20,000mm in 1999 to less than 100m in 2004. Comparing the water level information of 2004 to that of 2001, we also find that because of the drop of water level in drought season, the area of marsh land increased by 157 square kilometers. In survey site, Hexi village in Jiangxi province, we find snail in the marsh land where snail have never been find there. Then median of snail density is 10.625 per square meter, and snails have been found in 97.14 percents of our survey frames. By fitting the snail density data with negative binomial distribution in generalized linear model, we find that although snail density fits negative binomial distribution, its distribution does have a low cluster index (k=0.5161). After logarithm transformation, snail density fits much better to normal distribution, the ratio of chi-square against degree of freedom (DF) equal to 0.5704, and show close relationship with elevation(X_1), rainfall(X_2), vegetable density(X_3) and water covered weeks(X_4) in multi-linear regression model. The mathematic model is

 $Y = log^{-1}(15.806 - 0.05783X_1^2 - 0.06816X_2 + 0.00172X_1X_3 - 000108X_3X_4)$, determination coefficient R^2 is 0.5341, P < 0.0001.

STUDIES ON CLONING AND EXPRESSION OF THE GENE ENCODING SCHISTOSOMA JAPONICUM THIOREDOXIN AND IMMUNOGENICITY OF THE THIOREDOXIN AS A VACCINE CANDIDATE

HAN Hai-bo (MSc student) TUTOR: CAO Jian-ping

Schistosomiasis japonica remains a major public health problem in China despite of the remarkable success in schistosomiasis control achieved over the past five decades. The present policy for schistosomiasis relies primarily on population-based chemotherapy with praziquantel and Oncomelania control through mollusciding. High re-infection rates, occurrence of drug resistance strains and existence of numerous reservoirs of domestic animal hosts and wild mammals have been major problems. It seems clear that the currently feasible long-term solution to solve these problems of schistosomiasis is a protective vaccine. Of the six vaccine candidates against schistosomiasis monsoni selected by WHO, glutathione S- transferase (GST), paramyosin and triose-phosphate isomerase (TPI) have been in phase II clinic trials. Studies on vaccine candidates for *S. japonicum* are mainly in experimental stage in China. The protective efficacy of single gene engineering vaccine is still unsatisfactory. Further efforts should be made not only on developing polyvalent vaccines, but also on searching for novel vaccine candidates which induce high protective immunity.

According to the results from our proteomics analysis of S. japonicum (Chinese strain),

thioredoxin (SjcTrx) is one of the abundantly expressed proteins. The target gene encoding SjcTrx was successfully cloned and expressed. The DNA vaccine containing the gene encoding SjcTrx was also constructed. The immunoprotection against *S. japonicum* induced by reSjcTrx and DNA vaccine was evaluated in the C57BL/6 mice.

1. Cloning and expression of the gene encoding thioredoxin of Schistosoma japonicum

A couple of primers were designed, with the *Bam*HI restriction endonuclease site introduced in forward primer and *Sal*I in reverse primer. Total RNA was isolated from adult worms of *S. japonicum* and the SjcTrx gene was amplified by reverse transcriptase-polymerase chain reaction (RT-PCR). The PCR product and the pET28a vector were digested by both restriction endonucleases *Bam*HI and *Sal*I. The target DNA fragments were purified and cloned properly into the prokaryotic expression vector pET28a. After identification by endonucleases digestion, PCR and sequencing, the recombinant plasmid pET28a-SjcTrx was transformed into competent *E. coli* BL21 and expressed in the presence of IPTG. The pET28a-SjcTrx was sequenced and shown to be 97% identical in deduced amino acid sequence to that of *S. japonicum* (Philippine strain) thioredoxin. The results of SDS-PAGE and Western blot revealed that the molecular weight of expressed protein was around 14 kDa and could be recognized by sera from rabbits infected with *S. japonicu*m and from mice immunized with reSjcTrx. The recombinant plasmid pET28a-SjcTrx containing SjcTrx cDNA was successfully constructed and its expression protein named reSjcTrx was also successfully purified.

2. Construction of DNA vaccine of Schistosoma japonicum thioredoxin

A couple of primers were designed as mentioned above, with the *Bam*HI restriction endonuclease site introduced in forward primer with ATG as start condon and *Eco*RI in reverse primer with TAA as termination codon. Total RNA was isolated from adult worms of *S. japonicum* and the SjcTrx gene was amplified by RT-PCR.

The PCR products and the pcDNA3 plasmids were digested by both restriction endonucleases *Bam*HI and *Eco*RI. The target DNA fragments were purified and cloned properly into the eukaryotic expression vector pcDNA3. After identification by endonucleases digestion, PCR and sequencing, the recombinant plasmid pET28a-SjcTrx was transformed into competent *E. coli* JM709. The pcDNA3-SjcTrx was sequenced and showed the same nucleotide sequence as SjcTrx mentioned above. The recombinant plasmid pcDNA3-SjcTrx was constructed successfully.

3. Protective efficacy induced by recombinant Schistosoma japonicum thioredoxin in mice

Fifty female 6 week old C57BL/6 mice were divided into five groups, 10 mice in each group: reSjcTrx with Freund adjuvant, reSjcTrx with Montanide ISA720, two groups of adjuvants, challenging control group. In two groups immunized with reSjcTrx and complete/incomplete Freund's adjuvant or Montanide ISA720 adjuvant. each mouse was immuned subcutaneously with 15µg reSjcTrx emulsified in Freund's adjuvant or ISA720 adjuvant respectively. In Freund's and

Montanide ISA720 adjuvant control groups, each mouse was injected subcutaneously with sterile normal saline emulsified in Freund's adjuvant and Montanide ISA720 adjuvant respectively. In challenging control group, mice were not treated with recombinant antigen or adjuvants. Mice were vaccinated at week 0, 2, 4. Three weeks after final immulization, each mouse was challenged with 30±1 cercariae of *S. japonicum* (Chinese strain). At the week six after challenge, all mice were sacrificed and perfused. The mumber of recovered worms and eggs from hepatic tissue of mice were counted. The sera were collected from mice before immunization, before challenge and before killing, respectively. The anti-SjcTrx antibodies in sera were detected with ELISA assay. ELISA results showed that high tirers of specific IgG antibodies (1:2 500) increased in the mice immunized with the reSjcTrx. The worm reduction rate and egg reduction rate of reSjcTrx with Montanide ISA720 adjuvant group were 22.8% and 29.5% respectively, compared with challenge control and Montanide ISA720 adjuvant control group (P < 0.05). The worm reduction rate and egg reduction rate of reSjcTrx with Freund's adjuvant goup were 14.7% and 15.1% respectively, compared with challenge control and Freund's adjuvant control group (P > 0.05). The reSjcTrx showed certain levels of immunoprotection against challenged infection in C57BL/6 mice.

4. Protective Effect Induced by pcDNA3-SjcTrx against Schistosoma japonicum in mice

Forty female of 6 week old C57BL/6 mice were divided into four groups, 10 mice in each group: pcDNA3-SjcTrx group, co-immunized group with pcDNA3-SjcTrx and reSjcTrx, pcDNA3 control group and challenging group. In pcDNA3-SjcTrx group, each mouse was immunized with 100 µg pcDNA3-SjcTrx intramuscularly (i. m.)at week 0, 2, 4, respectively. In co-immunized group, each mouse was immunized with 100 µg pcDNA3-SjcTrx at week 0, and immunized with 15 µg reSjcTrx emulsified in Freund's adjuvant subcutaneously at week 2, 4. In pcDNA3 control group, each mouse was immunized (i. m.) with 100 µg pcDNA3 palsmid DNA in the same immunized schedule. In challenging control group, mice were free of treatment. Three weeks after final injection, each mouse was challenged with 30±1 cercariae of S. japonicum (Chinese strain). Six weeks after challenge, all mice were sacrificed and the worms were collected by perfusion. The mumber of recovered worms and eggs from hepatic tissue of mice were counted. The sera were collected from mice before immunization, before challenge and before killing. The anti-SjcTrx antibodies were detected in ELISA assay. Another six C57BL/6 mice were immunized with pcDNA3-SicTrx as above (i.m.), and the muscle tissues of injection area were treated for frozen section at the hours 24, 48, 72 after immunization. The expression antigen of SjcTrx in muscle of mice were detected by immunoenzymatic staining technique (IEST). ELISA results showed that the specific IgG could be detected in the mice immunized with pcDNA3-SjcTrx. The worm reduction rate and egg reduction rate of pcDNA3-SicTrx group were 45.7% and 41.4% respectively, and those of co-immunized group were 37.0% and 31.6% respectively. Compared with challenging control group, the results from immunized and co-immunized group showed significant difference (P < 0.05). IEST result

showed that SjcTrx were expressed in the muscle tissue injection area pcDNA3-SjcTrx. Further experiments should be made to confirm the immunogenicity of the DNA vaccine against schistosomosis japonica.

MOLECULAR CLONING AND IMMUNODIAGNOSTIC EVALUATION OF THE SPECIFIC ANTIGENS FOR ECHINOCOCCOSIS

JIANG Li (PhD student) TUTOR: FENG Zheng

[Objective] (1) To develop immunodiagnostic approaches for echinococcosis, two specific antigen genes Em18 and AgB were cloned from the Chinese isolates of *Echinococcus multilocularis* and *Echinococcus granulosus*. (2) To find new target antigen genes, two cDNA libraries were screened. New antigen genes were cloned and expressed and their diagnostic value was assessed.

[Methods] (1) Molecular cloning techniques: construction of cDNA library, *In vitro* amplification of DNA by the polymerase chain reaction (PCR), foreign DNA cloning into plasmid vectors, analysis of recombinants, gel electrophoresis of DNA, DNA sequencing, expressing of target genes, and verification and purification of the target recombinant proteins. (2) Bioinformatics techniques: alignment of nucleotide sequences, alignment of amino acid sequences, predictive analysis of protein structure and function, bioinformation resources in the public database. (3) Immunological detection and analysis techniques: preparation of specific monoclonal antibodies and polyclonal antibody, enzyme-linked immunosorbent assay (ELISA), sodium dodecyl sulphate- polyacrylamind gel electrophoresis (SDS-PAGE) and western blot analysis (WB) for proteins.

[Results] An Em18 full length gene was cloned from the protoscoleces cDNA of *Echinococcus multilocularis* isolate from Sichuan, China; Em18 recombinant antigen (ReEm18) was used for the diagnosis of alveolar echinococcosis (AE). Serological evaluation demonstrated that the recombinant antigen was of value in AE diagnosis with the sensitivity of 95.5% and the specificity 93.6%. The serum antibody level displayed a correlation with the course of the disease at early stage; we have characterized the antigenicity of Em18 by assessing five recombinant antigen fragments. The results provided evidence of a highly antigenic region residing in the N-terminal half to two-thirds of the Em18 sequence. The antigen fragment (EmS1 or EmS2) containing immunodominant epitopes remained the sensitivity to AE sera as high as the ReEm18 antigen, but the specificity was improved from 93.6% to 99.3% (ELISA) and 81.4% to 90.7% (WB); A polyclonal antibody and 14 monoclonal antibodies against ReEm18 antigen were prepared for detection of the circulating antigen. A sandwich ELISA method was established by using the monoclonal antibody and polyclonal antibody. The sensitivity to detect ReEm18 antigen was at 3 ng/ml, and 54.45% of AE patient sera had detectable circulating antigen.

AgB1 and AgB2 subunit antigen genes were cloned from E. granulosus (Eg) isolates of

Xinjiang and Gansu, China. The two subunit antigens and a combined AgB1 and AgB2 (AgBs) were expressed for serological evaluation for cystic echinococcosis (CE); It was showed that AgBs had an 84.4% sensitivity to CE sera, which was higher than that of AgB2 (57.8%) and showed no difference with AgB1 (75.6%). The specificity was 80.5%, which was higher than that of AgB1 (72.6%) and showed no significant difference with AgB2 (91.2%). There was no significant difference in sensitivity between the subunit antigens AgB1 and AgB2, but the specificity of AgB2 was higher than that of AgB1. As a whole, the diagnostic efficiency of the combined subunit antigen AgBs was superior to that of the AgB1 or AgB2 alone; The confirmed CE sera from 4 different endemic areas, Xinjiang, Qinghai, Gansu and Sichuan respectively, were checked by AgBs antigen. The results showed that the sensitivity to CE sera collected from different areas was significantly different. This may be caused by the genetic diversity of the parasite from different geographic areas.

Two cDNA libraries from Eg isolates of Xinjiang and Gansu, China were immunoscreened by a pooled serum of mouse infected with Eg eggs and protoscoleces, respectively. A total of 92 positive phage clones were obtained and fifteen positive clones were selected for sequencing. The fifteen gene sequences encode 10 proteins. Of the 10 protein genes, five genes are new records of Eg in GenBank. We have deposited sixteen of sequence information to GenBank in this study.

After a comprehensive analysis on the data of the screened 10 proteins, we selected a new gene (G10 for calreticulin) and a known antigen gene (X25 for EpC1) for expression. Western blot analysis showed that the two recombinant antigens (G10 and X25) had specific reactivity to CE sera and very low reactivity to sera from AE or other parasitic infections and normal healthy persons.

[Conclusion] (1) An Em18 full length gene was cloned from the isolate of Sichuan, China; Em18 recombinant antigen (ReEm18) was expressed and evaluated for the diagnosis of alveolar echinococcosis (AE). The sensitivity was 95.5% and the specificity was 93.6%. 2) Investigations on the immunodominant regions of the Em18 antigen have found that a highly antigenic region residing in the N-terminal half to two-thirds of the Em18 sequence. The antigen fragment containing immunodominant epitopes remained the sensitivity to AE sera as high as the ReEm18 antigen, but the specificity was improved from 93.6% to 99.3% (ELISA). EmS1- or EmS2-ELISA may be applicable for field survey, and could be developed as a fast diagnostic kit. (3) A sandwich ELISA with a detecting sensitivity to ReEm18 antigen at 3 ng/ml, was established by using specific mono- and polyclonal antibodies against ReEm18 antigen. It could detect the Em18 circulation antigens in AE sera. (4) AgB1 and AgB2 subunit antigen genes were cloned from *E. granulosus* (Eg) isolates of Xinjiang and Gansu, China. The two subunit antigens and a combined AgB1 and AgB2 (AgBs) were expressed. Serological evaluation showed that the diagnostic efficiency of the antigen AgBs was superior to that of the AgB1 or AgB2 alone. However, the sensitivity was limited by the genetic diversity of the parasite from

different geographic areas. (5) A new gene(G10) was selected for expression. Western blot analysis showed that the recombinant protein was specific to CE sera and may have value for CE diagnosis after the expression condition was further optimized. In conclusion, this study has provided scientific basis for the recombination and expression of the specific diagnostic antigens of echinococcosis, and for future application of the corresponding diagnostic techniques.

FIELD EVALUATION OF EFFICACY AND EFFICIENCY OF BACILLUS THURINGIENSIS VAR. ISRAELENSIS EMULSION AGAINST ANOPHELES ANTHROPOPHAGUS AND ANOPHELES SINENSIS

WANG Rong-rong (MSc student) TUTOR: TANG Lin-hua

[Objective] In order to provide scientific evidence for upcoming large-scale field trials of microbial larvicide, the efficacy and efficiency of *Bacillus thuringiensis var. israelensis* (*Bti*) emulsion were assessed against *Anopheles anthropophagus* and *Anopheles sinensis*, the two major malaria vectors in China.

[Methods] 1. Bioassays were carried out against third instar larvae of laboratory-bred and wild *An. anthropophagus* and *An. sinensis* to determine the median lethal concentration (LC₅₀) and 95% lethal concentration (LC₉₅) of *Bti*. 2. Field trials were conducted in Hubei and Zhuhai provinces to test the effectiveness of different concentrations of the *Bti* emulsion. 3. A literature review was conducted to estimate the linear correlation between temperature and the rate of development of *Anopheles* larvae. 4. Application cost of the *Bti* emulsion was calculated based on the cost of the product, labor costs, fuel and maintenance.

[Results] 1. Bioassays against An. anthropophagus (Zhuhai isolate) showed that LC₅₀ and LC₉₅ values were 1.50ppm and 4.90ppm, respectively. Bioassays against An. sinensis (Zhuhai isolate) indicated that LC₅₀ and LC₉₅ values were 0.90ppm and 2.62ppm, respectively. 2. The first set of field tests was carried out in rice paddies in Hubei province. Against An. anthropophagus, the 0.3ml/m² dosage was found to be ineffective (mean percentage of larvae killed on days 1, 2 and 3 was 79.2%, 14.4% and 5.6%, respectively); the 1.5ml/m² concentration resulted in 98.0%, 96.0%, 18.4% of mean larval mortality on day 1, 2 and 3; and the 3.0 ml/m² concentration caused 100%, 97.2%, 90.8% of mean larval mortality on 3 days post-treatment. Against An. sinensis, the 0.2ml/m² dosage was less than 70% effective (69.2%, 60.8%, 2.3%); the 1.0ml/m² concentration caused 98.4%, 89.6%, 67.6% of mean larval reduction within 3 days of treatment; and the 2.0ml/m² dosage was still 86% effective on day 3 (100.0%, 99.2%, 86.0%). The second set of field tests was carried out in Guangdong province, indicated that all treatments, irrespective of the Bti concentration applied, were equally effective at suppressing larval populations. There was no significant difference on the larval densities and the percentage reduction of larval densities within 1 week post-treatment between 3 dosages (F=0.26, P=0.77). 3. At 20-23°C, the estimated duration of the total immature stage of the larvae was more than 16 days; therefore, the proposed interval between applications is once per fortnight. At 24-27°C,

the estimated duration of the immature stage was more than 12 days, and 10-day intervals are recommended. In temperatures greater than 28°C, the suggested interval before re-application is 1 week. 4. Based on a dosage of 0.5ml/m², the unit cost of *Bti* application was approximately 175.73 RMB/hectare.

[Conclusion] 1. In laboratory assays, *Bti* emulsion showed good activity against *An. anthropophagus* and *An. sinensis*. 2. This study indicated that dosages of 0.4-0.8ml/m² are recommended to control *An. anthropophagus* and *An. sinensis* in the field. The residual duration of *Bti* emulsion was 1-2 days. 3. The application regimen should be determined on the basis of the site-specific ecological and climactic conditions. In general, 1-2 weeks is required for re-application of *Bti*.

THE IMPACT OF RETURNING THE CULTURED LAND INTO LAKE ON SHISTOSOMIASIS IN POYANG LAKE AREA

HE Zhan-ying (MSc student) TUTOR: Guo Jia-gang

There are 3.85 billion square meters snail habitat in China and 95 percent locates the lake region. After the policy which was the returning the cultured land into lake and resettlement of people from endemic areas to newly established towns was issued by State, it could be concerned whether to bring on snail habitat increase in this areas. In this study we focus to search after three aspects including prevalence, influencing factors and how to use remote sensing for monitoring these areas. It will provide a scientific evidence, and monitoring method for schistosomiasis control after the policy.

Part 1:Dongfengwei in Yongxiu county has an area of 5481319.6437 square meters . In 1997, the snails infection rate was 0.5%, the density of living snails was 1.27 per 0.11 square meter in the outside grassland; no snails were found inside the dam. Prevalence rate in the population was 13.4%. The area has turned to grassland and live snails were found in 2001 since the process of "returning the cultured land into lake and resettlement of people from endemic areas to newly established towns" in 1999. in 2002 and 2003, the snails decreased in the outside grassland and no snails were found in the dam.

Wuzhoutou area in Nanchang country had erased its dam because of the change of route in Ganjiang river in 1973. The original dam had been eroded to very low and grass grew inside. In 2002, there were 660,000 square meters areas in which snails were generally found. And there were nearly 700,000 square meters areas free of snails. Consequently, we analyze the whole Wuzhoutou area as two studied areas: areas with snails and areas without snails. The snails were tested in 2003-2004 springs, the rate of living snails was 0.63 per 0.11 square meter, 0.55 per 0.11 square meter respectively; the rate of infected snails was 0.1254 per 0.11 square meter, 0.0042 per 0.11 square meter respectively. In the nearest village, Wufeng village (150m), due to the herding and mowing in the grass, prevalence rate in the population examined was 1.5% in 2002.

Part 2: In order to understand the influences of the process of "resettlement of people from endemic areas to newly established towns" on the infection rate among population, questionnaires were collected about the infection rate and the means of using water during production and daily living and pattern of water contact. The result showed that the prevalence rate by stool examination reduced dramatically from original 13.4% to 1.6% in the people that had emigrated to non-endemic areas due to the fact they did not contact infested water. Whereas, the infection rate in the people who had emigrated to the endemic areas had no obviously changes due to poor sanitary conditions of the inhabitants and short distance to the infested water area in spite of improvement in using water. Generally speaking, the infection rate of people in Hedong village decreased significantly because of their emigration to the non-endemic areas, which is favorable to protection and control of the schitosomiasis.

Part 3:The areas of the Poyang Lake in where the cultured land were returned into lake were 880 thousand square meters. Although there are not large diffusion of snails, the migration of the population, the deserted or flooded lands will cause the diffusion of snails and the potential risk of the schistosomiasis are great. The snails in Wuzhoutou areas bred and spread. The number of the snails was high when they were found, causing more difficult to the control of schistosomiasis. Thus to enforce the monitoring is necessary.

This study evaluates the environmental situations of the area by means of computing the vegetation indexes and surface temperature using the field data and remote sensing information. Besides analyzing the two returned areas of Dongfengwei and Wuzhoutou, a controlled area was chosen: Changjiangzhou of Yugan country. This area was 2862 acres, where snails were found in 1953 and the infection rate of population and the positive of snails were both high. The result of snails tested in the spring of 2004 was: the density of living snails 0.63 per 0.11 square meter, and the rate of infected snails 0.0083 per 0.11 square meter. For the residents, the prevalence rate of stool examination was 11.0%.

The NDVI of Changjiangzhou, Wuzhoutou with snails and Wuzhoutou without snails, Dongfengwei was originally distinct. With the statistical analysis, the NDVI of the former in where areas was higher than the Dongfengwei. The LST of Changjiangzhou and Wuzhoutou with-snails was significantly distinct. The temperature of areas without snails was higher than that with snails. Because the LST can indirectly reflect the water content of soils, it is reasonable to presume that the water content of soils in areas without snails is lower than that in areas with snails and it is probably one of reasons of snails free in these areas. In the four studied areas, the LST of Dongfengwei was significantly higher than the former three areas, and the farm lands are mostly used to breed aquatics, so this hinders the breeding of snails to some extent.

Remote sensing data can supply large scales static images and large scales repeated survey. There has been vast amount of achievements in the use of NDVI to study of snail habitation. This paper uses the two indexes, LST and NDVI, to evaluate the environments of an area so it is more credible. With the development of remote sensing technology, there will be more types of

images and more indexes used in the future work to obtain the aim at the filed environmental monitoring.

STUDY ON CLASSIFICATION, POPULATION GENETICS AND ECOLOGICAL HABIT OF AN. MINIMUS

ZHENG Bin (PhD student) TUTOR: TANG Lin-hua

[Objective] ① To compare the differences between *An. minimus* A and *An. minimus* C on morphology, isoenzyme and mitotic karyotypes on the basis of accurate classification. ② To compare the genetic divergency among different isolates in Yunnan Province. ③ To find if there is any ecological differences between *An. minimus* A and *An. minimus* C.

[Method] ① The samples were collected in different regions of Yunnan Province and identified by PCR-RFLP, PCR-ASA and multiplex-PCR after morphological examination. ② Suspicious An. minimus A/C hybrid samples were identified by PCR-ASA, PCR-RFLP and D3 region sequence. ③ The F1 female samples were observed with stereo, optical and electronic microscope. For F1 samples, isoenzyme data were used for observation of the differences which may classify Anopheles minimus A and C. The brain ganglia of fourth-instar larvae were used for metaphase chromosome preparations, in which the best metaphase spreads of mitotic karyotypes were photographed. ④ The PCR products of each isolates were yielded by SSR-PCR. Then the genetic divergency, Fst, θ , Nm and genetic distance of each isolate were calculated and dendrogram was constructed. Excel were used to calculate the relationship between geographical distance and genetic distance. ⑤ χ -square test were used for comparision of the resting habit differences between An. minimus A and An. minimus C. The highest seasonal abundance of An. minimus A and An. minimus C were infered and the source difference of bloodmeal between An. minimus A and An. minimus C were detected by precipitin test and ELISA method.

[Result] ① There are stable differences between Anopheles minimus A and C in the pale spot of V2.1. For isoenzyme method, Anopheles minimus A and C only can be differentiated by EST allozyme. The X chromosome mitotic karyotypes of Anopheles minimus A and C has some differences, Anopheles minimus A has two types: X1 and X2, which are submetacentric. Anopheles minimus C has X3. Y1 and Y2 both are subtelocentric, but the ratio of long arm and short arm and the amount and distribution of heterochromatin are of a little difference. ② For An.minimus A/C hybrid, the pattern of both An. minimus A and An. minimus C is shown by the result of multiplex-PCR, PCR-ASA and PCR-RFLP, heterozygosis in the variation places of An. minimus A and C are displayed in the D3 sequence, that is, possessing the signal both of An. minimus A and An. minimus C. ③ The isolates of An. minimus have relatively high genetic divergency. By using the dendrgram from genetic distance, the eight isolates can be classified into two dicisions.One is the An. minimus C in Daguan, Yauanyang and Mengla, the other group is divided into three levels, An. minimus C in Yuanjiang and An. minimus A in Mengla respectively.

The P value of statistic analysis of geographical and genetic distance is more than 0.05.
Both in tenement and bullpen, the proportion of An. minimus C is higher than that of An. minimus A. But there is not any resting habit difference between An. minimus A and An. minimus C in Yunnan Province so far. The highest seasonal abundance of An. minimus A occurred in September, for An. minimus C, the time is July. Both occurrence of the high abundance are followed by the increasing of malaria cases. The proportion of human blood in An. minimus A (19.1%) is a little higher than that of An. minimus C (12.5%), but no statistic significance.

[Conclusion] There are some differences between *An. minimus* A and *An. minimus* C on morphology, isoenzyme and chromosome. In Mengla county, 5 *An.minimus* A/C hybrid have been found for the first time. There are some relationship between genetic distance and classification of *An. minimus* complex, but no relationship at all with geographical distance. Except for the time of highest seasonal abundance, there is not any ecological difference between *An. minimus* A and *An. minimus* C in Yunnan Province.

STUDY ON MALARIA EPIDEMIC SITUATION AND VECTOR EVALUATION AND GEOGRAPHIC INFORMATION SYSTEM OF YUNNAN PROVINCE

YU Guo-wei (PhD student) TUTOR: TANG Lin-hua

[Objective] ①To establish multifactor evaluation model of malaria epidemic situation and vector density; ②To establish malaria and vector evaluation geographic information system of Yunnan Province; ③To study the application of remote sensing vegetation NDVI index on malaria epidemic situation and vector evaluation and forecast; ④To explore malaria and vector risk distribution map.

[Method] ①There are 33 townships of 14 counties in Yunnan Province have been chosen as study fields. Successive surveillance data of malaria, vector, malaria prevention and control, climate, environmental, population and remote sensing vegetation surveillence data have been collected from 1984-1993. Monthly average manpower hourly density data of *An. minimus* and *An. sinensis* has been collected from 27 townships with *An. minimus* being the main transmission vector, and entomological inoculation rate of *An. anthropophagus* and *An. sinensis* have been collected in 6 townships with *An. anthropophagus* being the main transmission vector. Malaria epidemic situation data include incidence rate and mortality rate of malaria. Monthly average temperature, temperature_{max}, temperature_{min}, rainfall, sunlight amount, longitude, latitude, elevation, paddy field percentage, population density, agricultural population percentage, percentage of indoor residual spraying and tent using has been collected also. Digital map of Yunnan Province (1:1000000) has been extracted from Minimum Medical Database Spatial Decision Support System depending on ArcView3.0a and Erdas 8.6 software. Remote sensing NDVI have been extracted from NOAA/AVHRR pathfinder products, which has been

downloaded from http://eosdata.gsfc.nasa.gov. The resolving power of NDVI value is 8km× 8km. NDVI=(Ch2-Ch1)/ (Ch2+Ch1). ②Principle component analysis and factor analysis have been used to study the relationship of climate, environmental and remote sensing NDVI indexes with vector density to choose the principle evaluation indexes of vector density; 3 Analytical hierarchy process (AHP) has been used to establish An. minimus analytical hierarchy evaluation model; (4) Data of 15 townships in 1984-1993 has been chosen as the model establishing data. There are 18 indexes of climate, environmental, remote sensing NDVI etc., which have been chosen as the initial evaluation indexes of vector denxity. Vector summation density has been chosen as the main factor, and the grey correlation analysis has been done to choose principle evaluation indexes depending on certain grey threshold. Weights of indexes have been given depending on grey correlation order and E has been formed based on addition method. The relationship of E and vector density has been studied to establish vector density fitness evaluation model; (5) Vector summation density has been chosen as the first factor and An. minimus density has been chosen as the second factor. The average grey correlation degree and the grey correlation order have been caculated. 10 ⁿ has been given as the weight to index with minimum grey correlation degree (n=0), and which has been used as common difference of index weight. The weight of maximum grey correlation degree index has been used as the basic value, and 2 has been used as the common ratio to give weights to indexes to form vector synthesis evaluation model. @Malaria incidence rate has been used as the main factor, and average grey correlation degree of An. minimus density and summation vector density has been calculated. Vector summation density, An. minimus density, population density and agriculture population percentage have been chosen as the evaluation indexes of malaria epidemic situation. Depending on former method malaria epidemic situation synthesis evaluation model has been established; 7The vector density of another 12 townships has been fitted depending on vector density fitness evaluation model. The correlation analysis has been done to compare vector density forecast value and actual vector density standard value. The vector density of Jinghong, Mengla, Menglian, Simao, Yuanjiang, Zhengyuan counties in 1994, 1999, 2000 have been evaluated and malaria incidence rate has been forecasted. The goodness of fit test has been done to test the fitness of evaluation model. ®Based on ArcView3.0a and Erdas8.6 software Visual Basic and MapObjects have been used as developing tools to establish malaria epidemic situation and vector evaluation geographic information system of Yunnan Province.

[Result] ①Remote sensing NDVI has marked correlativity with *An. minimus* density and summation vector density in 4 townships of 27 counties, and in the other 23 townships the relativity is not marked. The coalition analysis result of Mangguoshu and Mengpeng townships of Mengla shows that the correlation coefficient of NDVI is: r = 0.6190, P < 0.05; ②Principle component analysis result shows that cumulative contribution rate of Z_1 , Z_2 , Z_3 is above 80%, therefore the first three principle components have been chosen. Principle component Z_1 have bigger load of NDVI, dry season NDVI and wet season NDVI. Quartimax rotation of factor

analysis result shows that common factor 1 has more load of sunlight amount and remote sensing NDVI; common factor 2 has more load of monthly average temperature, temperature_{max}, temperature_{min}; common factor 3 has more load of rainfall. ③An. minimus analytical hierarchy model shows that cumulative weight of climate indexes is 87.5%, and the analysis result shows that there are 10 townships An. minimus density index is above 0.6, and those counties are belonged to Yuanjiang, Jinghong, Mengla and Malipo counties. ④Vector summation density

fitness evaluation model is as following. The testing result shows that: $e^{i_{0.5}} = 21\%$, average relative error=19%. The correlation coefficient is r =0.810, P<0.05.

$$Y = 0.2146 X_{10}{}^{\prime} + 0.1878 X_{12}{}^{\prime} + 0.1610 X_{4}{}^{\prime} + 0.1342 X_{11}{}^{\prime} + 0.1073 X_{9}{}^{\prime} + 0.0805 X_{15}{}^{\prime} + 0.0537 X_{7}{}^{\prime} + 0.0268 X_{8}{}^{\prime}$$

⑤An. minimus density fitness evaluation model is as following:

$$Y = 0.0578 e^{0.0780 (8X_{10}^{'} + 7X_{11}^{'} + 6X_{12}^{'} + 5X_{15}^{'} + 4X_{9}^{'} + 3X_{4}^{'} + 2X_{8}^{'} + 1X_{7}^{'})}$$

⑥Vector density synthesis evaluation model is as following:

$$R_1$$
=0.2353 L' +0.2353 L_1' +0.1176 X_{12}' +0.1029 X_{10}' +0.0882 X_9' +0.0735 X_4' + 0.0588 X_{11}' +0.0441 X_{15}' +0.0294 X_8' +0.0147 X_7'

Malaria epidemic situation synthesis evaluation model is as following:

$$R_2$$
=0.2857Y' +0.1429X₁₀' +0.1270L' +0.1111X₉' +0.0952X₁₂' +0.0794X₈' +0.0635X₁₅' +0.0476X₁₁' +0.0317 X₇' +0.0159L₁'

 \otimes An. Anthropophagus entomological inoculation rate synthesis evaluation model is as following: $R_3=0.0192X_{15}'+0.0385X_1'+0.0577X_{14}'+0.0769X_4'+0.0962X_{13}'+0.1154X_{17}'+$

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0 1346X'+0 1538T'+0 3077 T
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9 The vector density of Jinghong, Mengla, Menglian, Simao, Yuanjiang, Zhengyuan counties in 1994, 1999, 2000 have been evaluated, and malaria epidemic situation has been forecasted. The goodness test for the simulation has been done: χ^2 =2.30, P>0.995. Therefore malaria and vector density synthesis evaluation model have good goodness. Malaria epidemic situation has increased in Jinghong and Mnegla, but decreased in Yuanjiang country. 10 Malaria epidemic situation and vector evaluation geographic information system of Yunnan Province has been established. There are seven databases of this system includes malaria epidemic, vector, climate, environmental, remote sensing, population and malaria prevention databases. Document management, database establishment, map creation, data inquiry functions can be realized in this system, and malaria and vector evaluation and forecast functions can be finished also.

[Conclusion] ①Depending on geographic information system and remote sensing and techniques, the malaria epidemic situation and vector evaluation model system and geographic information system can be developed. ②Depending on vector summation density fitness

evaluation model, vector density can be simulated by climate, environmental and remote sensing surveillance indexes; Depending on vector density and malaria epidemic situation synthesis evaluation model, malaria transmission trend and vector density can be evaluated and forecasted.
3 Malaria epidemic situation and vector evaluation geographic information system of Yunnan Province can provide scientific supports for malaria control prevention and early warning system of Yunnan Province.
4 Remote sensing NDVI is one of good evaluation indexes of malaria epidemic situation and vector density.

STUDY ON THE MOLECULAR MARKERS RELATED TO ANTIMALARIAL RESISTANCE AND CONSTRUCTION OF SUBTRACTIVE CDNA LIBRARY IN *PLASMODIUM*

Guan Ya-yi (PhD student) TUTOR: TANG Lin-hua

[Objective] 1 To develop a method for detecting the mutations of *Plasmodium falciparum* chloroquine resistant transport gene (*Pfcrt*) 76th codon as well as the mutations of *Plasmodium falciparum* multidrug resistance gene 1 (*Pfmdr1*) 86th codon and 1246th codon. 2 To investigate the prevalence of the point mutations in *Pfcrt* K76, *Pfmdr1* N86Y and D1246Y in *Plasmodium falciparum* isolated from Hainan and Yunnan provinces. 3 To determine the correlation between the prevalence of mutations in *Pfcrt* K76, *Pfmdr1* N86Y and D1246Y and the level of chloroquine resistance of *Plasmodium falciparum* isolates by *in vitro* microtest. 4 To construct the subtracted cDNA libraries related to pyronaridine using the suppression subtractive hybridization (SSH) technique, taking the pyronaridine-resistant strain of *Plasmodium berghei* ANKA (RP strain) as a tester, and the pyronaridine-susceptible *P. berghei* ANKA strain as a driver and reversely taking each other as a driver and a tester to perform the substraction.

[Methods] 1 Blood samples were taken from the cases detected as falciparum malaria in Yunnan and Hainan provinces. Nested PCR was applied to amplify the fragments of *Pfcrt* gene including the 76th condon as well as *Pfmdr1* genes including N86Y and D1246Y condon. Restriction fragment length polymorphism (RFLP) was used to detect the point mutations. 2 Chloroquine resistance of the same isolates was measured by the in vitro microtest. The prevances of the point mutations in resistant-isolates and that of susceptible ones were compared by γ^2 test. Sequencing was carried out after purification of some PCR products and their identities were compared. 3 In order to get the genes that were highly and specifically expressed in the resistant strain (Plasmodium berghei RP strain) and in the suspceptible one (Plasmodium berghei ANKA strain), the cDNA of resistant strain was used as a tester and that of susceptible strain as a driver, and reversely used the two strains. The total RNA was isolated from the two strains, respectively. The cDNAs was synthesized by super smart cDNAs synthesis technique. Then cDNAs were digested with Rsa I. The cDNAs were added to adaptor 1 and adaptor 2R, respectively. The tester cDNAs were hybridized with excess driver cDNA. The PCR products were cloned into pMD 18-T plasmid vectors which were transformed into E.coli 100

JM109.

[Results] 1 For Plasmodium falciparum isolates from Yunnan and Hainan, the prevalence for Pfcrt 76T was 88.0% and 64.3%, for Pfcrt K76, 8.9% and 21.4% and for mixed alleles of *Pfcrt* K76T, 4.4% and 14.3%, respectively. 2 In the sequenced isolates, alleles associated with chloroquine resistance in isolates carry Pfcrt alleles encoded an amino acid haplotypes of CVIET, CVIKT and SVMNT. All Hainan chloroquine-resistance isolates had haplotypes of CVIET. There were only two isolates from Yunnan carrying haplotypes of CVIKT and SVMNT, respectively. All the chloroquine-susceptible isolates show haplotypes of CVMNK . 3 The prevalence of Pfmdr1 86Y was 46.5% and 3.4%, a prevalence of 41.9% and 89.7% for *Pfmdr1* N86 and a prevalence of 11.6% and 6.9% for the mixed alleles in *Plasmodium* falciparum isolates from Yunnan and Hainan, respectively. 4 No point mutation in Pfmdr1 at codon 1246 was found in isolates from the *Plasmodium falciparum* from Yunan and Hainan. 5 By the in vitro test, 74.1% and 72.2% of isolates of Yunnan and Hainan showed resistance to chloroquine, with 25.9% and 27.8% being susceptible to chloroquine, respectively. 6 The *Pfcrt* 76T alleles occurred in 94.3% and 80.9% of the resistant isolates by in vitro microtest, in 60% and 14.3% susceptible isolates from Yunnan and Hainan, respectively. There was a significant difference between susceptible and resistant isolates carrying 76T mutant codon (P < 0.001). A statistical analysis — the rank correlation analysis showed that the rank relation index (r_s) was 0.93 (P< 0.001) which refered two factors: the level of resistance to chloroquine by in vitro microtest and the prevalence of Pfcrt K76T. 8 There was no significant difference between susceptible and resistant isolates carrying *Pfmdr1* 86Y mutant codon (*P*>0.05), however, the prevance of *Pfmdr1* 86Y point mutation between the two provinces had significant difference $(\chi^2 = 15.5, P=0.025)$. 9 There were 43 sequences submitted to Genbank. 10. A total of 416 and 309 subtracted clones were received for the two subtracted cDNA libraries, respectively. The length of SSH fragments inserted into the vectors was about 300 –1 000 base pairs by PCR.

[Conclusions] 1 The nested PCR-RFLP is a rapid method for detecting the point mutations of *Pfcrt* and *Pfmdr1* genes. 2 There is a positive correlation between the prevalence of *Pfcrt* k76T mutation and the level of cloroquine resistance detected by *in vitro* microtest. *Pfcrt* K76T may be used as a molecular marker used in the surveillance of the changes of chloroquine resistance and the imported cases infected with resistant strains to a area. 3 It is the first report that in the sequenced isolates from Yunnan and Hainan, the chloroquine-resistance isolates show amino acid haplotypes of CVIET, CVIKT and SVMNT encoded by *Pfcrt* 72-76th. The differences among areas may exist. 4 There was no significant difference between susceptible isolates and resistant ones carrying *Pfmdr1* N86Y mutant codon, and the further study on surveillance with the *Pfmdr1* N86Y marker are needed. 5 A isolate from Hainan had *Pfmdr1* 86Y which had a 100% identities. 6 No point mutation in *Pfmdr1* at codon 1246 was found in isolates from the *Plasmodium falciparum* from Yunan and Hainan. 7 There were 43 sequences submitted to Genbank in our research. 8 It is the first time to

construct two subtracted cDNA libraries related to pyronaridine-resistant and -susceptible strains, a basis for further isolation, identification of the differentially expressed genes in the two strains

§ 7. 出版著作和发表论文题录

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§8.2005 年 大 事 记

- ▶ 1月5-20日,"第三次全国血吸虫病流行病学抽样调查数据资料汇总工作会"、"健康教育材料开发研讨工作会"在无锡召开。
- ▶ 1月7日,上海市卫生局党委书记、局长陈志荣等来所检查指导工作,汤林华等所领导就本所的有关工作向局领导作了汇报。
- ▶ 1月16-25日,津巴布韦大学兽医学院院长 Mukarartirwa 博士来所访问,讨论螺传寄生虫病的合作项目。
- ▶ 1月17日,召开2004年度业务工作年会,血吸虫病室等4个疾控处室对2004年的工作作了总结,18个课题作了年度工作汇报。
- ▶ 1月18日,举行2005年工作会议,汤林华所长作了《2004年行政业务工作总结》和《2005年工作要点》的报告。受中心领导委托,中心疾控办主任杨维中、人力资源处副处长徐缓出席了会议。当天下午,所第四届二次职代会审议了所长的年度工作报告。
- ▶ 1月18-20日,受卫生部委托,我所主办了"第三次血吸虫病流行病学抽样调查第三次专家组会议",卫生部疾控司血防处王立英处长、中国疾控中心疾控办杨维中主任等领导出席了会议。
- ▶ 1月27日,WHO 遏制疟疾伙伴关系抗疟药及供应服务部门主任 Dr. Maryse Dugue 博士、基本药物与药物政策 Dr. Clieve Ondario 博士来所访问,与我所探讨青蒿素联合处方抗疟药资格预审及使用的有关问题。
- ▶ 2月18日,周晓农副所长赴北京参加了由卫生部组织召开的"血吸虫病纳入职业病范围研讨会",会议建议将血吸虫病纳入职业病管理。
- ▶ 2月19-25日,美国国立过敏及传染病研究所基金管理办公室 Kirker 主任和 Singh 先生来所检查评估我所 TMRC 国际合作项目的财务报告,并讨论 2005-2007 年 NIH 课题的管理情况。
- ▶ 2月28日,召开2005年党委工作会议,党委副书记汤林华、纪委书记周晓农同志分别作了2004年党委、纪委工作总结,部署了2005年工作。
- ▶ 2月28日,所保密委员会主任周晓农与相关部门负责人签定了保密责任书。

- ▶ 3月4日,举行"2005年中层干部会议",汤林华所长要求各位中层干部统一思想,提高认识,将今年的工作落实到人,抓细抓实。
- ▶ 3月4日,世界卫生组织血吸虫病考察团完成了赴上海、安徽和四川等地现场的考察, 向卫生部汇报考察结果,周晓农副所长参加了汇报会。
- ▶ 3 月 10 日,周晓农副所长参加国家自然科学基金重大项目"基于现代信息技术研究传 染病时空传播与流行规律"研究方案研讨会。
- ▶ 3月14-16日,在山东省济宁市举办了"全国寄生虫病疫情汇总信息管理培训会",全国 25 个寄生虫病流行省(市、区)疫情管理和统计人员共80余人参加了培训会。
- ▶ 3月25-26日,协助卫生部疾病控制司在北京举办了"血吸虫病专家咨询委员会、寄生虫病专家咨询委员会换届会议",汤林华所长、周晓农副所长分别担任了新一届寄生虫病专家咨询委员会、血吸虫病专家咨询委员会主任委员。
- ▶ 4月6日,汤林华所长与各部门负责人签定安全责任书。
- ▶ 4月6-7日,汤林华所长、周晓农副所长以及各疾控科室负责人参加了卫生部组织召开的"2005年全国疾病控制工作电视电话会议"。
- ▶ 4月12-15日,"全国传染病监测工作启动大会"在北京召开,血吸虫病、疟疾列入疾病监测范围,周晓农副所长参加了会议。
- ▶ 4月14日,所纪委与后勤服务处、财务处、基建办公室签订了"廉洁勤政责任书"。
- ▶ 4月15-17日,"全国血吸虫病、与疟疾监测方案培训班"在武汉举行,我所有关专家到会并授课,并参与了血吸虫病、疟疾监测方案实施细则的起草工作。
- ▶ 4月19日,我所组织召开"寄生虫病调查后期试点方案研讨会",对全国钩虫病和食源性寄生虫病防治试点方案、全国寄生虫病中长期规划进行了深入探讨并形成讨论稿。
- ▶ 4月26日,经民主推荐测评、考核、两委班子研究决定,聘任潘嘉云同志为所长助理。
- ▶ 4月28日,汤林华所长带领所中心组成员、保密委员会成员、近期出国人员等到"上海市出国人员宣教中心"参观。
- ▶ 5月5日和13日,工会组织全所职工分两批赴井冈山红色之旅。

- ▶ 5月9-12日,"全国血吸虫病、疟疾监测方案操作手册专家审定会"在上海召开,中国疾控中心疾控与应急办主任杨维中出席了会议。
- ▶ 5月16日,汤林华所长、周晓农副所长、许隆祺研究员等专家出席了在卫生部举行的 全国人体重要寄生虫病抽样调查结果新闻发布会。
- ▶ 5月18-25日,汤林华研究员等3人赴越南参加"亚洲疟疾培训网络理事会与合作组织年会"和"药物政策发展培训班审查会议",汤林华研究员作为上届亚洲疟疾培训网络轮值国主席,在会上与本届协调国主席进行交接仪式。
- ▶ 5月24-25日,周晓农研究员、郑江研究员出席了由科技部组织的血吸虫病防治技术评估会,就血吸虫病防治技术、产品、方法等进行评估,以期筛选出有效的技术和产品。
- ▶ 5月25日,本所调整岗位评聘委员会及人事争议调解委员会成员,调整后的岗位评聘委员会和人事争议调解委员会分别由汤林华等11位同志和周晓农等7位同志组成。
- ▶ 5月27日,第四届4次职工代表大会,对本所所务公开工作进行测评。
- ▶ 5月30日,急性虫媒传染病实验室改造项目中的新建配电间受电,二路进电改造完成。
- ▶ 6月10日,周晓农副所长等4人赴海口参加力卓(三苯双脒肠溶片)四期临床实验启动会。
- ▶ 6月13日,卫生部王陇德副部长莅临本所视察工作,并在我所召开的"重大寄生虫病 防治专题座谈会"上作了重要讲话,中国疾控中心朱志南书记、卫生部疾控司郝阳副司 长一起参加了视察工作。
- ▶ 6月13-18日,受中国疾控中心委托,我所组织了全国血吸虫病防治情况的明察暗访工作,重点对7个省的血吸虫病重流行区进行抽查。
- ▶ 6月17-27日,周晓农研究员赴丹麦、瑞典和瑞士参加"全球螺传疾病网络工作组"第二次会议、"新现螺源性蠕虫病"会议,并进行血吸虫病地理信息合作研究的讨论。
- ▶ 6月28~29日,汤林华所长等4人赴云南省和海南省对全球基金疟疾项目的实施进行督导。
- ▶ 7月3-9日,周晓农研究员赴日本参加"国际蠕虫病和包虫病控制会议"。

- ▶ 7月8日,召开保持共产党员先进性教育活动动员大会,所党委副书记、先进性教育领导小组组长汤林华所长作动员并上党课。中国疾控中心党委朱志南书记、上海市卫生局先进性教育活动办公室吕欣欣副主任先后讲话。
- ▶ 7月14日,卫生部召开全球基金第一轮疟疾项目二期启动签约会议,汤林华所长出席了会议。
- ▶ 7月15日,我所举办了"全球基金疟疾项目省级项目办管理与财务主管培训班"。
- ▶ 7月21日,党委副书记汤林华向职工代表和民主党派通报先进性教育的情况。
- ▶ 7月27日,卫生部规财司于德志副司长、刘奎处长、中国疾控中心宫新生副主任等专程来沪参加由市卫生局主持的关于我所2号楼修复加固工程协调会。
- ▶ 7月29-31日,在职党员赴安徽芜湖开展"继承革命传统,情系疫区,服务全国"、"双结对"主题实践活动。
- ▶ 8月1日,受卫生部委托,卫生部血吸虫病专家咨询委员会专家组赴江西省血吸虫病流行区开展调研工作。
- ▶ 8月7-11日,周晓农研究员等3人赴印度尼西亚参加"第五届亚洲血吸虫病网络工作会议"。
- ▶ 8月15日,召开分析评议阶段动员大会,中国疾控中心主任王宇,党办主任刘贵来,卫生局先进性教育督导组组长毛仁忠和本所的全体共产党员、积极分子、民主党派和部门负责人参加了会议。
- ▶ 8月15日,分别召开老领导、老专家座谈会和中层干部、科技骨干座谈会,中国疾控中心王宇主任和与会人员做了互动式交流。
- ▶ 8月21-25日,周晓农研究员赴泰国参加"第十七届国际教育协会世界流行病学大会"。
- ▶ 8月23-31日,卫生部寄生虫病专家咨询委员会丝虫病组赴广西、海南省进行了消除丝虫病以及丝虫病监测等专题调研。
- ▶ 8月26日,举行欢送会,欢送药物室张超威副主任技师援疆工作1年。
- ▶ 8月28日,"血吸虫病血清学诊断试剂测评会"在上海召开,经测评,初步选定安徽省

IHA 诊断试剂作为今后 2 年全国血吸虫病监测点统一使用试剂。

- ▶ 9月1日,召开所党政领导班子民主生活会,上海市科教党委纪工委的领导、市卫生局党委先进性教育活动办公室副主任陈敏生、督导组组长毛仁忠、中国疾控中心副主任沈洁和党委办公室主任刘贵来与会指导。
- ▶ 9月4-10日,周晓农副所长和伍卫平研究员赴四川甘孜州开展包虫病防治工作调研, 为实施包虫病防治示范县方案做前期准备工作。
- ▶ 9月12-23日,成功举办了"国际抗疟药政策发展与实施培训班",来自13个国家的34名教员和学员参加了培训班。
- ▶ 9月15日,"急性虫媒传染病实验室"P2实验室工程经过前期投标、答疑,本所招标小组成员、设计单位、总承包单位、监理单位的讨论和审核,确定该工程由苏州金燕净化设备有限公司中标。
- ▶ 9月16日,召开所政务公开会议,有关部门负责人向职工代表通报本所职工培训、上 半年财务和设备采购情况。
- ▶ 9月19日,召开本所整改提高阶段动员大会。汤林华副书记对分析评议阶段的工作进行了总结,部署了整改提高阶段的工作。中国疾控中心白呼群副主任、党办田占平副主任,上海市卫生局先进性教育督导组毛仁忠组长等参加会议。
- ▶ 9月21-24日,周晓农副所长和有关专家参加了卫生部组织的"血吸虫病防治策略研讨会",提出了重新论证血吸虫病传播控制和传播阻断地区的标准,同时对2005年血吸虫病急性感染疫情进行了分析与探讨。
- ▶ 9月24-25日,召开"全球基金第五轮疟疾项目评审意见研讨会",卫生部疾控司血防处 王立英处长及有关专家参加了会议。
- ▶ 9月26日,召开了"全国消除丝虫病工作专家座谈会",卫生部疾控司血防处王立英处长参加了会议。
- ▶ 9月29日,召开了"消除丝虫病评审专家研讨会",卫生部寄生虫病专家咨询委员会丝虫病专家组成员及有关省丝虫病专家参加了会议。
- ▶ 10月9-14日,我所血防专家赴安徽省芜湖市参加由中国疾控中心举办的"全国血吸虫病诊断技术培训班"并授课。此次国家级培训班之后,各省将相继展开血吸虫病诊断技

术培训。

- ▶ 10月13-23日,受卫生部疾控司委托,我所在无锡举办了"全国血吸虫病综合治理项目高级师资培训班",血吸虫病流行省(市、县)血防部门的有关领导和专家参加了此次培训班。
- ▶ 10 月 17 日,经中心评聘委员会评审,郑江教授被聘为首席专家,周晓农、邱持平、郭家钢被聘为本所关键岗一级。
- ▶ 10 月 18 日,党委召开整改工作通报会,汤林华副书记通报了先进性教育活动有关情况和整改成果。随后进行了测评,结果满意率为 100%,测评过程和结果得到卫生局督导组的认可。
- ▶ 10月20日,我所在安徽省合肥市组织召开了"安徽省消除丝虫病达标工作研讨会"。会议对安徽省消除丝虫病工作的方案和目标进行了探讨,并对安徽省下一步工作提出了意见和建议。
- ▶ 10月21日,召开保持共产党员先进性教育活动总结大会,党委副书记、所长汤林华代表所党委作先进性教育活动工作总结。中国疾控中心党委书记朱志南和上海市卫生局党委先进性教育活动办公室副主任吕欣欣出席大会并讲话。
- ▶ 10月22-23日,周晓农副所长和有关专家参加了由卫生部组织的"全国血吸虫病传播控制和传播阻断地区标准修订研讨会",并对重大建设项目血吸虫病卫生学评价规范进行了论证与制订。
- ▶ 10月24-26日,汤林华所长及有关专家参加了由中国疾控中心举办的"全国疟疾诊断及镜检技术培训班"并授课,此次培训班的举行标志着全国疟疾监测点监测工作全面展开。
- ▶ 10月25-27日,受中国疾控中心委托,周晓农副所长及有关专家对全国血吸虫病监测点的湖北、湖南两省进行了督导检查。
- ▶ 10月27日,国家863项目"日本血吸虫基因工程疫苗的研究"通过科技部验收。
- ▶ 10月27-29日,我所与卫生部血吸虫病专家咨询委员会承办的"纪念血吸虫病在中国发现 100周年大型学术会议"在湖南长沙召开,全国血防战线 150余名专家学者出席了会议,卫生部王陇德副部长、湖南省委谢康生副书记、中国疾控中心王宇主任到会并作了重要讲话。

- ▶ 10 月 29 日,我所组织召开的"全国血吸虫病传播阻断地区流动人口管理工作研讨会" 在长沙召开,会议对如何加强血吸虫病传播阻断地区流动人口的血吸虫病防治和管理 进行了探讨。
- ▶ 11月2-4日,我所专家赴云南省大理州洱源县举办"寄生虫病调查病原学技术培训班",就钩虫、蛔虫、鞭虫等土源性线虫病病原学检查方法对50余名县级疾控中心专业人员和乡镇医生进行了培训。
- ▶ 11 月 2-10 日,完成了中国消除丝虫病国家报告(初稿)的起草工作,并邀请 WHO 专家参与研讨修订。
- ▶ 11月4日,我所专家赴云南省孟连县开展旋毛虫突发疫情调查,提出了防治工作建议。
- ▶ 11 月 5-7 日,我所在郑州市举办"全国消除丝虫病资料统计分析培训班",来自 16 个省 (自治区、直辖市)的 33 名专业人员参加了培训。
- ▶ 11 月 14-16 日,周晓农研究员、冯正研究员赴瑞士参加"WHO 血吸虫病科学工作组会议"。
- ▶ 11 月 16-19 日,召开"全国疟疾监测点数据库建设研讨会",会议对数据库的结构、功能等进行了论证。
- ▶ 11 月 18-19 日,汤林华研究员赴喀麦隆参加 WHO"遏制疟疾联盟(RBM)合作伙伴第 五次论坛"。
- ▶ 11 月 22 日,召开本所领导班子调整会议。出席会议有卫生部人事司司长王环增、疾控中心党委书记朱志南、上海市卫生局组织处副处长吕欣欣等领导参加会议。会上宣布卫生部党组关于蔡继红同志任本所党委书记的决定,王司长、朱书记等领导分别作了重要讲话。
- ▶ 11 月 23-24 日,召开"寄生虫病防治重点工作专家研讨会",会议就卫生部血吸虫病专家咨询委员会、寄生虫病专家咨询委员会的工作重点、我所近期开展的工作以及 2006 年寄生虫病防治工作重点进行了探讨,卫生部疾控司血防处王立英处长、周晓农副所长参加了会议。
- ▶ 11 月 25-26 日,汤林华研究员赴老挝参加"大湄公河次区域亚洲开发银行/WHO 加强少数民族地区疟疾控制项目启动和咨询委员会会议"。

- ▶ 11 月 28-29 日,在甘肃省兰州市组织召开了"全国包虫病黑热病防治工作研讨会",汤林华所长及四川、甘肃等 11 省疾控部门负责人和专业人员出席了会议。
- ▶ 12月1日,根据基建办公室和我所招标领导小组讨论决定,急性虫媒传染病实验室改造工程实验室家具由雷蒙特科学实验室设备有限公司中标。
- ▶ 12月1-21日,经公开招聘、个人报名、资格审查、竞聘演讲答辩、测评、组织考核、公示等程序,经所党政领导班子研究决定,聘任盛慧锋同志为信息中心副主任、张仪同志为媒介控制室副主任,试用期为一年。
- ▶ 12月2-6日,在青岛组织召开了"全国消除丝虫病国家报告第二稿修订会"和"卫生部寄生虫病专家咨询委员会丝虫病指导组工作会议"。
- ▶ 12月5日,市卫生局纪委一行4人来我所检查党风廉政工作,党委书记蔡继红和纪委书记周晓农分别汇报工作。通过查看资料、个别访谈、职工评分等综合考评,取得良好成绩。
- ▶ 12 月 5-8 日,在南昌市组织召开了"全国血吸虫病健康教育现场工作会",会议对全国血吸虫病健康教育工作方案、血吸虫病健康教育试点方案进行了论证。
- ▶ 12月6-8日,在南昌市组织召开了"全国血吸虫病综合治理试点经济效益评估方案研讨会",会议对血吸虫病综合治理试点经济效益评估方案进行了论证和研讨。
- ▶ 12 月 6-8 日,在珠海市组织召开了"食源性诊断技术培训班",来自全国各省(市、自治区)寄生虫病防治单位的 47 名学员参加了培训。
- ▶ 12 月 9-11 日,举办了"中华预防医学会全国寄生虫学学术研讨会"、"卫生部寄生虫病 专家咨询委员会议"、"《中国寄生虫学与寄生虫病杂志》编委会"、"全国人体重要寄 生虫病后续防治策略研讨会"和"寄生虫病综合防治试点示范区方案论证会"。
- ▶ 12月11日,我所2项国家十五攻关课题通过科技部验收,获得良好成绩。
- ▶ 12 月 26-29 日,组织召开了"中国消除丝虫病数据资料汇总工作会",丝虫病流行区各省有关专家到会对各省的丝虫病数据资料进行了全面汇总。
- ▶ 12 月 26-28 日,卫生部疾控司组织的"全国血吸虫病防治工作规范审稿会"在芜湖召开, 我所部分领导和专家参加了会议。

▶ 12月29日,完成本年度我所的岗位调整工作。

§ 8. IMPORTANT EVENTS OF 2005

- ➤ January 5-20: Conference on Collecting Data of the Third Nationwide Schistosomiasis Epidemiology Sampling Survey and Seminar on Developing Health Education Materials were held in Wuxi.
- ➤ January 7: Tang Lin-hua reported to the leadership on related work when Chen Zhirong, party committee secretary and director of Shanghai Health bureau came to the IPD checking and guiding work.
- ➤ January 16-25: Dr Mukarartirwa, president of Animal Medical School of Zimbabwe university visited the IPD and discussed cooperation project of parasitic diseases transmited by snail.
- > January 17: 2004 annual work conference on business was held, schistosomiasis department and other three departments in charge of disease control summarized their work, eighteen research groups made annual report.
- ➤ January 18: Tang Lin-hua, director of IPD, made reports about 2004 work summary of administration and business and 2005 main points of work at 2005annual work confenence. Yang Weizhong, head of disease control office and Xuhuan, assistant director of human resources department entrusted by leaders of the center attended the meeting.
- ➤ January 18: The second session of the Fourth congress of workers and staff considered the annual work report of director of the IPD at afternoon.
- ➤ January 18-20: Ministry of Public Health asked the IPD to host the third experts panel conference on the third schistosomiasis epidemiology sampling survey, Wang Liying, director of schistosomiasis prevention department of disease control office of Chinese Center for Disease Control and Prevention and other leaders attended the meeting.
- ➤ January 27: Dr. Maryse Dugue, Chief of Department of Anti-malaria Drug Supplying Services, WHO/RBM partnership and Dr. Clieve Ondario, from Drug Policy Initiate visited the IPD and explored related problems about qualification preliminary hearing and use of artimisinin combining with prescription drugs of anti-malaria.
- February 18: Zhou Xiao-nong, Vice Director of IPD attended seminar on schistosomiasis included in the scope of administration of occupational diseases held in Beijing, suggesting

schistosomiasis included in administration of occupational diseases.

- February 19-25: Mary Kirker, chief of Grants Management Branch and Mr. Singh came to the IPD to check and assess fiscal report of TMRC international collaborative project and discussed management situation of NIH topic from 2005 to 2007.
- February 28: The 2005 work meeting of IPD's CPC Committee was held. Tang Lin-hua, vice secretary of the CPC committee, and Zhou Xiao-nong, secretary of the disciplinary committee, summarized related work in 2004 respectively and laid, out work in 2005.
- February 28: Dr. Zhou Xiao-nong, Head of Secrecy Committee of IPD, signed security responsibility contract with persons in charge of related department.
- March 4: 2005 middle-level cadre conference was held. Tang Lin-hua, Director of the IPD requested every middle-level cadre to seek unity ideologically, enhance their awareness and would implement work of this year to appropriate persons, seizing details and putting into effect.
- March 4: WHO Schistosomiasis mission had accomplished field inspection in Shanghai, Anhui, Sichuan and other places, and reported inspection results to Ministry of Public Health. Zhou Xiao-nong, vice director of the institute attended the report conference.
- March 10: Zhou Xiao-nong, Vice Director of IPD attended research programme seminar on space and time transmission and epidemic regularity for infectious diseases on the basis of modern information technology within significant project of National Foundation for Natural Science.
- March 14-16: Eighty people in charge of epidemic situation administration and statistics from 25 parasitic diseases prevailing province (autonomous region, municipality) attended training conference on epidemic situation collection and information administration in Jining of Shandong Province.
- March 25-26: IPD helped disease control department of Ministry of Health to hold re-election conference on expert advisory committee for Schistosomiasis and expert advisory committee for parasitic diseases, Tang Lin-hua, director of the IPD and Zhou Xiao-nong, vice director of the IPD took charge of director committee member for expert advisory committee for parasitic diseases and expert advisory committee for Schistosomiasis respectively.

- April 6: Tang Lin-hua, director of the IPD signed safety responsibility contract with persons in charge of different departments.
- April 6-7: Tang Lin-hua, director of the IPD, Zhou Xiao-nong, vice director of the IPD and persons in charge of different departments of disease control attended television-telephone conference on 2005 disease control work held by Ministry of Health.
- April 12-15: Conference on surveillance work starting up for national infectious diseases was held in Beijing. Schistosomiasis and Malaria were listed among diseases under surveillance. Zhou Xiaonong, vice director of the institute attended the meeting.
- April 14: IPD's Discipline Inspection Commission signed incorruptible and practicing diligent institute responsibility contract with its logistics services department, fiscal department and capital construction office.
- April 15-17: Surveillance programme training class for National Schistosomiasis and malaria held in Wuhan, related experts of the institute attended the class and gave lectures, and participated in drawing up enforcement regulations for Schistosomiasis and Malaria.
- April 19: Later period of parasitic diseases investigation experiment unit programme seminar was held by our institute, deeply exploring experiment unit programme for national Ancylostomiasis and food-borne parasitic diseases control and prevention and intermediate-term and long-term planning for national parasitic diseases, and formulating discussion draft.
- April 26: Party committee and discipline inspection commission decided that Pan Jiayun was appointed assistant director after democratic recommendation, test and appraise.
- April 28: Tang Linhua, Director of IPD, led members of control group, members of security committee, those who would go abroad in the near future and so on to visit Shanghai publicity and education center for persons of going abroad.
- May 5 and 13: Labour Union organized divided and members of the IPD into two groups to visit Jinggang Mountain.
- May 9-12: Experts finalizing conference on operating manual of surveillance programme for the whole country Schistosomiasis and Malaria was held in Shanghai. Yang Weizhong, head of disease control and emergency office of Chinese Center for Disease Control and

Prevention attended the meeting.

- May 16, Tang Lin-hua, Director of IPD, Zhou Xiao-nong, Vice Director of IPD, Prof. Xu Long-qi, and some other experts attended news conference on result of sampling survey for the whole country important parasitic diseases living in human body held in Ministry of Public Health.
- May 18-25: Tang Lin-hua and other two senior researchers of IPD went to Vietnam to attend ACTMalaria annual conference of executive board meeting and examination conference on drugs policy development training, Tang Linhua, as the former CCD of ACTMalaria, handed over his chairmanship to the new CCD of Vietnam.
- May 24-25: Prof. Zhou Xiao-nong and Prof. Zhengjiang attended evaluating conference on technologies of Schistosomiasis control and prevention evaluating technologies, products, methods and so on of Schistosomiasis control and prevention in order to sift out effective technologies and products.
- May 25: After the IPD adjusted members of position evaluating and appointing committee and personnel controversy mediation committee, position evaluating and appointing committee is made up Tang Lin-hua and other 10 persons, personnel controversy mediation committee is made up Zhou Xiao-nong and other 6 persons.
- ➤ May 27: The fourth session of Fourth congress of works and staff tested and appraised public situation for the affairs of the IPD.
- May 30: New switch room of insect infectious diseases laboratory electrifying, updating for electricity by two circuits was accomplished.
- ➤ June 10: Dr Zhou Xiao-nong, the Vice director of IPD, went to Haikou with the other three researchers to attend the initial meeting of the fourth clinic examination of Lizhuo.
- June 13: Wang Long-de, Vice Minister of MOH, visited IPD to inspect the work of the institution and delivered remarks in the conference of important parasitic diseases control and treatment; Zhu Zhinan, the CPC secretary of China CDC, together with Hao Yang, vice director of department of disease control and prevention, MOH, participated in the meeting.
- ➤ June 13-18: Consigned by the CDC, our institution organized the inspection of the schistosomiasis control and treatment in the country wide and emphasized on the spot-check of the high prevalence epidemic areas in the 7 provinces.

- ➤ June 17-27: Professor Zhou Xiao-nong went to Denmark, Switzerland and Sweden to attend the second conference of World Snail-transmitting Disease Net Group, the new occurring snail-transmitting helminthiasis and made discussion about the cooperative research of schistosomiasis geographic information system.
- ➤ June 28-29: Tang Lin-hua, the director, went to Yunnan and Hainan province to supervise the implement of the project of malaria of World Fund with other 3 researchers.
- ➤ July 3-9: Professor Zhou Xiao-nong went to Japan to attend the International Helminthiasis and Echinococcosis Control and Prevention Conference.
- ➤ July 8: the mobilization meeting of Keep-Advancing Education of Chinese Communist was held. Tang Lin-hua, vice-secretary of Institution Communist Committee and the leader of Keep-Advancing Education group, made mobilization address and give the communist party lesson. Zhu Zhinan, secretary of China CDC Communist Committee, and Lv Xinxin, vice director of Keep-Advancing office of Shanghai Bureau of Health, also made significant address.
- ➤ July 14: MOH held the sign-up conference of the second phase of project of malaria of the first turn of World Fund. Director Tang Lin-hua attended the conference.
- ➤ July 15: Our institution held the education class to the management and finance superintends from different provinces of the project of malaria of World Fund.
- ➤ July 21: Tang Lin-hua, vice secretary of Institution Communist Committee, made report about Keep-Advancing Education to the deputies of staffs and democratic party members.
- ➤ July 27: Yu De-zhi, vice director of finance department of MOH, Liu Kui, chief of department, and Gong Xin-sheng, vice director of China CDC came to Shanghai to participate in the coordination conference of fixing and consolidating project of No.2 building in our institution presided by the Shanghai Health Bureau.
- ➤ July 29-31: The communists in our institution went to Wuhu and Anhui provinces to carry out the Double-linked action of "Keep revolutionary tradition, Care the prevalent areas, Serve the nation".
- August 1: Consigned by the MOH, the Schistosomiasis Specialists Committee went to epidemic areas in Jiangxi province to develop the survey of schistosomiasis.

- August 7-11: Professor Zhou Xiao-nong went to Indonesia to attend the fifth conference of the Asian Schistosomiasis Net Group.
- August 15: The Kick-off meeting of analysis and appraise phase was held, Wang Yu, Director of China CDC, Liu Guilai, the director of Communist Office China CDC, Mao Rengui, Chief of Keep-Advancing Education Supervise Group of Shanghai Health Bereau, the rustlers, the democratic parties and principals of different departments present.
- August 15: The symposiums of old leaders and old specialists, middle level leaders and technicians were held respectively, on which Wang Yu, director of China CDC, made mutual discussion with the attendants.
- August 21-25: Professor Zhou Xiao-nong went to Thailand to attend the seventeenth IEA World Congress of Epidemiology.
- August 23-31: The Specialist Consulting Committee of MOH went to Guangxi and Hainan provinces to carry out the survey of filariasis elimination and surveillance.
- August 26: The meeting was held to send off Zhang Chaowei, the vice director of drug department to go to Xinjiang province to work for 1 year.
- August 28: The appraise conference of schistosomiasis serum diagnosis reagents was held in Shanghai, and after the appraisement, the IHA reagent made by Anhui province was preparatory chosen to be the uniform reagent used in the schistosomiasis surveillance spots in the following 2 years.
- September 1: The democratic living conference of institution Communist party leader was held, and Chen Min-sheng, the leader of Shanghai Science and Education Committee and vice-director of Keep-Advancing Education Office of Bereau of Health, Mao Renzhong, the leader of Supervise Group, Shen Jie, the vice director of China CDC, and Liu Guilai, director of the Communist Committee Office attended and made guidance.
- ➤ September 4-10: Vice-Director ice-director Zhou Xiao-nong and professor Wu Wei-ping went to Ganzi, Sichuan to conduct the survey of echinococcosis control in order to make early preparation for the modern county which will perform the strategy of echinococcosis control.
- > September 12-23: The education class of international strategies development and

implement of anti-malaria drugs was successfully held 34 teachers and students attended it from 13 countries.

- September 15: Through early biding and checking, discussing and examining of members of our institution and the design, construction and surveillance units, the P2 lab of "acute vector-born transmitted diseases" was determined to be constructed by Suzhou Jinyan Purifying Equipment Lt.D.
- September 16: The finance meeting was held. Persons in charge reported the staff training, the finance working and the equipment buying to the representatives of staffs.
- September 19: The mobilization conference of the first stage of revolution and development was held. Vice-secretary Tang Lin-hua made a summary of the former stage work and made the plan of this stage. Bai Huqun, Vice-director of China CDC, Tian Zhanping, vice-director of the Communist Office, and Mao Renzhong, the leader of Keep-Advancing Education Supervise Group of Shanghai Health Bereau attended.
- September 21-24: Vice-director Zhou Xiao-nong and relevant specialists attended the meeting of schistosomiasis control strategy in MOH, gave the schistosomiasis transmission control and interrupted standard after verification and analyzed and discussed the acute infection of schistosomiasis in 2005.
- September 24-25: The conference of evaluation of fifth project of malaria of World Fund was held. Wang Li-ying, the superviser of schistosomiasis office of MOH, attended it.
- September 26: The specialists discussion meeting of filariasis control was held, Wang Liying, the superviser of schistosomiasis office of MOH, attended it.
- September 29: The specialist evaluation meeting of filariasis was held, parasitic diseases specialists consulting committee and relevant filariasis specialists attended.
- ➤ October 9-14: the schistosomiasis specialists of IPD went to Wuhu, Anhui Province to attend the education class of schistosomiasis diagnosis held by China CDC, after which the diagnosis education would be developed in each province.
- October 13-23: Consigned by MOH, the high teachers education class of schsisotomisis control was held in Wuxi. Leaders and specialists attended it from schistosomiasis epidemic provinces (cities and couties).

- October 17: Through the evaluation by the CDC committee, Zhengjiang was employed as chief specialist. Zhou Xiao-nong, Qiu Chiping and Guo Jiagang were employed as the Key First.
- ➤ October 18: The report meeting of revolution working was held. Tang Linhua, reported the relevant results of Keep-Advancing Education Action. After that, the evaluation was conducted with 100% satisfaction and accepted by the supervise group.
- ➤ October 20: The meeting of the basic elimination of filariasis in Anhui was held in Hefei, Anhui. On the meeting, the plans and objectives of elimination of the filariasis in Anhui were discussed and gave suggestions to the next step work in Anhui province.
- October 21: The convention was held to summarize the activities of keeping the advancement of the communists. Tang Lin-hua, vice-secretary of the communist committee and director of IPD of China CDC, gave a summary of the activities of keeping the advancement of the communists as a delegation of IPD of China CDC. Zhu Zhi-nan, secretary of the communist committee of China CDC, and Lv Xing-xing, vice director of the activity office for keeping the advancement of the communists in the board of health of Shanghai, were present and gave lectures.
- October 22-23: Zhou Xiao-nong, vice director of IPD, accompanied with some related experts, attended the symposium concerning the amendment of standards for the national schistosomiasis spread control and the spread interdiction districts, which was organized by MOH. During the symposium, they gave argumentations and establishments for the health appraisal regulations of the schistosomiasis, which was a great constructive item.
- ➤ October 24-26: Tang Lin-hua, accompanied with some related experts, attended and gave lectures for the education course on diagnosis and microscope inspection technology of malaria nationally, which was conducted by China CDC. The course indicated that national malaria surveillance work had been unfolded generally.
- ➤ October 25-27: Entrusted by the China CDC, Dr Zhou Xiao-nong, accompanied with some related experts, paid supervision and inspection on the schistosomiasis surveillances of Hubei and Hunan provinces, which were spots of national schistosomiasis surveillance.
- Cotober 27: The national 863 project, the research on the gene vaccine for schistosomiasis japonicum, was checked and accepted by the science and technology office.

- ➤ October 27-29: Undertaken by the expert consultation committee of health ministry for schistosomiasis and our institute, the great academic meeting on the commemoration of the discovering of schistosomiasis for 100 years in China was convented in Changsha, Hunan province. More than 150 experts were present at the meeting. Wang Long-de, vice minister of health ministry, Xie Kangsheng, vice secretary of the Hunan province committee, and Wang Yu, director of China CDC were present and gave important dissertations.
- ➤ October 29: Conducted by IPD, the symposium on the management of mobile population in the national schistosomiasis spread interdiction districts was held in Changsha. How to enforce the prevention and cure as well as management of schistosomiasis in the mobile population of the schistosomiasis spread interdiction districts were discussed.
- November 2-4: Experts of IPD held the educational course on the technology for schistosomiasis pathogeny survey in Eryuan County in Dali state of Yunnan Province. More than 50 professional personnel coming from county CDCs and rural doctors received the education on the inspection methods of hookworm, roundworm, flagellate and such soil-born wireworms.
- November 2-10: We completed the drafting work of the national report on eliminating the filariasis in China, and invited experts from WHO to participate in the dissusion and amendment of the national report.
- November 4: Experts of our institute carried out the investigation on the epidemic outburst of trichina in Menglian county of Yunnan province and gave advice on prevention and cure.
- November 2-4: Our institute held a educational course on statistics and analysis of national data on eliminating filariasis. 33 professionals from 16 provinces (municipalities or directed districts) attended the course.
- November 14-16: Researcher Zhou Xiao-nong and researcher Feng Zheng went to Switzerland for the WHO science workgroup meetings on schistosomiasis.
- November 16-19: The symposium on database construction of the national malaria surveillance spots was convened, the framework and function of the database been identified.
- November 18-19: Tang Linhua went to Cameroon for the fifth forum on the collaborators of RBM of WHO.

- November 22: The meeting for team rearrangement was held with leaders including Wang Huanzeng, minister of branch of personnel in health ministry, Zhu Zhinan, secretary of the communist committee of China CDC, and Lv Xingxing, vice director of the activity office for keeping the advancement of the communists in the board of health of Shanghai, being present at the meeting. It declared the health ministry's determination of appointing Cai Jihong as the secretary of the communist committee of the IPD of China CDC. Minister Wang and Secretary Zhu gave important addresses respectively.
- November 23-24: the expert symposium on the key task of schistosomiasis prevention and cure was convened with Wang Liying, the chief of schistosomiasis prevention section in branch of disease control and prevention of health ministry, and Zhou Xiaonong, vice director of the IPD of China CDC, being present at the meeting. The Health ministry expert consultation committee for schistosomiasis, the key task of the committee, the recently unfolded project of our institute, and the key point of schistosomiasis prevention and cure work for 2006 were discussed at the meeting.
- November 25-26: Prof. Tang Lin-hua research went to Lao, PDR for meeting on the startup and consultation committee of ADB or WHO reinforced malaria prevention project in minority resident areas near the sub-areas of the big Mekong district.
- November 28-29: The Symposium on the National Echinococcosis and Kala-azar Prevention and Cure was held in Lanzhou, Gansu province. Tang lin-hua, director of IPD and the principals and professionals from the CDCs of Sichuan, Gansu and some other 9 provinces were present at the meeting.
- ➤ December 1: According to the determination of the capital construction office and the leader group on public bidding, the ASLAB hit the bid for the equipments in the reconstruction lab of acute insect-infected diseases.
- ➤ December 1-21: After the procedure of open recruitment, applications, qualification checkup, lectures and replies, appraisals, examination and announcement, Sheng Huifeng was appointed vice-director of the information center and Zhang Yi was appointed vice-director of the medium control office with one year for probation.
- > December 2-6: The second edition amendment meeting for the national report of eliminating filariasis nationally and the filariasis guide group of health ministry parasite expert consultation committee's work meeting were held in Qingdao.

- December 5: Four leaders from discipline committee of the board of health in Shanghai came to our institute to inspect the clean politics work. Cai Jihong, the secretary of the communist committee of our institute, and Zhou Xiaonong, the secretary of the discipline committee of our institute, reported work respectively. Through data examination, individual interview, employee's grades and such synthesized appraisals, good success was achieved.
- ➤ December 5-8: The local work meeting on the national health education for schistosomiasis was convened in Nanchang city. The work and pilot plan on the national health education for schistosomiasis were demonstrated at this meeting.
- December 6-8: The symposium on the economy-benefit appraisal of the pilot for national schistosomiasis synthesized treatment was convened in Nanchang city. The plan for the economy-benefit appraisal of the pilot for national schistosomiasis synthesized treatment was demonstrated and discussed.
- ➤ December 6-8: The educational course on diagnosis technology for food-born diseases was organized in Zhuhai city. 47 members from the institutes of parasite diseases all over the country attended the course.
- ➤ December 9-11: The academic symposium on national schistosomiasis of national prevention association, the parasite expert consultation committee of health ministry, the edit committee for magazines of Chinese parasitology and schistosomiasis, the symposium on the policy of national important succedent schistosomiasis prevention and cure, and the demonstration meeting on the pilot for national schistosomiasis synthesized treatment were held in our institute.
- ➤ December 11: Two national 15-aimed subjectS of our institute passed the check of science and technology ministry and gained a good achievement.
- ➤ December 26-29: The collection meeting of filariasis elimination data in China was organized. Related experts in filariasis epidemic districts participated in the meeting and gathered the filariasis data roundly.
- ➤ December 26-28: National schistosomiasis prevention and cure standard examination meeting was held in Wuhu, which was organized by Disease control department of Health Ministry with some leaders and experts in our institute being present at the meeting.

> December 29: The rearrangements of staff's position were completed.

$\S 9.$ 主 题 实 践 活 动

寄生虫病所开展"继承革命传统,情系疫区,服务全国" 主题实践活动的情况汇报

寄生虫病所作为中国疾病预防控制中心的下属单位,肩负着疟疾、血吸虫病等我国主要寄生虫病的预防控制、科学研究、技术指导、专业队伍培训、应急处理突发性或灾害性疫情等全国性任务。在先进性教育活动中,所党委紧密联系本所承担的任务,于 2005 年 7 月 29-31 日,组织全所 61 名在职党员到革命老区、血吸虫病流行区安徽泾县,开展实践"三个代表"重要思想,以"继承革命传统,情系疫区,服务全国"为主题的实践活动与安徽省寄防所"双结对"活动,以多种形式,进一步激励党员完成疾病预防控制任务的责任感和使命感。上海市卫生局保持共产党员先进性教育办公室的周笑芸、孔宬莹等同志专程指导。

一、主题活动的目的

- 1. 为实践"三个代表"重要思想,联系实际,找准结合点,走出去在实践中受教育,丰富保持共产党员先进性教育活动内容,有效推进先进性教育活动顺利进行。到革命老区,接受革命传统教育,坚定理想信念;坚定党的为人民服务的宗旨,密切党和人民群众的血肉联系,与血吸虫病疫区党组织和人民"双结对",增强疾病预防控制工作的责任感,使命感,提高党员素质,加强党组织战斗力。
- 2. 近年来我所党员队伍和职工队伍的年龄结构发生了明显的变化,青年党员和学生党员占了较大比例,许多人没有在疫区工作的经历,对疫区的民情和血吸虫病流行情况缺乏感性认识。
- 3. 机关和后勤部门的部分党员没有下过疫区,对现场工作没有直接感受,通过主题 实践活动,对现场工作加深认识,进一步提高了职能和后勤部门服务于一线现场工作的自 觉性。
- 4. 安徽省泾县是革命老区,也是安徽省血吸虫病流行比较严重的地区之一,离上海比较近,我们的选择也有利于实践活动的日程安排。

二、主要做法和内容

在安徽省寄防所和泾县血防所的配合下,本次主题实践活动从四个方面进行:

1.接受革命传统教育,学习革命先烈的光辉事迹。在革命老区泾县,老党员、原新四军纪念馆馆长,以"皖南事变"为题为我们上党课,以丰富的历史资料,揭露了蒋介石发动皖南事变的阴谋、歌颂了叶挺将军大义凛然,坚持抗日,宁死不屈的精神。新四军官兵与多于我十倍的敌人展开殊死搏斗,前赴后继,流血牺牲,突出重围,坚持抗日的丰功伟绩,使大家深受教育。特别是听了新四军将士弹尽粮绝,引爆最后一颗手榴弹与敌人同归于尽;七位女战士集体跳崖壮烈牺牲的英雄事迹时,许多青年党员流下了热泪。天气虽然闷热,但是在将近三个小时的党课中,全体党员自始至终精神饱满,全神贯注。听完党课后,大家冒着高温前往云岭瞻仰了新四军军部旧址和新四军纪念馆,珍贵的历史资料再现

了新四军艰苦卓绝的斗争过程,同志们感慨地说:正是千千万万革命先烈抛头颅洒热血,才有我们今天的美好生活。

2. 在茂林皖南事变烈士陵园,悼念革命先烈,重温入党誓词。在宏伟的"皖南事变烈士陵园"广场,全体党员心情格外激动,大家着装整齐,佩戴党徽,冒着高温烈日,在庄严的国际歌中,怀着崇敬的心情向无名烈士墓敬献花圈表示悼念,在烈士墓前、在党旗下,重温入党誓词,进一步向党表达坚定党的理想信念,坚持党的宗旨,全心全意为人民服务的决心。

重温入党誓词,党员们的心情久久不能平静,激动地说:"入党誓词是党员的终身承诺,党的理想、宗旨不能忘。"有的老党员说,今天在党旗下重温入党誓词,好像回到当年入党宣誓的那一幕,是一次心灵的洗涤。一些青年党员说,党员从入党宣誓那刻起,就立下为共产主义事业奋斗终身的誓言,增强党性观念,坚持党的宗旨,是对每个党员的起码要求,表示,要以实际行动努力实践三个代表重要思想,作一个好党员。

- 3. 在血吸虫病流行区,开展宣传教育,进行访病问苦。我所的党员、安徽省寄防所的党员和泾县血防站的党员分成三个小组,冒着高温到丁家桥等血吸虫病流行区,开展防病治病宣传、查灭钉螺和访病问苦实践活动,受到了当地群众的热烈欢迎。在活动中,党员有的发放宣传防病图片,有的讲解防病治病知识,有的为农民群众量血压、查病情,有的在田边地头、河滩沟渠调查钉螺密度和分布情况,在一条小沟渠,查钉螺的党员看到密密麻麻的钉螺,感叹任重道远,纷纷议论如何研制一种高效的方法代替传统的查螺方法。所领导和党员专家则走家访户,指导血吸虫病患者如何正确用药,并从全所党员自愿筹备的扶贫帮困资金中,给三位晚期血吸虫病人送帮扶慰问金共 1500 元,表达我所全体党员对疫区人民的关怀。
- 4. 和安徽省寄防所结对共建,互相学习,取长补短,优势互补,为有效控制血吸虫病共同奋斗。在做好充分准备的情况下,7月29日下午,在安徽省寄防所会议室,我所党委负责人代表我所党委和安徽省寄防所党总支负责人共同签订了"结对共建"协议书。本着相互学习,双向服务、共同提高,优势互补,资源共享,促进改革与发展的原则,明确了双方在"双结对"共建活动中的工作目标,具体要求和双方职责。我所负责落实安徽省寄防所每年选派一名党员干部来上海学习培训的具体安排,落实安徽省寄防所有关人员来上海调研、学习和交流活动,优先安排安徽省寄防所专业人员参加本所举办的培训班或进修班,优先与安徽省寄防所合作申请相关的重大、重点项目,以及血吸虫病的预防控制和科研工作。安徽省寄防所协助我所党委做好党员到疫区接受革命传统教育的组织落实工作、协助安排专业人员赴疫区进行血防和科研工作,并对相关人员的表现提供考核意见。通过"结对共建",形成双方相互配合,服务疫区,服务基层的长效机制。

三、本次主题实践活动的六点收获

1. 这次主题实践活动,增强了党员的组织观念,锻炼了党员。虽然大部分时间是在高温烈日下进行,但是,不论是第一次出远门的青年党员,还是年近七旬的党员专家,都以饱满的精神状态,认真学习的态度,高度的组织纪律性,在实践活动中边学习,边实践,边提高,表达了对教育活动的重视和充实提高自身素质的愿望,为先进性教育活动打下良好的思想基础。

- 2. 通过接受革命传统教育和重温入党誓词等活动,广大党员深刻认识到入党誓词是党员对党的终身承诺,坚定党的理想信念,坚持党的宗旨,实行"三个代表"重要思想,是每个党员应尽的义务,表示要通过先进性教育活动,进一步提高思想觉悟,勇于奉献的精神,为党的先进性建设,为实现四个目标要求而努力。
- 3. 增强了疾病预防控制的责任感。在实践活动中,看到一些地方血吸虫病没有得到有效控制、农村生活比较贫穷的状况,作为国家级疾病控制所一员,大家心情沉重,深感责任重大, 许多青年党员表示要刻苦学习业务技术,提高做好本职工作的技能, 树立吃苦耐劳和开拓创新精神,为有效控制血吸虫病流行的总目标和其他寄生虫病的预防控制做出贡献。
- 4. 职能部门和后勤服务部门的党员,通过主题实践活动,思想作风和工作作风都有了转变,机关党支部的党员向全所作出7点承诺,表示要进一步增强服务意识,以务实高效的工作态度对待各项工作,作到办事"不回避,不推诿,今日事,今日毕",全心全意为一线服务。后勤党支部在做好服务工作方面也采取了一些措施,对问题比较多的水电煤气定期进行检查维修,平时随时报随时修,保证了业务工作的正常进行,意见明显减少。
- 5. 这次主题实践活动也为全所党员提供了相互熟悉及相互交流的机会,党员领导干部和党员之间,不同支部的党员之间,老党员和新党员之间,利用课余时间以各种方式进行了广泛的交流,加深了解,融洽关系,增进了友谊,增强了党组织的凝聚力。
- 6. 进一步密切了和安徽省血防所、泾县血防站和疫区人民的关系。这次主题实践活动,安徽省寄防所作为先进性教育先行单位,给予我们具体有效的帮助,该所党员和职工认真负责的工作精神、雷厉风行的工作作风、与疫区群众的深厚感情、与基层血防人员的合作关系等,都给我们留下了深刻印象,很值得我们学习。

我们这次"继承革命传统,情系疫区,服务全国"主题实践活动的影像资料,市卫生局先进性教育办公室向上海电视台推荐,被新闻综合频道选用并于8月17日在先锋节目播放。

REPORT OF THE THEME PRACTICE ACTIVITY ON "FOLLOWING REVOLUTIONARY TRADITION, CONCERNED ABOUT ENDEMIC AREAS AND SERVING THE WHOLE COUNTRY"

Under the leadership of China CDC, the National Institute of Parasitic Diseases is in charge of parasitic diseases control and prevention, scientific research, technical guidance, professional training, emergency response of malaria, schistosomiasis and other major parasitic diseases in China. During the period of the Education Campaign to Preserve the Advanced Nature of CPC Members, the party committee of IPD organized 61 party members to visit Jingxian County of Anhui Province, an old revolutionary base area and endemic area of schistosomiasis in July 29-31 so as to practice the important thoughts of "Three represents". After taking activities on "developing revolutionary traditions, caring the livings in endemic areas and serving the whole country" and "double pairing off" activity, the party members' sense of responsibility and sense of duty was greatly inspired. Comrade Zhou Xiaoyun and Kong Chengying from the Office of Education to Preserve the Advanced Nature of CPC Members,

Shanghai Municipal Health Bureau made a special trip to give guidance during the activities.

Recommended by the Office of Education to Preserve the Advanced Nature of CPC Members, Shanghai Municipal Health Bureau, the image materials of this theme practice activity were accepted by the STV News Channel and played on August 17, 2005.

共产党员统理唯教宣主题实理活动

Theme Practices in the Education Campaign to Preserve the Advanced Nature of CPC Members









共产党员先进胜教育主题实践活动

Theme Practices in the Education Campaign to Preserve the Advanced Nature of CPC Members



