Conference Report

On the first international meeting of the

Research Initiative on Traditional Antimalarial Methods

(RITAM)

A partnership between

The Global Initiative For Traditional Systems (GIFTS) of Health, University of Oxford

&

The Tropical Disease Research Programme (TDR)

of the World Health Organisation

Held at Tumaini University of the Health Sciences, Moshi, Tanzania

8-11 December, 1999

Executive Summary

The first international meeting of the Research Initiative on Traditional Antimalarial Methods (RITAM) was held at the Regional Dermatology Training Centre (RDTC) of the Tumaini University of Health Sciences, Moshi, Tanzania.

This Inaugural Meeting of RITAM, jointly hosted by the Global Initiative for Traditional Systems of Health (GIFTS) at Oxford University and the World Health Organisation (WHO), was designed to develop a strategy for more effective, evidence-based use of traditional medicines that can also inform malaria control policy decisions. RITAM was established during 1999 as a network of researchers and others active or interested in the study and use of traditional, plant-based anti-malarials.

Malaria is one of the key health issues affecting developing countries, particularly in sub-Saharan Africa and Asia. With increasing drug resistance and high cost of pharmaceutical drugs, the use of herbal antimalarials is popular.

The conference was attended by biological and social scientists, clinicians, traditional healers, and policy makers from Africa, Asia, Europe and the Americas. The meeting was funded by the Rockefeller Foundation, the Nuffield Foundation, WHO's Tropical Disease Research (TDR) Programme, and direct support to delegates was provided by other funders.

The meeting addressed the need for research and policy on the prophylactic and therapeutic effects of medicinal plants as well as on vector control and repellance.

There were **five main outputs** from the meeting:

1. *Targets* for making a significant contribution to the control of malaria through the use of traditional anti-malarial methods.
2. *Methods* for achieving these targets, including ethical guidelines.
3. An *implementation strategy* for moving this field ahead quickly and soundly, and for putting research findings into practice.

4. *Linkages* established between researchers working on traditional antimalarial methods, based on agreed research priorities, and designed to avoid unnecessary replication.
5. Strengthening the RITAM *database* of current knowledge on traditional herbal anti-malarial methods.
6. **Four specialist groups** were established to develop the above:

1. Policy, advocacy and funding
2. Preclinical studies
3. Clinical development
4. Repellance and Vector Control.

These will be coordinated by an executive committee managed by GIFTS. Two meetings are planned in 2000: a natural products chemistry meeting at WHO in Geneva in June, and a symposium at the World Congress on Tropical Medicine in Cartagena, Columbia, in August.

Contents

Background

Malaria is recognised as one of the key priorities for the World Health Organisation. The programme of research that was drafted from the initial meetings on malaria in Dakar, Senegal, in 1997 included research into herbal antimalarials. However, while research has progressed in other areas of malaria control, research into herbal antimalarials has yielded few - if any - results that can be implemented by malaria control programmes. Discussion of this topic has been absent from international meetings on malaria.

This Inaugural Meeting of the Research Initiative on Traditional Antimalarial Methods (RITAM) was designed to develop a strategy for more effective, evidence-based use of traditional medicines that can also inform malaria control policy decisions. The aim of this meeting was to bring together experts on research and policy on herbal medicines for malaria, to formulate a research strategy that will make a significant contribution to malaria control programmes. It will be followed by a natural products chemistry meeting at WHO in Geneva in the Spring of 2000.

RITAM

The purpose of RITAM is to facilitate exchange and collaboration among those studying and using plants in the control of malaria with a view to developing a coordinated strategy for more effective, evidence-based use of traditional antimalarial methods.

RITAM was established during 1999 as a network of researchers and others active or interested in the study and use of traditional, plant-based anti-malarials. This has grown steadily from an initial symposium held at Oxford University in September 1995 on plant-based antimalarials held at Oxford University. This symposium was part of an international conference on traditional medicine and public policy organised by the Global Initiative For Traditional Systems (GIFTS) of Health. A subsequent selection of papers on this topic was published as part of the GIFTS special issue of the Royal Society of Medicine's journal TROPICAL DOCTOR (Supplement 1, 1997).

The establishment of a network of researchers and others in this field resulted from an undertaking given by GIFTS at the

Symposium on “Plants as Medicines” at the European Congress on Tropical Medicine in Liverpool in September 1998. The intention to establish this network was further reaffirmed and developed at the Multilateral Initiative on Malaria (MIM) African Malaria Conference in Durban, South Africa, in May 1999. In May 1999, a formal partnership between GIFTS and the World Health Organisation's Tropical Disease Research Division (TDR) was agreed in Geneva with a view to hosting two related meetings to inaugurate the initiative - the first in Africa and the second in Geneva.

Traditional Medicine Use

Utilization of traditional medicine is widespread in non-industrialised countries. The efficacy of many traditional treatments have been well documented, including in the area of skin disorders and allied fields, malaria and other parasitic disorders. Currently, modern pharmaceuticals are not available in constant supply in those areas most affected by malaria - particularly in sub-Saharan Africa and in South and SE Asia.

Furthermore, resistance to major drugs for treating bacterial and parasitic diseases has significantly reduced treatment options. Finally, the cost of drugs, if available and effective, is so high that institutions and patients are increasingly unable to afford them. Reports from clinics and NGO’s in Africa, where 80% of the world’s malaria burden exists, indicate that the poorer members of society are now using traditional medicine at least for economic reasons.

Herbal Antimalarial Methods: Developing a research and policy agenda

Malaria is one of the key health issues affecting developing countries, particularly in sub-Saharan Africa, but also in Asia. Malaria causes many deaths, much suffering, and delay in economic development. At present, the cheapest drugs for the treatment of malaria are becoming ineffective as malaria parasites evolve mechanisms to resist them. Alternative drugs are often too expensive for the poor to afford, so in some areas the use of herbal remedies is popular.

The two most effective drugs for malaria originate from plants: quinine from bark of the Peruvian *cinchona* tree, and artemisinin from the Chinese antipyretic *Artemisia annua.* It is probable that other plants contain as yet undiscovered antimalarial substances. Much research has focussed on trying to isolate and purify these from plants. However, there has

been almost no research into the clinical effectiveness of herbal remedies as they are used in real life. National malaria control programmes have largely ignored the potential of traditional healers, even though they are more numerous and culturally accepted than conventional health care workers.

Overview

Delegates

The conference was attended by biological and social scientists, clinicians, traditional healers, and policy makers, with a wide range of scientific and professional experience. From Africa, there were 28 delegates from 11 countries. There were 16 delegates from eight European, Asian and American countries. Delegates were invited because of their work or interest in plant-based means of controlling malaria.

Sponsors

The conference was made possible through the generous support of the following funding bodies. The Rockefeller Foundation contributed US$25,000 to fund participants from Europe, America, West Africa and Tanzania, and to fund the organisation and administration of the conference. The Nuffield Foundation's Commonwealth Countries Programme gave BP£10,000 to fund ten participants from Commonwealth countries in Central and Southern Africa. The Tropical Disease Research (TDR) programme of the World Health Organisation (WHO) gave US$10,000 to fund the attendance of five developing country delegates. In addition, three delegates obtained funding from existing MIM grants, and two delegates were funded by the International Foundation for Science in Stockholm. Other delegates raised funds from personal and institutional sources.

Organisers

The conference was organised by RITAM, as a partnership between the Global Initiative for Traditional Systems (GIFTS) of Health at the University of Oxford, and TDR at WHO. The conference chair was Dr Gerard Bodeker of GIFTS. The conference was generously hosted by Professor John Shao, Vice-Chancellor and Professor Henning Grossmann, Director of the Regional Dermatology Training Centre, of the Tumaini University for Health Sciences, Kilimanjaro Christian Medical Centre, Moshi, Tanzania. The programme coordinator was Dr Merlin Willcox, and the conference administrator was Ms Gemma Burford.

Meeting Format

The meeting consisted of seven sessions on different topics. Each session had 40-60 minutes of plenary talks, which were brief summaries of work so far, and key issues to consider in discussions about future research. The full programme with

abstracts is available as a separate document. These presentations were followed by small group discussions. The emphasis was on discussion and debate of priorities for future research, research methodology, ethics, and implementations of findings. At the end of each discussion, the chairman of each group fed back to the plenary about the group's recommendations. These are summarised later in this report.

Objectives

The meeting was structured according to sets of objectives developed for a range of themes on research, policy and product development. The purpose of focussing presentations in this way was to generate a coherent action agenda by the end of the meeting.
Opening Session
Keynote addresses, to introduce the conference format and aims

Session 2: Herbs for the Prevention of Malaria
Do some traditional anti-malarials have a prophylactic effect?
Are there equivalent local agents for vector control?
What should be the key research targets in this area, and how can these be achieved?

Session 3: Herbal Treatments for Malaria
There were three separate subsections for this session:
Ethnobotanical and Sociological studies
Pharmacological studies
Clinical studies
Each addressed the same fundamental questions:
In the face of resistance to conventional antimalarials, are there local treatments that appear to work?
What are the key research targets for developing the use of medicinal plants as effective and acceptable treatment options for malaria?
What are the best means to establish efficacy and safety?
Can a methodology be developed for simple application by rural hospitals, doctors, NGOs?
What important ethical issues are involved, and how should these be addressed?
What are the intellectual and cultural property rights considerations?

Session 4: How to implement research findings?
Can herbal treatments be grown, prepared and used locally?
Can larger scale production be developed for servicing national needs?
If safe and effective, can local herbal anti-malarials be used as traditionally prepared?

How can herbal antimalarials be incorporated into malaria control programmes?
What ethical and regulatory issues need to be addressed, and how?
What are the intellectual and cultural property rights considerations?

Session 5: Networking

How to set up research links between different institutions and researchers?

How to develop and disseminate a database of research on herbal antimalarials?

Closing Session - Summarising decisions made by the meeting and agreeing on a format for presenting them.

Five main outputs from Meeting

1. **Targets** for making a significant contribution to the control of malaria through the use of traditional anti-malarial methods.
2. **Methods** for achieving these targets, including ethical guidelines.
3. **An implementation strategy** for moving this field ahead quickly and soundly, and for putting research findings into practice.
4. **Linkages established between researchers** working on traditional antimalarial methods, based on agreed research priorities, and designed to avoid unnecessary replication.
5. **Strengthening the RITAM database** of current knowledge on traditional herbal anti-malarial methods.

Summary of small group discussions

Plants for Insect Repellance and Vector Control

Targets for research:
Non-pyrethroid insecticides (long-lasting, no offensive odour)
Larvicides (when and where breeding sites and human populations are concentrated)
Repellant plants grown around houses (but danger of diversion of mosquitoes to unprotected families)
Insect growth regulators or chemosterilants of plant origin (toxicity testing needed)
Plants with anti-insect and anti-plasmodial effect (e.g. *Neem, Ocimum*)
Integrated control (test each component to check whether each is contributing to control)
Test for nuisance vs. disease control

Methods:
Standardised testing procedures
Commercialisation without preventing “low technology” use
(qv Mitscher et al 1996, Pure and Appl Chem 68 (2): 2325-32).

Botanical Prophylactics

Targets for Future Research:
To find botanical agents widely used in different places, by lay people as well as traditional healers, and used in food as well as for prophylaxis.
To further evaluate such agents through
Basic safety and toxicity studies
Controlled clinical trials of potential botanical prophylactics
To feed back results to the relevant communities and the formal health sector

Methods:
Epidemiological studies of malaria in different subgroups, according to:
daily activity and behavioural patterns,
diet and food taboos (cf diet in the prevention of cancer).
NB: Need to control for strain virulence (molecular epidemiology)

Sociological studies:
planting traditions, “lost crops”
“consensus” plants
household measures (as well as herb sellers and traditional healers)
what is the threshold between prevention and treatment?
Rapid assessment ethnographic techniques – but how accurate are they?

Ethnobotanical studies, looking at plants with particular properties:
oxidants
bitter taste
inactive in vitro (IC50 >100ng/ml). This IC50 may be too low for treatment, but sufficient for prevention of malaria.

Case reports of herbal prophylactic agents:
São Tome: some traditional healers take herbs every day and never get malaria
India: some families take the bark of a particular tree before the monsoon to prevent malaria
Nigeria: some people take plants regularly in order to prevent malaria; others take plants as part of their diet which may prevent malaria, but without the explicit intention of doing this.

Safety and Toxicity:
basic safety tests
national bodies should accept “customary use” as a basis for going directly to clinical trials

Clinical studies:
using students: comparing term-time vs holidays, controlling diet
using ex-patriots who are unable to take standard prophylactics because they travel frequently or go abroad for a prolonged time.

Research Implementation
Nutraceuticals could be introduced into food (eg fortifier in children’s cereal, salt, tea bags)

Public health campaigns for people to cultivate and use certain plants (NB need for correct identification of plants)
Commercial product development eg for ex-patriots
Traditional healers may wish to promote the use of certain botanical prophylactics which they strongly believe to be effective even before scientific proof of efficacy is obtained.

Ethnobotanical Studies on Herbal Treatments for Malaria
Targets for Future Research
Record existing knowledge before it dies out
Clarify the definition of malaria in a particular community
Search for potential prophylactic agents
Look for plants used together with western medicines
Look for other traditional medicines / treatments for malaria not involving plants
Confirm what is known, add what is incomplete and correct what is distorted
Assess feasibility of wider cultivation of *Artemisia annua* and other antimalarial plants
Develop guidelines on the integration of traditional and orthodox medicine to inform government policy.

Methods need to:
clarify the definition of malaria, and ask about plants used for all symptoms related to malaria
interview lay people as well as traditional healers
involve traditional healers as partners, and ensure that they benefit from the research, for example, by developing research partnerships and career structures.
involve local scientists in the team
build capacity in taxonomy, and train lay people in differentiating between similar plants with different activity and toxicity.
ensure information is passed on to pharmacologists and clinicians for further research, so that existing research results are implemented.
feed back relevant information to the local community where the study was conducted.
continue monitoring use of herbal antimalarials over time, as this is a dynamic process.

Ethics

Need to protect intellectual property rights (An issue here is conflict between IPR considerations and the prevailing research emphasis on publishing lists of species.)

Need informed consent from the community

Need to devise ways to share benefits, and return findings to the community

Need to conserve biodiversity, for example by encouraging cultivation - rather than collection - of useful but rare plants.

Need to boost product development at local, commercial and international levels.

Traditional healers must be empowered to articulate their own priorities.

Pharmacological Studies on Herbal Treatments for Malaria

Targets for Future Research

To confirm the efficacy and safety of traditional antimalarials

To evaluate remedies reputed to potentiate existing drugs or act as resistance reversers

To standardise the crude extracts produced by healers

To prioritise development of drugs against the pathogenic erythrocytic stages, but also look for anti-hepatocytic drugs, which would act as a useful prophylactic for the individual.

To develop Standard Operating Procudures (SOPs) for safety and toxicity testing prior to clinical trials.

To look at ways of improving herbal preparations by finding ways of standardisation and preservation.

Methodology

Clinical observation with traditional healers before extensive pharmacological tests.

In vitro and *in vivo* (in rodents infected with sporozoites) safety and toxicology tests should precede human trials

Query usefulness of WHO microtest kit for rapid assessment of herbal medicines' activity against malaria.

Need to develop methods for demonstrating synergism between different components of herbal medicines

Ethics

To integrate traditional and western doctors

Need to change policies in herbal medicines to allow clinical trials with minimal safety and toxicity data.

Clinical Studies on Herbal Treatments for Malaria

Targets for Future Research

To verify safety and efficacy
To find treatments giving a good clinical response
To find new drugs to overcome resistance
To develop standard operating procedures, not guidelines

Methods

Observation of symptoms and parasitaemia
Randomised trial of chloroquine vs. chloroquine + herbal resistance reverser.
Studies of herbal prophylactic (locally acceptable herb)
Cooperation between physicians and pharmacologists. Need to define level of safety required and design protocols.
To monitor standardisation of herbal medicines

Production and Dispensing of Herbal Antimalarials

Can herbal medicines be grown, prepared and used locally?

The correct plant species (and variety thereof) must be identified properly, and the optimal conditions for propagation and growth defined.
Forest farming should be encouraged.
Community pharmacopoeia could be compiled.
There is a need for community education to prevent overharvesting, and promote sustainable harvesting.
There is a need for proper quality control, and standardising preparations.

What are the ethical and regulatory issues?

Defining the plant as a food supplement rather than as a drug would make it easier to obtain regulatory approval.
Import policies should be developed to favour local medicines

Can larger scale production be developed for servicing national needs?

The quality o the plant extract depends on growing conditions, therefore the sites for cultivation must be carefully chosen.
Artificial pesticides and herbicides should be avoided.
The local community should be involved as plant collectors and growers, so that the community gets the main benefit.

Conservation strategies are essential – for example, India has conserved 90% of its medicinal plants by setting up small forest reserves. Nigeria has ‘community forests’.

Protection of Intellectual Property Rights (IPR)

Problems:
The Process is expensive (applications for patents, legal fees);
It is based on alien, not traditional values;
Requirements for patents (novelty, innovatiion, application / usefulness) favour the ‘single compound’ ideology, not traditional medicine.

Suggested solutions:
National Laws to regulate:
access to genetic resources
equitable benefit sharing
regulation of land tenure system, harmonised within regions

Active involvement of communities in formulation of laws and regulations
Empowering the community to participate in matters relating to regulation of access and benefit sharing (e.g. form legally recognised local associations)
Advocate regulations to take the interests of indigenous and cultural knowledge at the regional and international levels.
Develop national expertise in negotiating on IPR related issues (genetic resources).
Multidisciplinary technology transfer bodies.
Benefit sharing based on process and/or products.

Integration of Traditional and Modern Services

There is a need to:
Better inform doctors about traditional medicine, through:
data collection and documentation
report extent of utilisation by patients
continuing medical education on traditional and complementary medicine

Document safety and efficacy of traditional antimalarials
Standardise methods (optimising use), while still providing choice
Develop a herbal formulary, giving priority to herbal antimalarials
Recognise and promote the values of the holistic approach (spiritual and body healing), through a three-way collaboration between the patient, traditional healer and modern doctor
Support the establishment of traditional healers as a profession, allowing for the development of:
trust
high standards
choice between services, and mutual referral
improvement in practice through learning from past experiences
Establish policies (and laws to support them), through commitment by policy and decision makers, involving all parties concerned, and prioritising the best interests of patients.
Promote the development of a local industry to produce herbal antimalarials, repellents and vector control agents.
Prevent the extinction of endangered species, by
starting plantations to cultivate medicinal plants
creating reserves to protect wild plants
Enhance research in traditional medicine, generating useful knowledge on traditional antimalarials
Create a permissive environment for the continued use and development of traditional medicine
Develop training curricula in traditional medicine, including evidence on the value of its use for specific conditions such as malaria

Establishing Research Collaborations

Formal Collaborations should aim to:
Maximise complementarity
Transfer technology
Share knowledge and information
Define common interests, and develop research interests together
Define equitable sharing of resources and benefits

Find sources of funding together
Set strategies for solving common problems
Obtain results efficiently, saving time, energy and money
Share responsibilities

Informal collaborations
Local / regional / global networks
Consortium / Foundation

Advantages:
Increase complementarity
Easier to attract funding
Enhanced capacity building
Cost-effective way of functioning
Increased chances of success
Prevention of duplication

Requirements for establishing collaborations through RITAM:
Initiative must start locally and expand outwards
Partners must participate actively
Sustainability
Favourable atmosphere and political commitment
Institutional recognition and respect of procedures

Database development and Interactive Information sharing

It is hoped to develop:
Online network of RITAM members (consider restricted access for members only)
Online / e-mail newsletter (NB this should also be available by post so as not to exclude those without internet access)
Database of research on traditional antimalarials

RITAM Policy and Network Management

The Role of RITAM:
The foremost priority must be action and research on traditional medicine to directly combat malaria
RITAM Policy should
not interfere in national and regional policy
work to establish networks at national level
advocate strongly at the international level.
Building institutional partnerships and collaborations
Linking researchers working on traditional medicine, with those working on active principles
To promote an intellectual property policy reflecting the current high ground, in consultation with:
local models in Africa, Asia, the Americas and elsewhere
Kew Gardens model
Strathclyde model
Proposed RITAM activities
1. Generating a political response to the groundswell of support for R+D in traditional medicine:
working with ministers at SEARO, CWG
developing national and regional networks of natural medicine research institutes, to develop policy at national and regional level (eg OAU, STRC)
to work at level of Prime Ministers for multi-sectoral change.
Legal and regulatory issues:
structures should be revised
policy must have vision, mission statement, proactive participants, and funding.

2. Work with WHO re their policy and activities:
conflict between clinical trial protocols and traditional medicine guidelines
not currently promoting research on traditional medicine

3. Work with the medical establishment on:
nutritional aspects of medicinal plants
synergistic activity among multiple ingredients in herbal medicines
what constitutes evidence
traditional medicine as part of medical education
policy on drug development and role of industry.

Developing a database of existing research (ethnobotanical, pharmacological, phytochemical, toxicological, chemical, epidemiological), and disseminating information on traditional medicine – looking at weaknesses of the current system, and how messages can get into the right system.
Identifying and linking traditional and biomedical institutions interested in research partnerships.
Exchange of information via :
mailing list
website / online network
newsletter

Identification of plant species and families to be prioritised in research on traditional antimalarials; this may eventually lead to endorsement of traditional medicines when sufficient evidence becomes available.
8. Helping with funding applications for collaborative research projects. Projects wishing to use RITAM's name must be approved by the RITAM Executive Committee. This will necessitate a rapid response.

RITAM structure

Specialist groups have been formed on:
Policy, Advocacy and Funding
Preclinical studies
Clinical development
Repellants, Vector control and other preventive measures

These groups will produce protocols and recommend the levels and types or research required in their areas.
They will consist of:
A Chairman: an internationally recognised expert in the relevant field, enthusiastic, committed, and available for consultation.
A secretary: an enthusiastic, hard-working member to co-ordinate the specialist group.
Members, drawn from the RITAM network, through personal contacts, and by advertising in relevant journals. Members can be part of more than one specialist group if they wish.

2. Regional Networks to be formed, eg:
Link established with NAPRECA (Natural Products Research in East and Central Africa)
South American and Caribbean Network to be formed at the World Congress on Tropical Medicine in Cartagena, Colombia, in August 2000

National Networks will be formed in some countries, based on individual RITAM members taking the lead on this in their own countries. The first such network is being formed in India.

RITAM Management

Executive Board, consisting of the chair of each specialist group, and other members as appropriate, including heads of national/regional networks. Dr. Gerard Bodeker was elected Chair of the RITAM Executive Board for an initial three year period.
Secretariat, based at the Global Initiative for Traditional Systems (GIFTS) of Health at the University of Oxford.
Partnership with WHO

RITAM Funding

Core funding is required for:
The RITAM secretariat and administration
Website, online network and newsletter development
Database development

RITAM staff to attend key meetings

RITAM may seek funds from funders of RITAM members' projects, but must not compete with those members.
A meeting of donor agencies is hoped to take place at the spring Geneva meeting.
Agencies to be contacted for support include:
AUPELF
CIDA
DANIDA
European Community: INKO-DC
FAO
GTZ
IDRC
Institute for Tropical Medicine (Belgium)
Institut de Recherche pour le Développement (France)
International Foundation for Science, Sweden
IUCN
The Medical Research Council of Great Britain (MRC)
NIH
NORAD
Nuffield Foundation
Organisation for the Prevention of Chemical Warfare (Sweden)
The Pan American Health Organisation (PAHO)
SAREC
SIDA
The Third World Academy of Science (Triesle)
UNDP
VIH-PAL (France)
The Wellcome Trust
The World Wildlife Fund

RITAM specialist groups

Policy, Advocacy and Funding
Chair: Dr Gerard Bodeker, Chairman of the Global Initiative for Traditional Systems (GIFTS) of Health; Chair, Commonwealth Working Group on Traditional & Complementary Health Systems
Secretary: Dr Merlin Willcox

Priorities:
To implement the recommendations of the working groups made during this conference;
To generate support for meeting the objectives of RITAM, both with respect to policy development and funding, in WHO and national governments.

Responsibilities:

- Responsible for implementing the Recommendations in Section K above on RITAM Policy.
- Responsible for RITAM network management/

Targets:
To produce the first RITAM newsletter, reporting on the meeting, by the end of January 2000
To produce a special publication on the conference, incorporating plenary papers, as soon as possible
To produce articles and advertisements for relevant publications to recruit new members, as soon as possible
To obtain core funding for RITAM as soon as possible
To coordinate a meeting of funding bodies at the Genva conference in Spring 2000
To set up the online network of members, website, and initial database by June 2000
To expand Latin American and Caribbean membership, and possibly set up a regional network, at the conference in Cartagena in August 2000

Preclinical Studies

Chair: Professor Phillipe Rasoanaivo, Institut Malgache de Recherches Appliquées, Madagascar
Secretary: Dr. Maria do Céu de Madureira, Centro de Malária e outras Doenças Tropicais, Lisbon, Portugal

Research Priorities:
To develop good ethnomedical methods, to obtain good data
To standardise methods for the assessment of the efficacy of herbal antimalarials (in vitro and in vivo)
To standardise methods for the assessment of the safety of herbal antimalarials
To standardise dosage and form of administration of herbal antimalarials

Targets:
To develop a protocol aimed at the rapid assessment of a traditional antimalarial
To come up rapidly with useful herbal antimalarials

3. Clinical Development

Chair: Dr Andrew Kitua, Director General, National Institute for Medical Research, Tanzania
Secretary: Dr Jasper Ogwal-Okeng, Head, Department of Pharmacology, Makerere University, Kampala, Uganda

Research Priorities:
1. To collaborate with traditional healers and the preclinical specialist group in quantifying the safety and efficacy of traditional medicines.
2. To develop herbal antimalarial preparations that are safe and effective

Targets:
To produce, pilot, evaluate and implement standard operational procedures for clinical trials on herbal antimalarial treatments, prophylactics and resistance reversers.
To establish the safety and efficacy of herbal antimalarials
To encourage the use of effective herbal antimalarials in their traditional forms

To establish a database of effective herbal antimalarials
To establish guidelines for the use of effective herbal antimalarials (by traditional and modern practitioners)
To promote the integration of effective herbal antimalarials into primary health care
To promote training of traditional and modern practitioners in the use of effective herbal antimalarials, and enhance a two-way referral mechanism
To ensure that intellectual property rights are respected at all stages

4. Repellants and Vector Control

Chair: Dr Bart Knols, International Centre for Insect Physiology and Ecology, Nairobi, Kenya

Secretary: To be elected

Research Priorities:
To develop a database for plant-based repellents and insecticidals
To select candidate plants (considering geographical distribution)
Community sensitisation and involvement

Targets:
To develop standard operational procedures for evaluating plant-based insect repellents and insecticides
To initiate a database of plant-based insect repellents and insecticides.

Summary of outcomes

Targets for making a significant contribution to the control of malaria through the use of traditional anti-malarial methods:

Each specialist group developed targets in their areas of expertise. These have been listed on the preceding pages.

Methods for achieving these targets, including ethical guidelines.

There was not enough time to develop these fully during the conference. However, important debates were initiated in the small group discussions, and will be followed up electronically by the specialist groups.

An implementation strategy for moving this field ahead quickly and soundly, and for putting research findings into practice.

The establishment of a structure for RITAM, with definition of its roles, activities and management was a major step forward. The specialist group on "Policy, Advocacy and Funding" will continue this work.

Linkages established between researchers working on traditional antimalarials, based on agreed research priorities, and designed to avoid unnecessary replication.

The unique opportunity for personal interaction during the conference enabled the strengthening of existing contacts, and the establishment of many informal research links, including:
Information sharing between traditional healers in Uganda and Tanzania
Collaboration between researchers in Portugal and in Mozambique
Collaboration between researchers in Burkina Faso and The Democratic Republic of Congo
A project proposal for a clinical trial of a herbal extract reputed to reverse chloroquine resistance in Madagascar

Scientific support from Northern laboratories for Southern investigative teams

Strengthening the RITAM database of current knowledge on traditional herbal anti-malarials.

Many delegates generously provided copies of their published and unpublished work for incorporation into the RITAM database.

Appendix
List of Members of Specialist Groups

Policy, Advocacy and Funding

Chair: Dr Gerard Bodeker gerry.bodeker@green.ox.ac.uk
Secretary: Dr Merlin Willcox merlinwillcox@hotmail.com

Members:
Dr Omotayo O. Ebong ononiwu@port-harcourt.dowell.slb.com, uniport@alpha.linkserve.com
Dr Henning Grossmann rdtc@eoltz.com
Dr Andrew Kitua, Dr Peter Mmbuji akitua@twiga.com
Dr Tinto Halidou, Dr Maminata Traore palu.muraz@fasonet.bf
Prof Maurice Iwu iwum@bioresources.org
Dr Bart Knols bknols@icipe.org
Mr Hamisi Malebo malebo@hotmail.com
Dr Dominique Mazier mazier@ext.jussieu.fr
Mr Joseph Mthetwa arch@zamnet.zm
Prof M Nkunya nkunya@chem.udsm.ac.tz
Dr Hellen Oketch heoketch@africaonline.co.ke
Unnikrishnan Payyappallimana unnipm@hotmail.com
Professor Virgilio do Rosario cmdt@esoterica.pt
Darshan Shankar darshan@frlth.ernet.in
Prof John Shao kcmc@eoltz.com
Dr Rodwell Vongo thpaz@zamnet.zm
Mr Lawrence Yamuah L.K.Yamuah@city.ac.uk

Preclinical Studies

Chair: Prof Philippe Rasoanaivo rafita@dts.mg
Secretary: Maria do Céu do Madureira cmdt@esoterica.com

Members:
Dr Edith Ajaiyeoba, Dr OM Bolaji malaria.iba@alpha.linkserve.com
Dr Odon Mulangu Binzambal odonmulangu@yahoo.com
Dr Omotayo O. Ebong, Dr Innocent Ononiwu ononiwu@port-harcourt.dowell.slb.com, uniport@alpha.linkserve.com
Prof Nina Etkin, Dr Xiao Pei Gen etkin@hawaii.edu

Dr Tinto Halidou, Dr Maminata Traore palu.muraz@fasonet.bf
Dr Peter Houghton peter.houghton@kcl.ac.uk
Prof Maurice Iwu iwum@bioresources.org
Mr Saidu D Kapu ksgama@niprd.anpa.net.ng
Dr Caroline Lang'at, Prof SC Chabra ku-chem@swiftkenya.com, ku-chem@thorntree.com
Mr Nzira Lukwa nzira@blair.co.zw
Prof RLA Mahunnah ditm@muchs.ac.tz
Mr Hamisi Malebo malebo@hotmail.com
Dr Dominique Mazier mazier@ext.jussieu.fr
Mr Joseph Mthetwa arch@zamnet.zm
Mr Silva Fabião Mujovo mulhovo@health.uem.mz
Prof M Nkunya nkunya@chem.udsm.ac.tz
Dr JW Ogwal-Okeng pharmacology@healthnet.or.ug
Dr Hellen Oketch heoketch@africaonline.co.ke
Dr Idowu Olanrewaju idowu@infoweb.abs.net
Unnikrishnan Payyappallimana unnipm@hotmail.com
Ms Anna Plateroti africanlegacy@cs.com
Ms Maggie Murebwayire Sengabo sengabo@hotmail.com
Darshan Shankar darshan@frlth.ernet.in
Dr Rodwell Vongo thpaz@zamnet.zm
Dr Merlin Willcox merlinwillcox@hotmail.com
Mr Lawrence Yamuah L.K.Yamuah@city.ac.uk

Clinical Development

Chair: Dr Andrew Kitua akitua@twiga.com
Secretary: Dr JW Ogwal-Okeng pharmacology@healthnet.or.ug

Members:
Dr Odon Mulangu Binzambal odonmulangu@yahoo.com
Dr PT Doe, Prof Henning Grossmann rdtc@eoltz.com
Mr Eliphaz Kaita nyine@hotmail.com
Mr Saidu D Kapu ksgama@niprd.anpa.net.ng
Dr Caroline Lang'at ku-chem@swiftkenya.com, ku-chem@thorntree.com
Mr Nzira Lukwa nzira@blair.co.zw
Maria do Céu do Madureira cmdt@esoterica.com
Prof RLA Mahunnah ditm@muchs.ac.tz
Mr Hamisi Malebo malebo@hotmail.com

Dr Dominique Mazier mazier@ext.jussieu.fr
Mr Joseph Mthetwa arch@zamnet.zm
Prof M Nkunya nkunya@chem.udsm.ac.tz
Dr JW Ogwal-Okeng pharmacology@healthnet.or.ug
Dr Hellen Oketch heoketch@africaonline.co.ke
Dr Idowu Olanrewaju idowu@infoweb.abs.net
Ms Maggie Murebwayire Sengabo sengabo@hotmail.com
Prof John Shao kcmc@eoltz.com
Dr Rodwell Vongo thpaz@zamnet.zm
Dr Merlin Willcox merlinwillcox@hotmail.com

Insect Repellance and Vector Control

Chair: Dr Bart Knols bknols@icipe.org
Secretary: *to be elected*

Members:
Dr Edith Ajaiyeoba malaria.iba@alpha.linkserve.com
Prof Christopher Curtis chris.curtis@lshtm.ac.uk
Prof Nina Etkin etkin@hawaii.edu
Prof William Isharaza must@healthnet.or.ug
Dr Caroline Lang'at ku-chem@swiftkenya.com, ku-chem@thorntree.com
Mr Nzira Lukwa nzira@blair.co.zw
Prof RLA Mahunnah ditm@muchs.ac.tz
Mr Hamisi Malebo malebo@hotmail.com
Mr Joseph Mthetwa arch@zamnet.zm
Prof M Nkunya nkunya@chem.udsm.ac.tz
Unnikrishnan Payyappallimana unnipm@hotmail.com
Ms Anna Plateroti africanlegacy@cs.com
Dr KD Sharma ccras@del6.vsnl.net.in
Prof Paulo Vieira paulo@ufscar.bz