

MALARIA TREATMENT/ PREVENTION - REVISITED

Malaria Rate at 95 Per Cent

Tom Magumba, Kampala

April 21, 2007

Daily Monitor, Uganda

About 95 percent of the country has perennial malaria transmission and only 5 percent experiences seasonal transmission, ministry of health statistics on the malaria scourge have shown.

Perennial transmissions emerge when a disease becomes persistent in an area recurrently for a long period of time.

The statistics show that between 30-50 per cent of all outpatients in hospitals, health centres and local clinics report cases of malaria cases. Of these, only 20 per cent get admitted and while between 9-14 per cent die of the disease.

The statistics indicate that one in every two children below 5 years is admitted due to malaria and the disease claims 350 children everyday. Children who suffer acute transmissions die within a period of 24 hours. Many families spend nearly 25 per cent of household income on treating malaria.

Besides causing the deaths of between 70, 000 and

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Nakato Lewis

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The African Traditional Herbal Research Clinic located in Bukoto, Uganda is a modern clinic facility created to establish a model space whereby indigenous herbal practitioners and healers can upgrade and update their skills through training and certification and respond to common diseases using African healing methods and traditions in a modern clinical environment.

Traditional healers are the major health labor resource in Africa as a whole. In Uganda, indigenous traditional healers are the only source of health services for the majority of the population. An estimated 80% of the population receives its health education and health care from practitioners of traditional medicine. They are knowledgeable of the culture, the local languages and local traditions. Our purpose is to raise public awareness and understanding on the value of African traditional herbal medicine and other healing practices in today's world.

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110,000 people annually, malaria is one of the main causes of poverty in Uganda. Speaking at a press Conference to launch the malaria week on Tuesday, State Minister for Health Richard Nduhuura said people should view malaria as more vicious than war because it claims more life daily than war.

Uganda will join the rest of Africa April 25 to commemorate the African Malaria Day under the theme, Free Africa from Malaria now-Roll back Malaria.

The national celebrations are scheduled for Sembabule district. Religious leaders have joined in the malaria sensitization campaign.

“We are embarking on a combative approach to constantly remind the public of the danger malaria causes” Dr. Nduhuura said.



110,000 Children Die of Malaria Every Year

By Isaiah Kitimbo, Kaliro

**April 25, 2007
Daily Monitor**

The Minister of Health has revealed that between 70,000 and 110,000 children under five years in Uganda die annually due to malaria alone.

Dr. Stephen Malinga said malaria is the number one killer disease in Uganda and accounts for more than a quarter of all causes of death among children less than five years.

“In addition, Malaria leads to very poor pregnancy outcomes like abortion, premature delivery and very weak babies,” he said. The Minister was on April 23 speaking at Kaliro District headquarter where he officiated at the launch of Malaria No More free mosquito nets distribution campaign.

The Ministry of Health is running a campaign to distribute 580,000 long lasting Insecticide treated mosquito Nets in 26 districts in Uganda plagued by malaria. The campaign is aim at achieving at least 85% coverage around the country.



Uganda Gets 2 Million Doses of Coartem

By Peter Nyanzi, Kampala

**March 27, 2007
Daily Monitor**

A consignment of at least two million doses of the anti-malaria drug Coartem has arrived in the country for free distribution to health centres countrywide.

Top officials of drug manufacturers Novartis, who are in the country to attend a malaria workshop, yesterday said the drugs would be officially handed over to the Ministry of Health this week.

Cost Reduction

The consignment contains 20 million tablets procured at a price reduction of 36 per cent, which is equivalent to a savings of \$9 million (about Shs16.2 billion). The officials said other African countries have used funds saved due to the price reduction to roll out their malaria treatment programmes.

Coartem is now the official drug recommended by the World Health Organisation (WHO) for the effective treatment of malaria in countries like Uganda where resistance to conventional anti-malaria drugs is high.

Over 300 Ugandans, most of them children under five years, die from malaria everyday with annual economic loses estimated at \$690 million.

Effective Drug

Novartis Vice President for Communications said Coartem is currently the only artemisinin-based combination therapy pre-qualified by the WHO and procured with grants from the Global Fund to fight Aids, Tuberculosis and Malaria.

The drug, to be distributed at no cost to patients in public health facilities, is a highly effective and well-tolerated anti-malaria that achieves cure rates of up to 95 per cent.

Speaking to reporters ahead of the workshop, which will bring together health experts from 14 African countries, and Europe said the US, Prof.

Bob Snow, the head of the Malaria Public Health and Epidemiology Group, said “Uganda has been provided with enough funds by the Global Fund to provide Coartem free of charge in public health facilities country-wide.”

Health Minister Stephen Malinga is expected to open the workshop, which will among other things address the challenge of improving accessibility and the administration

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AFRIKAN SPIRITUALITY

The Loss of African Traditional Religion In Contemporary Africa

by Rev. Peter E. Adotey Addo

The desecration of Africa in the past by the Western European powers seriously and adversely affected the traditional cultures of the indigenous African people to the extent that many traditional beliefs, social values, customs, and rituals were either totally destroyed or ignored. In most cases they were considered to be nothing more than pagan values and superstitions that played no part in traditional African culture. Culture after all is the way of life developed by people as they cope with survival. True culture then must include the traditional beliefs and spiritualism. The introduction of European Christianity and values separated the indigenous Africans from their traditional ancient spiritual roots as well as their traditional identity as a spiritual people. This short paper is to introduce the reader to an introduction to Traditional African Religion.

Traditional African religion is centered on the existence of one Supreme High God. However, the Europeans who spread Christianity in Africa never understood or properly appreciated the African's own conception of the Great Creator. They saw no similarity between the God they preached and the African's own belief in the One Supreme God and creator who was, king, Omnipotent, Omniscient, the Great Judge, Compassionate, Holy and Invisible, Immortal and Transcendent. The traditional African belief is that the Great One brought the divinities into being. He therefore is the maker and everything in heaven and on earth owes their origin to Him alone. He is the Great king above all Kings and can not be compared in majesty. He is above all majesties and divinities. He dwells everywhere. Thus He is omnipotent because He is able to do all things and nothing can be done nor created apart from Him. He is behind all achievements. He alone can speak and accomplish his words. Therefore there is no room for failure. He is Absolute, all wise Omniscient, all seeing, and all Knowing. He knows all things and so no secrets are hid from Him. If there is rain it is God who wills it and if the fish do not run it is by His will.

This Great Creator is the final Judge of all things, but he is able to be compassionate and merciful. He can look kindly and most mercifully on the suffering of men and women and is able to smooth the rough roads through his divine priests and the spirits of the ancestors. The God of the African Traditional Religion is also a Holy God both ritually and ethically. He is complete and absolute since He is never involved in any wrong or immorality. Traditionally Africans believe that since God's holiness blinds He therefore can not be approached by mere mortals. He is a spirit and thus must be approached by spirits invisible to mere humans.

How is this God to be approached then? He is to be approached

Managing Editor: Nakato Lewis

PUBLISHER: KIWANUKA LEWIS

Published monthly and freely by BHSN for the African Traditional Herbal Research Clinic



The traditional shrine as a symbol of our cultural history

directly and indirectly only through his chosen priests. Libations or prayers are the only supplications acceptable. And they are made by his chosen priests in traditional rituals and ceremonies at appropriate times and places. The priest becomes the keeper of the welfare of the people and subsequently is entrusted with the sacred rituals of worship. The African therefore does not need to prove the existence of God to anyone. God is self existing and needs no proof. His existence is self-evident and even children are taught from birth that the Great One exists. There is a Ga Language proverb that says, "No one points out the Great One to a child."

This God then is given regular and direct worship at regular intervals and the calendar is kept by dedicated priests. However, there is continuous indirect worship on a daily basis through the divinities and ancestors at all times during the day by each family and individual. The ritual altars in the African villages are the indigenous peoples' way of reaching out and praising the Great Creator. To the Africans they are the boundary between heaven and earth, between life and death, between the ordinary and the world of the spirit. The constant pouring of drink, food and sacrificial animal blood makes them sacred and no one would dare abuse them. Some altars are simple; especially the ones in homes, but some communities and villages have communal altars for the entire village as vehicles for channeling the positive forces from the Great one and the ancestors to the whole community.

Through oral traditions these cultural values are kept and transmitted from generation to generation. In summary: In the private and public life of the African, religious rites, beliefs, and rituals are considered an integral part of life. Life then is never complete unless it is seen always in its entirety. Religious beliefs are found in everyday life and no distinction is made between the sacred and the secular. The sacred and the secular are merged in the total persona of the individual African. Life is not divided into compartments or divisions. Thus there are no special times for worship, for everyday and every hour is worship time. There are no creeds written down because through the traditions of the Elders all creeds and functions are carried in the individual's heart. Each individual by his very nature and life style is a living creed from the time one rises until one retires at night. An understanding of the basic nature of the African religious tradition surely illuminates the meaning of spirituality in contemporary Africa.



FEATURED ARTICLES

Government to reduce all Deaths due to Malaria by Half by 2010

Dr. Nduhura – State Minister for Health

April 25, 2007

Daily Monitor

The Malaria Week marks seven days of intensive highlights of current malaria control activities.

During the week, the Public is updated on what is happening and where we are going as far as the fight against malaria is concerned.

Today, 25 April, 2007 marks the end of the “Malaria Week” that was officially started on 17th April 2007 with Media update and Press Briefing at the Ministry of Health headquarters.

It is therefore our responsibility to build on what has taken place during the week to achieve the envisaged objectives for observing Africa Malaria Day 2007.

During the malaria week, a Press Briefing was carried out to inform the country through the media that the Government of Uganda is moving in a strategic direction towards achieving our set objectives of reducing by a half of all deaths due to malaria by 2010.

In line with the Abuja targets, the malaria decade (2001-2010) has seen Uganda strengthen through the Ministry of Health four main strategies to control and prevent malaria.

The Home Based Management of Fevers Strategy

Implementation of the Home Based Management of Fevers (HBMF) strategy now covers the whole Country. Through this approach, medicines have been availed to the community to enable children aged less than 5 years old access treatment for malaria within 24 hours of recognition of symptoms.

To-date, at least two Community-based Medicine Distributors (CMDs) have been trained in all Villages in Uganda. They have been trained to administer malaria treatment using a pre-packaged dose for children aged between 4 months – 2 years and 2-5 years. This intervention has saved lives of many children that in some district reports indicate that over 80 per cent of children under five years are able to

access effective treatment for malaria within 24 hours.

This strategy has been quite effective for example; in Kumi District, reports indicate that the children’s ward is almost closed and the health workers have more time to attend to other ailments other than malaria.

The proportion of children receiving early treatment following the introduction HBMF increased from a baseline of 54 per cent-62 per cent among children of 2-23 months, and from 56 per cent-65 per cent among children aged 24-59 months.

There are indications that HBMF helped to reduce severe anemia among children aged 6-12 months by 16 percent, 13-18 months by 25 per cent, and 19-24 months by 36 per cent.

The problem of long distances to the nearest health facility is being tackled by bringing services to the people. Every Parish is earmarked to have a functional Health Centre II (HCII). About 151 Health Centre IV’s at County levels, have been equipped to offset the burden of referral for emergency cases. By end of 2003, the number of health facilities had increased to 2,930 country-wide hence increasing accessibility to health services within a distance of 5 km from 49 per cent in 1986 to 72 per cent.

There has also been increased Public-Private Partnerships in health care delivery. For instance, the new medicines introduced to treat malaria with a combination of Artemesinin Therapies (ACTs), Public Health Facilities and Private not for Profit Clinics have been provided with pre-packaged medicines to treat patients free of charge.

Furthermore, the government is supporting both Government and NGO Health Facilities to provide malaria treatment by providing conditional Primary Health Care grants to each health care facility.

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Prevention of Malaria in Pregnancy (MIP)

Intermittent Preventive Treatment of Malaria in Pregnancy (IPT) is another strategy to control malaria. Mothers are encouraged to take two doses of SP (Fansidar) during the 4th and 7th Month of Pregnancy in Antenatal Clinics. This is meant to reduce frequency of abortions due to malaria, anaemia and number of children born underweight as a result of malaria. The proportion of pregnant women receiving IPT with SP increased from 20 per cent in 2002/03 to 30 per cent in 2003/04.

Promotion of Insecticide Treated Nets (ITNs)

Promotion of Insecticide Treated Nets (ITN's) is high on government priority list. Through Public-Private Partnerships, we have just concluded the distribution of free nets to children below five years and pregnant women. There is increased distribution of Long Lasting Nets to vulnerable groups country-wide. One of the main activities during the Malaria Week was the launch of "Malaria No More Nets" that are to be distributed in 26 Districts. As a starter, Kaliro District received its share of freely distributed nets on 23 April, 2007 to coincide with the Africa Malaria Week.

Indoor Residual Spraying (IRS)

My Ministry is also putting emphasis on vector control through Indoor Residual Spraying (IRS). We are considering the re-introduction and use of DDT for indoor residual spraying for malaria vector control in Uganda after being cleared by WHO. As of now two rounds of Indoor Residual Spraying (IRS) using Icon have been conducted in Kabale District. The analysis of data from health facilities indicates a great breakthrough in reducing malaria among the people that would be reporting for treatment.

Kanungu District has just concluded the Indoor Residual Spraying (IRS) exercise and in Kitgum District, IRS is taking place in IDP Camps right now. In all these Districts, the Leaders together with our Partners through the Presidential Malaria Initiative have done a great job. It is this Leadership and Partnership that our theme for this year is emphasizing to Roll Back Malaria for Positive Results.

The struggle to Uganda of malaria cannot be over-emphasized. Everybody is mandated to contribute from their point of advantage. As we observe the 7th Africa Malaria Day, remember:

1. Seek malaria treatment within 24 hours of symptoms' recognition
2. Consistently sleep under a treated Mosquito

net

3. Clean your environment to avoid and reduce breeding sites for mosquitoes
4. Close your windows and doors early to avoid mosquitoes entering your house
5. Let your house be sprayed with approved insecticides

LET'S FIGHT AND KILL MOSQUITOES NOW.



Continued from page 2 – Uganda Gets 2 Million Doses of Coartem

of safe and effective medicines in African countries.

The officials said Novartis has formed a partnership with East African countries to increase agricultural cultivation of Artemisia, the plant from which Artemisinin, the active ingredient in Coartem is made.



New Hope in Malaria War

Dr. Salim Abdulla

April 23, 2007

Daily Monitor

Malaria one of Africa's oldest and gravest threats, may soon meet its match: a vaccine. A malaria vaccine has been considered among science's greatest challenges.

But thanks to a remarkable discovery and a novel partnership, we could have an effective vaccine in just a few year' time. Let's make this Africa Malaria Day (April 25) by getting ready to adopt the vaccine.

The world's most advanced malaria vaccine, RTS,S made history in 2004 when results from a trial of 2,000 young children in Mozambique showed that a vaccine could reduce severe malaria by 49%.

Since severe malaria kills up to a million children a year and sickens millions more, even partial protection of this kind could save millions of lives.

An unusual partnership – linking a vaccine manufacturer, a foundation and African scientists – is working hard to make this vaccine available. Right now RTS,s is in late Phase II trials in Gabon, Ghana, Kenya, Mozambique and Tanzania.

Next year, RTS,s will begin the final stage in the clinical development process. If these tests continue to be successful the vaccine could be available as soon as 2012.

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FEATURED ARTICLES

Seeking to Reduce the Malaria Burden

Patience Atuhaire

Daily Monitor

January 31, 2007

Malaria is widely spread throughout the country with 90% of the total population in highly endemic, primarily rural areas. It accounts for 25% of all outpatient attendances in Uganda and 15.4% discounted life years lost due to death from malaria as well as 12.9 workdays lost due to absenteeism. The overall cost of malaria in Uganda is estimated at nearly 1% of the Gross National Product. The National Malaria Control Programme outlines insecticide treated nets (ITNs) as a key strategy for malaria control but their access and availability to the population is still limited.

NetMark, therefore, is an organization with a time-limited investment by USAID whose goal is to reduce the burden of malaria in sub-Saharan Africa by increasing the commercial supply of an public demand for Insecticide Treated Nets (ITNs).

This is done through partnerships with commercial companies and national malaria control programs, and national scale public education and promotional efforts. The organization launched in Uganda in 2003 and has contributed to several successes in the fight against malaria in the following ways:

- The number of nets distributed in Uganda jumped from 280,295 to about 2.5 million in 2004.
- Ninety-three percent of net distribution in Uganda in 2005 came from the private sector.
- There are now eight ITN distributors in Uganda compared to only one in 2002.
- The number of outlets selling nets increased from only five in Kampala to 1,164 throughout the country.
- The average ITN price dropped to \$5.50 from \$8.00 in 2002.
- The commercial sector's investment in the ITN business more than quadrupled from \$445,694 in 2003 to nearly \$1.9 million by the end of 2005, with businesses investing \$2.55 for every dollar USAID spent in fiscal year 2005.

Through Netmarks' work, commercial sales of ITNs and untreated nets topped 2.2 million and 2.5 million, respectively, for a total of nearly 5 million nets between 2003 and March 2006. Netmark's goal in Uganda is to battle malaria by creating a sustainable, national market for ITNs that makes them accessible and affordable for all.

To do this, NetMark developed the Full Market Impact (FMI) approach to establish a sustainable commercial market that complements donor-led ITN efforts by reaching people who can buy ITNs. This frees up resources that can be used to reach more people who cannot pay for nets by:

- Expanding public knowledge and use of ITNs (particularly long lasting ITNs) through a multimedia campaign to create demand.
- Providing support to manufacturers and distributors to ensure consistent supply of stock.
- Providing support to distributors to make their products more widely available through retail outlets throughout the country, in both urban and rural areas.
- Encouraging participation of more international manufacturers and local distributors for great competition among brands. This has ultimately lowered prices and made the products available to all socio-demographic groups, especially those more vulnerable to malaria.
- Evaluating progress and measuring impact through ongoing retail audits and periodic household surveys.

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Netmark's commercial partners now plan to be in the ITN and LLIN market for the long term, which means ITNs will remain available long after donor funds shift to other priorities over time.

Presently there is no local manufacturer of nets in Uganda although there have been some discussion to start a small production unit. Net ownership varies according to rural or urban areas and also according to project sites. Household coverage is estimated at less than 5%, although some areas have higher coverage. Approximately 45% of the population spends money on other anti-mosquito measures, such as coils and aerosols.

In order for the organization to come up with practical strategies, they have carried out research both in rural and urban areas to get findings on knowledge about malaria as well as the general access and use of nets all over the country. They found out that though the population generally has knowledge about the pandemic and its control methods, most of them did not consider the disease a serious one. Mosquitoes were perceived as a major problem, and almost everyone, even in rural areas, used some kind of commercial mosquito control product (e.g., coils or aerosols).

Respondents had relatively negative perceptions of all mosquito control methods, including nets, although more respondents had positive things to say about nets than they did about other products. Some respondents however, like nets because they protect against mosquitoes/other insects, protect against illness/malaria, and are "long-lasting." Respondents (net owners and non-owners) viewed net owners as "knowledgeable" and net owners saw themselves as economically savvy, "health conscious" and "caring." Nets were also viewed as a luxury item, reserved for the rich and educated.

On the other hand, some respondents perceived nets as hot, restrictive, expensive, and unable to protect the entire family, ineffective, and inconvenient to get in and out of or to hang. Some respondents said nets were difficult to use with children (e.g., children could become trapped or suffocate).

They were also hard to keep under the net as they might damage the net.

The main reason non-owners gave for lack of net ownership was cost, but a few said nets were either unavailable or unnecessary when other insect control products were used.



Mosquito Nets Cut Birth Problems

Agencies, London

Daily Monitor
April 26, 2007

Pregnant women in Africa can reduce their risk of miscarriage or stillbirth by up to a third by sleeping under insecticide-treated bed nets.

The UK scientific research is likely to bolster calls for treated mosquito nets to be made more widely available to pregnant women and children in Africa.

Malaria is a preventable disease that kills more than 1M people a year, 90% of them in Africa – mostly children.

A treated net costs about \$4.00 – simply too much for many African families.

This latest study drew on the results of four earlier trials in Kenya and Ghana involving more than 6,000 women.

The use of mosquito nets, treated with insecticide, it suggests, makes a big difference to the health of pregnant women and their newborn babies.

When they were used, the number of miscarriages and stillbirths fell by almost a third. The number of babies born with a low weight also fell – by about a quarter.

Earlier studies have focused on the health impact on young children – but this is thought to be one of the first to show evidence of the impact on pregnant women.



President Bush Donates 500,000 Mosquito Nets

Grace Natabaalo & Kakaire A. Kirunda

Daily Monitor
April 27, 2007

As efforts to combat Malaria in Uganda continue, the US President has announced new anti-malaria plans for Uganda.

Speaking on Malaria Awareness Day on April 25 at the White House in Washington, President George Bush unveiled the latest measures in his government's five-year plan to combat malaria in Africa, which included distribution of 500,000 insecticide-laced bed nets in Uganda.

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FEATURED ARTICLES

How Malaria Impoverishes Uganda

Jane Nafula
Daily Monitor
May 9, 2007

Until recently malaria was only known as the leading killer disease in Uganda and sub-Saharan Africa. But studies from the Ministry of Health indicate the disease is also the leading cause of poverty.

This is because it has serious impact on the economic, social and cultural aspects of society.

A study carried out in 2002 in Uganda identified ill health as the most frequent cause of poverty. The study showed that a poor malaria-stricken family might spend up to 25% of its income on malaria treatment and prevention. There are also direct costs in form of treatment, treatment seeking and funeral expenses.

Industry

Malaria leads to loss of household incomes through absenteeism from work. It is estimated that workers suffering from a malaria bout can be incapacitated for five to 20 days. A study showed that a high percentage of employees were absent from work due to malaria.

In Apac district 54 per cent of workers cited malaria as the reason for absenteeism, in Kampala 33 per cent and 50 per cent in Rukungiri. On the average out of seven working days, between four to nine days were lost per malaria episode. This means that recovery would take longer than a week in some workers.

During such a period some companies pay for workers' treatment while the employees are not productive at the moment. Company production is affected leading to lower profit levels and higher costs of production. And this occurs several times a year in many families. This affects the national budgets because the lower the output, the lower the taxes paid to the government. As such, the government cannot meet the obligation of providing services such as in health, thus creating a vicious cycle of poverty.

Apart from direct effects of malaria to industries is

the additional low demand level. A sick and perennially poor population has low consumption levels. Because of low household incomes, such a population can hardly afford basic necessities in life. This makes it difficult for such a country to attract investment because of the small market available. The opportunities that go with investment (jobs, taxes, social infrastructure and a higher standard of living) are lost.

In industry and agricultural enterprises like tea, sugarcane, coffee, rice, tobacco estates, malaria accounts for the greatest number of man-hours lost, which maybe up to or more than 50% of all the man-hours lost. This affects production and revenue for the industry, families and the nation as well.

Malaria also leads to loss of investment funds thus affecting the economy. It is known that investors are not much interested in investing in countries where most of their profits will be eroded through absenteeism from work due to malaria and on treatment of malaria infected workforce.

Agriculture, Education

This means there are high chances that children in such families will not be able to attend school. This affects performance. It is estimated that in endemic areas like Uganda, malaria may impair as much as 60% of the schoolchildren's learning ability.

Children from such families will perform poorly, go to poor schools and have fewer or no opportunities to higher education. This makes them miss out on good employment opportunities and they end up doing low skilled labour intensive jobs.

In case the dead person is the breadwinner for the family, children will automatically drop out of school and are condemned to living a wretched life.

In agriculture, the period parents (mostly mothers) spend nursing sick children is lost whereas it could be used to grow crops for food and income.

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Continued from page 8 – How Malaria Improverishes Uganda

Hence, an episode of malaria affects health, education, agricultural activity and food security. All these build up to increasing poverty in homes.

Statistics from the Ministry indicate that malaria afflicted families on the average can harvest only 40% of the crops.

It must be remembered that Uganda is basically an agricultural-dependent country. About 90 per cent of the population is engaged in agriculture. The country earns more from agriculture than from any sector. When this mainstay of the economy suffers, the very fabric of the country is threatened.

Malaria is transmitted by the anopheles mosquito and it spreads faster during the rainy season. Unfortunately this is the main farming season, when families can least afford to be sick. Hence malaria interferes with farm activities increasing poverty in homes.

Social-cultural Impact

Malaria has also caused serious socio-cultural consequences in families.

Frequent illness or deaths of children due to malaria can lead to misunderstandings within families (especially polygamous families) and between families.

Those with sickly children or children dying often are likely to accuse others whose children do not fall sick or die often of bewitching their children, which may result into a fight or hatred.

Families with a lot of problems (frequent illnesses, poverty, low education levels and inability to fend for children) are usually unstable.

In most parts of rural Uganda (if not all) it is conceived insensitive if a person continues with farm work like digging. Until a person is buried no digging is permitted. Yet during this period the bereaved families provide food for mourners although some neighbours assist. This increases poverty and food insecurity as President Yoweri Museveni noted. Whereas food is being consumed, no production is taking place thus creating not only food deficit but increasing poverty since agriculture is the income earner in rural Uganda.

Cost of Treatment

Dr. John Bosco Rwakimri, the National Malaria Control Programme manager in the Ministry of Health says Uganda loses at least \$690 million to malaria every year. This is in terms of treatment, prevention, time lost due to sickness not counting burial expenses.

According to the Ministry of Health direct cost of treatment for an episode of malaria is estimated at Shs8,000 (\$4.10) in urban settings and Shs3,300 (\$1.80) in rural populations.

Assuming that 50% of the 5,200,000 children under five years old currently in Uganda suffer an average of six episodes annually and are treated in health facilities at 2,000/= per episode, then Ugandans are spending $(50/100 \times 5,200,000 \times 6 \times 2,000) = 31,200,000,000/=$ annually for malaria treatment of the under fives only! (US\$20 million, ed. note)

This does not include other expenses incurred, such as transport while seeking treatment, treatment for adults, and children over five years old, treatment of adults and children admitted in health facilities, the higher costs of treating the under 5s and other family members in private clinics and urban areas, chloroquine failures which require more expensive drugs, funeral expenses for children and adults who die, aerosol sprays, mosquito coils, mosquito nets and other mosquito control expenses.

It therefore follows that controlling malaria is not only a health concern but a socio-economic and cultural obligation for all sectors. It is one way of improving human development and fighting poverty in Uganda.

Statistics used are from the Ministry of Health obtained from www.health.go.ug. However, some adjustments have been made to reflect the growth in population and the currency exchange rate, although the figure for treatment of malaria has remained at Shs 2,000 as per study.



Continued from page 5 – New Hope in Malaria War

Africans are at the forefront of testing this vaccine. As one of the principal investigators of one of the clinical trial sites, I have witnessed the positive impact of the trial on African scientists and communities.

African scientists, working closely with the other partners, participate in the design of the clinical trial protocols, implement the protocols, and manage the day-to-day work of the trial. The investigators build strong working relationships with local communities enrolled in the trials. We liaise with the Ministries of Health and local institution to update them. The trials have also improved medical care provided.

The writer is the principal investigator of one of the RTS,s trial sites, and the chairman of the group that coordinates all the clinical trials.



Four New Malaria Drugs Invented

Jane Nafula

Daily Monitor
May 7, 2007

After a seven-year search for the best drug that can cure malaria, the Medicines for Malaria Venture, (MMV), a non-profit making organisation has finally developed four new highly effective anti-malarial drugs.

The NGO with headquarters in Geneva, Switzerland is dedicated to reducing the burden of malaria in disease-endemic countries by discovering, developing and delivering new affordable anti-malarials through effective public-private partnerships.

MMV's Vice President Public Affairs Anna Wang told journalists in Kampala on Saturday that the four drugs are in the pipeline and would be ready within the next two years.

"Clinical trials started three years ago and we are now in the last stage of developing the new and affordable drugs to ensure universal access. Almost half of people who suffer from malaria don't have access to drugs because they are expensive," Ms Wang said.

She said by mid next year, one of the drugs, pediatric coartem, a formulation for children would be ready. Children under five years and women are vulnerable to malaria because of their low immunity levels.

Ms. Wang said the other three drugs are Artemisinin-based Combination Therapy with different formulations which include, Pyramax, DHA-PIQ (Dihydroartemisinin/Piper-aquine), and LapDap combined with artesunate (CDA).

The NGO will today hold a stakeholders' meeting at Speke Resort Munyonyo. President Yoweri Museveni is expected to officiate at the opening of the meeting.

According to Ms Wang, a patient is supposed to swallow one table for three days and afterwards he or she will be relieved of the disease.

The drugs will be supplied in endemic countries including Uganda. This will be done in collaboration with the Ministries of Health, researchers and other stakeholders both in private and public sectors.

MMV's goal will register at least four new anti-malarials before 2010 and maintain a sustainable pipeline of anti-malarials to meet the needs of over 3.2 billion people at risk from this deadly disease.

Last year alone, the organization injected about \$50 million in the development of the drugs. Donors mainly fund its activities. The new treatment could be an important development in the fight against malaria, which is escalating mainly due to multi-drug resistance including the most frequently use and affordable treatments for malaria, such chloroquine.

The available Artemisinin-based Combination Therapy (ACTs) are relatively expensive, currently costing approximately US\$1.20-3.50 (SHS 8,000) per adult dose.

Globally, malaria kills between one and two million people annually.

According to Unicef, malaria infects 350 to 500 million people each year, kills a child somewhere in the world every 30 seconds, accounts for about one in five of all childhood deaths, and is most prevalent in Africa.



Study Suggests New Malaria Drug

Kakaire A. Kirunda

Daily Monitor
May 28, 2007

A new study suggests there is a better alternative to the current first-line drugs for the treatment of uncomplicated malaria in the country.

The study suggests the DP (dihydroartemisinin-piperaquine drug combination appears to be a good alternative to AL (artemether-lumefantrine) as first-line treatment of uncomplicated malaria. DP is popularly known by the brand name Duo Cotecxin while AL is what is branded as Coartem.

The study was carried out in Apac, a district with high malaria transmission intensity. Its findings were published in the PLoS Clinical Trials Journal of May 18. Researchers from Makerere University Medical School and the Institute of Public Health as well as their counterparts from the UK, USA and Thailand carried out the study.

"Patients treated with DP had a lower risk of recurrent parasitemia due to non-falciparum species, development of gametocytemia, and higher mean increase in haemoglobin compared to patients treated with AL," says the study. "Both drugs were well tolerated; serious adverse events were uncommon and unrelated to study drugs."

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Continued from page 7 – President Bush donates 500,000 Mosquito Nets

“We are committed to helping our African partners build on these efforts, and so I want to share with you two new endeavours: First, America will expand our cooperation with the government of Uganda, and the non-profit group, Malaria No More, to distribute more than a half-a-million bed nets in Uganda,” President Bush said. Malaria is one of the most deadly and prevalent diseases in Sub-Saharan Africa and also the most preventable and treatable. More than 1 million people die of malaria each year, 75 percent of them African children, and more than 300 million people worldwide fall ill from malaria annually.

According to the 2006 Malaria Country Action Plan for Uganda, household ownership of bed nets is only 25% and that only 15% of children under five are sleeping under a treated bed net. The President’s Malaria Initiative established a goal that 85% of children under five and 85% of all pregnant women will have slept under a bed net by 2010.

“Working in partnership with the President’s Malaria Initiative and Malaria No More will produce a total of 530,000 bed nets for Uganda together,” according to the organisation’s website.



Ministry, PMI in Joint Campaign against Malaria

Isaiah Kitimbo, Kaliro

**Daily Monitor
April 30, 2007**

The President’s Malaria Initiative, Malaria No More, and the Ministry of Health have started a joint campaign to distribute 580,000 insecticide-treated mosquito nets.

The nets are to be distributed to pregnant women, children under five and other vulnerable people in 26 districts.

The group last week launched the free mosquito net distribution campaign at Kaliro district headquarters.

The ceremony was officiated by the Health Minister Stephen Mallinga.

Malaria is the leading cause of death in Uganda.

Paid for by PMI and Malaria No More, the nets will be distributed alongside 1.8 million others from the Global Fund.

“This is an example of how collaboration can help us with our mission: saving lives together and working together towards our common goal of stopping malaria” PMI Coordinator Tim Ziemer said in a press release.

“It will only be through working hand in hand with other organizations that we achieve our goal given to us by President Bush of stopping malaria and protecting those who are most susceptible and in most need.”

President Bush launched the PMI in 2005 and challenge the rest of the world to match the \$1.2 billion pledge, to reduce malaria deaths by 50 per cent in 15 African countries.

Mr. Bush urged that the PMI be a collaborative US government effort led by the US Agency for International Development (USAID).



Continued from page 10 – Study Suggests New Malaria Drug

According to the researchers, Duo Cotecxin was superior to Coartem for reducing the risk of recurrent parasitemia and gametocytemia, and provided improved hemoglobin recovery.

Parasitemia is the quantitative content of parasites in the blood while gametocytes refer to one of the stages in the life cycle of the malaria parasite. Gametocytemia therefore means the parasites presence in the blood.

The study findings show that patients treated with Duo Cotecxin had a significantly lower risk of recurrent parasitemia in both falciparum and non-falciparum infections.

Both Duo Cotecxin and Coartem are fixed dose co-formulated Artemisinin-based combination therapies (ACTs). ACTs are a newer group of anti-malarials that produce fast response in patients, are active against multi-drug-resistant P. falciparum malaria, are well tolerated by patients and have the potential to reduce malaria transmission by decreasing gametocyte carriage.

However, researchers contend that Duo Cotecxin has a simpler, once daily dosing schedule compared to Coartem, which is provided twice daily, ideally with a fatty meal.

Despite the excellent initial parasite clearance by the two drugs as indicated in the study and the provision of insecticide treated nets at enrollment, the researchers observed that approximately half of all participants experienced recurrent malaria within 42 days.

The researchers said the finding emphasizes the need for more aggressive approaches to malaria control in areas with very high malaria transmission.

To reduce new malaria infections, they called a sustained

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combination of several malaria control measures, including treatment with ACTs, provision of ITNs (with education about their use), and potential use of indoor residual spraying as has been the case in South Africa.

This, they argued, will likely decrease the malaria burden and reduce drug pressure due to repeated use of ACTs.

Monitoring of the impact of these combined control measures will be critical to assess success in malaria control in Uganda, they further observed.

The study results could have important policy implications, according to the researchers, who observed children aged 6 months to 10 years with uncomplicated falciparum malaria in the study, ‘Artemether-Lumefantrine versus Dihydroartemisinin-Piperaquine for Treatment of Malaria: A Randomized Trial.’



Shs3.7b Malaria, ARV Drugs Rot in NMS

Agness Nandutu

**July 12, 2007
Daily Monitor**

As thousands of Ugandans die everyday of HIV/AIDS and malaria, drugs worth about Shs4 billion are rotting in the National Medical Stores Entebbe.

While on their fact finding tour of NMS in Entebbe yesterday, MPs on the Social Services Committee led by James Kubeketerya (Bunya East) were shocked to find eight containers of 2-feet, full of expired drugs yet Ugandans are perishing in hospitals with treatment.

The NMS General Manager Apollo Newton Mwesigye told MPs that due to over stocking of drugs by third party programmes at NMS, ARV drugs valued at Shs900 million and other drugs worth Shs1.2 billion have already expired. Those that are about to expire are valued at Shs1.65 billion.

Third parties are programmes like Global Funds that store drugs at NMS.

Mr Mwesigye said, “Due to unique nature of NMS operations, expiry of drugs has remained a big challenge. We can only minimize these losses if NMS is given power to perform its statutory mandate of procurement, storage and distribution of drugs. We can-

not do away with the expired drugs but if procurement is harmonized, we can reduce,” he told MPs.

Former NMS General Manager Robert Rutagi was last year suspended for the mismanagement that led to the expiry of ARV packs worth Shs936 million.

Thousands of Ugandans die of malaria and HIV/AIDS annually due to inadequate drugs in hospitals countrywide.

He told MPs that big volumes of expired drugs and those that are about to expire belong to third party programmes but few of the drugs belong to NMS.

Out of the 13,000 square metre-storage space, only 2000 store NMS drugs.

Mr. Mwesigye told MPs that third party programmes procure big volumes of drugs, which are sometimes already procured by NMS.

“NMS is not involved in the planning or procurement of the items and we are expected to accept all consignments at very short notice. This has led to a distortion in NMS hence expiry,” he said.

He said many of the programmes procure short-lived drugs and leave them for a long time at NMS, which in many cases expire. Mr. Kubeketerya demanded for the list of programmes that bring in the drugs that expire at NMS.

“If you don’t expose them, it’s your name that gets spoiled. It’s proper to avail to us the names of these programmes so that people get to know their negligence,” he said.

Some of the programmes that were named to have left drugs for a long time at NMS to expire are Global Fund, Aids Control Programme, Clinton Foundation, Malaria Control Programme among others.

Mr. Mwesigye told MPs that there is an increased number and volume of redundant stock at NMS.

He said high on the redundant stock list are condoms, homapaks for malaria, ARV oral dosage forms and syrups, Uganda Aids Commission lab supplies and other Global fund stock among others.

“This translates into high inventory holding costs and the expiry risk that in turn leads to financial loss. This is because NMS is not involved in the planning and procurement of the items,” he said.

He said big volumes of the drugs that expire have a short life span and are brought in without proper planning.

He said some of the drugs are procured in preparation for outbreaks like bad flu but expire if the outbreaks don’t occur. Said Mr Mwesigye “If there is harmonizing of procurement with third party programmes, we can do proper planning and schedule the distribution in a well

Continued on page 13

coordinated manner to reduce expired drugs,” he said.

Rukiga MP Samuel Byanangwa said, “These donors should be told how it works. How can they bring in drugs and them fail to distribute them? Uganda is not a dumping ground.”



Quinine Crippling Children

Richard Otim, Kumi

May 7, 2007
Daily Monitor

Kumi Hospital Medical Superintendent John Opolot has asked the government to prohibit the use of quinine injections as malaria treatment, saying the drug is crippling children.

He said whereas no case of polio related disabilities had been reported in Kumi district for the past five years, quinine has been the cause of the increasing cases of disability among infants.

He was speaking to Daily Monitor last week in Kumi District.

“Quinine is very toxic and most cases of disability we reported are due to post injection paralysis.” Dr. Opolot said.

He said some infants develop “glutial fibrosis”, or hardening of the child buttocks, after administering the drug.

“Parents should insist on oral or intravenous administration of the drug and by qualified health personnel,” Dr Opolot said. He said the cases, which range from physical to mental disabilities, have been inflicted on children by mal-administration of quinine injection conducted especially by quack health assistants. He said this result into post injection paralysis.

Quinine may also cause paralysis, hearing problems, and blindness in adults. Medical personnel advise that one on quinine treatment should take a lot of fluids to avoid such complications.



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Fake Quinine on Market

Hussein Bogere & Jane Nafula

May 10, 2007
Daily Monitor

The public has been warned against using counterfeit Quine tablets in the treatment of Malaria. The warning came from the National Drug Authority, which together with the Ministry of Health have launched an investigation into the source of the counterfeit Malaria tablets.

NDA lifted the lid on the counterfeits yesterday in a public statement.

“It has come to our attention that counterfeit Quine® (Quine Sulphate) BP 300mg tablets have found their way into the Ugandan market,” the statement reads in part.

NDA however, warns that any one found selling the tablets will be prosecuted.

“We are investigating, if there is anything wrong, the law will take its course,” Sam Okware, the Commissioner for Community Health (in the Ministry of Health) told Daily Monitor yesterday.

NDA says the particulars appearing on the tin of the counterfeit Quine tablets are Batch No. 0908 with a manufacturing date of 05/2005 and expiry 04/2009.

“Contrary to what is purported on the label, the product with the above particulars has not been manufactured in the facilities of Kampala Pharmaceutical Industries (1996) Ltd in Uganda. They are the sole license holders and manufacturers of Quine® tablets which are registered in Uganda Reg. No 0780/06/97,” NDA warns.

NDA further warns that anybody found selling the counterfeit tablets will be prosecuted because their sale, purchase and use has been prohibited immediately.

The available stock must be quarantined as well, NDA said.

Dangerous

Dr. Okware said the sale of counterfeit drugs is a very dangerous practice. “Those drugs have adverse effects on the users because they give a false sense of security, they don’t cure and they easily cause side effects.” He said normal drugs must not have side effects.

Lately, there have been reports of patients experiencing side effects as a result of using Quinine. On Monday, Kumi Hospital Medical Superintendent John Opolot asked the government to prohibit the use of Quinine injections because they were crippling children. He said mal-administration of Quinine injections has inflicted a range

Continued on page 14

of physical and mental disabilities on children.

It is not clear whether these side effects are a result of the use of the counterfeit drugs. Dr. Okware said this is an issue worth investigating.

Fears

The Minister of State for Health (Primary Health Care), Emmanuel Otaala said the use of counterfeits may worsen the impact of malaria in Uganda.

Studies show that malaria is not only the leading cause of death in Africa, but also the leading cause of poverty. About 20-23% of deaths in Uganda are attributed to malaria.

On the issue of quinine injections crippling children, Dr. Otaala admitted the problem is rampant. He said quinine injections kill muscles, that's why the ministry is recommending that it is administered through drips.



Chloroquine to be Phased Out

Ephraim Kasozi

July 26, 2007
Daily Monitor

In an effort to strengthen the fight against malaria in the country, the National Drug Authority has resolved to phase out anti-malarial drugs that have high resistance against the disease.

According to Deus K. Mubangizi, the chief Inspector of drugs, the drug regulatory body would phase out chloroquine and Homapak.

“We have launched a countrywide survey to assess the amount of mono-therapies in stock and sub optimal to resolve. We intend to phase out the previous anti-malarial drugs that have higher resistance against malaria,” he said.

Mr Mubangizi made the remarks yesterday at the stakeholders meeting held in Kampala. The Stakeholders' meeting was organized by Afford to discuss the role of local pharmaceutical sector in promoting access to Artemisinin-based Combination Therapies (ACTs) in Uganda.

Mr Mubangizi said the move is aimed at advocating for increased availability of ACT drugs that include Coartem, a drug that the government monopolized to distribute in its health centres.



Does it Matter: Whether Uganda refuses to take \$28m for Malaria Drugs?

with Joachim Buwembo

August 26, 2005
Daily Monitor

Who told those fellows sitting in Geneva or whatever town it is called that Uganda is so poor it needs someone to treat mosquito bites for it? Reports published earlier this week indicate that they tried to give us \$28m worth of Coartem medicine to treat malaria victims in this country. Between the Global fund chaps and those other ones in World Health Organisation, they even took it upon themselves to negotiate for us with the manufacturers so that they can sell the medicine to us cheaply, at only \$2 a dose instead of \$40, which a dose costs on the open market. Were they insinuating that our rich government cannot afford the “right” price so they go head and treat us like broke chaps?

But our proud officials have showed them a move, as the teenagers would say. In the spirit of national pride, our officials have ignored the offer for over a year, leaving those patronizing Global Fund fellows no choice but to cancel it. That is the way to go. Who told them that we are such weaklings we need those mzungu medicines for our very strong children? Don't they know we have our herbs to mix and drink when we fall sick? Do they imagine Ugandans are tourists who need to be pampered with sophisticated medicines in order to fight malaria?

Today, malaria only kills a few hundred children a week. If it was killing a million, there would be cause for alarm. But it cannot even kill ten thousand a day, and some fellow wants to give us mzungu medicine! The problem with some of these donors is that they image that our rich forests do not have enough plants to treat our diseases. They forget that we have a very rich heritage of flora in our forests to deal with simple matters like mosquito bites. Have they ever seen a monkey dying of malaria for example?

Why do we have the only colony of mountain gorillas in the world? Isn't that proof that our forests are very healthy? If they continue dangling their money in front of us, trying to rush us into making transactions in Geneva, we can all walk to the forest in protest and live there for a year. This will show them that we can do without their Coartem. Or do those Global Fund busy bodies forget that our present leaders lived for five years in the bush without dying of malaria?”

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Continued from page 14 – Does it Matter:

We can live without it. And if a few hundred kids die a week, well, that creates more room in our crowded classrooms, doesn't it?



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GM Mosquito Could Fight Malaria - Study

Agencies

Daily Monitor
March 21, 2007

A genetically modified (GM) strain of malaria resistant mosquito has been created that is better able to survive than disease-carrying insects.

It gives new impetus to one strategy for controlling the disease: introduce the GM insects into wild populations in the hope that they will take over.

The insect carries a gene that prevents infection by the malaria parasite.

Details of the work by a US team appear in Proceedings of the National Academy of Sciences journal.

In the laboratory, equal numbers of genetically modified and ordinary "wild-type" mosquitoes were allowed to feed on malaria-infected mice.

As they reproduced, more of the GM or transgenic, mosquitoes survived. After nine generations, 70% of the insects belonged to the malaria-resistant strain.

The scientists also inserted the gene for green fluorescent protein (GFP) into the transgenic mosquitoes, which made their eyes glow green.

This helped the researchers to easily count the transgenic and non-transgenic insects.

Dr Mauro Marrelli and his colleague from John Hopkins University in Baltimore, Maryland, wrote in PNAS: "To our knowledge, no-one has previously reported a demonstration that transgenic mosquitoes can exhibit a fitness advantage over non-transgenic." The modified mosquitoes had a higher survival rate and laid more eggs.



Mosquito Bacteria Identified in Malaria Battle

Reuters, Rome

May 16, 2007
Daily Monitor

Scientists in Italy say they have identified a potential weapon against malaria living inside the blood-sucking mosquitoes that spread the disease – their internal bacteria.

Malaria, a mosquito-borne disease used by a parasite, kills at least a million people annually. Most of the victims are young children in sub-Saharan Africa.

With attempts to completely eradicate mosquitoes or create a vaccine so far unsuccessful, the Italian scientists set out to find any bacteria that lived symbiotically inside the pests.

Such bacterial could potentially be genetically altered later to attack the malaria parasite when it reaches the mosquito, said Daniele Daffonchio at the Universita degli Studi di Milano, one of the five Italian universities behind the research.

In the study, published in the Proceedings of the National Academy of science on Monday, the team said it identified one candidate – a bacteria called Asaia, which is found throughout the mosquito's body.

That includes the mosquito's gut and saliva gland as well as its reproductive organs, meaning that the altered bacteria could spread to mosquito offspring.

"Instead of spraying chemical or biological pesticides, you could use this symbiotic bacteria that is passed on," Daffonchio said. "You don't have to spray every year." Daffonchio said research into modifying bacteria like Asaia was being conducted to battle the deadly Chagas disease. Malaria has become resistant to some drugs, and work on a vaccine has been slow.



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FEATURED ARTICLES

No Money for DDT Spraying

Steven Kibuuka, Kampala
Daily Monitor, April 24, 2007

Deaths from malaria are likely to continue after the government yesterday expressed doubt that the planned widescale spraying of DDT to fight the disease will start in July.

Speaking in an interview with Daily Monitor, Emmanuel Otaala, the minister of State for Primary Healthcare said the government has failed to raise close to \$400 million (Shs750b) needed to kick-start the spraying.

“We don’t have money to buy DDT right now,” Dr. Otaala said.

“We did not budget for it this financial year so we cannot use it this year.”

The Ministry of Health had announced plans to begin using DDT to combat malaria in June 2007, in the pioneer districts of Apac in northern Uganda, Kanungu in the southwestern and all IDP camps.

An estimated 320 people die of malaria in Uganda daily. According to the World Health Organization, there are between 1.5 million and 2.5 million deaths due to malaria in the world with 90 per cent of cases in sub-Saharan Africa.

Added to the deaths are the social-cultural costs which cannot be easily monetized. But such costs indicate that the disease is also the leading cost of poverty in Uganda.

Dr. Otaala, however, said the government has started requesting Development partners to help out. “Already USAID has agreed to help us,” he said. “USAID has promised to give us US\$50 million but this can cover only 7-8 districts,” Dr. Otaala said.

However, the minister said the American agency would only release the funds after carrying out its own assessment of the effects of the chemical.

“The USAID promise is not yet guaranteed because they are right now carrying out an impact assessment which involves finding the impact of DDT on the

environment and that takes long,” Dr. Otaala said.

“The earliest they can finish this is June and then make a report which may also take a lot of time. Development partners, who are willing to help us out, should not put difficult conditions as usual because people’s lives are at stake here,” he said.

The National Environment Management Authority approved the use of the chemical last year as a means of controlling Malaria in the country.

Nema said that DDT would have no harm as feared by environmental activists.

The World Health Organization also approved its use in Uganda as long as it’s sprayed indoors.

Dr. Otaala says that DDT would be use as a malaria prevention programmed by the government, malaria has caused many deaths among Ugandans.

DDT will be sprayed in the inside walls of homes and buildings. The crystalline solid residue left behind serves to repel and kill mosquitoes, the vector responsible for the spread of malaria.

“DDT is one of the cheapest, most effective tools in the fight against malaria in many developing countries and we also want to use it here,” Dr. Otaala said.

There has been considerable controversy surrounding the harmful effects of DDT since 1962, when Rachel Carson, an American environmentalist, published *Silent Spring*, a comprehensive study detailing the damage that wide-scale DDT use had inflicted on the environment and wildlife in the United States.

Concerns regarding the impact of DDT are not unfounded. There is little doubt within the scientific community that the chemical can cause serious environmental harm; however, its precise impact on humans is a subject of debate.

Anarfi Asamoah-Baah, the Director General for Malaria at WHO said in a statement on September 15, 2006 that

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Continued from page 16 – No Money for DDT Spraying

“DDT presents no health risks when used properly.” However Jay Feldman, the executive director of Beyond Pesticides, an American company specializing in DDT issues, says this view is “short-sighted and doesn’t recognize the long-term problems and hazards.”

There was concern, that if Uganda began using DDT, its agricultural products could be banned in Europe. DDT use has been prohibited in Europe for over 20 years.

Dr. Otaala believes that by weighing in favour of DDT use, WHO has completely laid these concerns to rest.

Currently the government is spraying lambda-thylothrin (ICON) in malaria-infected regions.

The National Coordinator of Roll Back Malaria Control Programme, John Bosco Rwakimari, said last week they are spraying Icon after all traditional ways they have been using failed.

The ministry has been using case management, mosquito netting, and clearing bushes as methods of fighting malaria.



DDT Agenda is Suspicious

Ellady Muyambi

May 10, 2007
Daily Monitor

I have heard Ministry of Health officials agitating for the re-introduction of DDT in Uganda in order to fight malaria. DDT cannot be a solution to this problem.

We submitted our petition to the National Environment Management Authority (Nema) for failing to observe the required standards. Government must employ DDT alternatives. For example, using pyrethrins. Some people have argued that these are expensive, but in reality they are cheaper than DDT. All you need to do is to compute the cost of implementing the WHO recommendation for applying DDT for IRS. Secondly, there has been mass productions of these products basically because there are no legal provisions for biocides.

Johnson and Johnson of USA signed a contract with the WHO board to deliver 60,000 tons every year. The company, however, is not obliged to buy the stocks but the stocks have to be there – a silly contract? No it is not, it was meant to stifle the development of pyrethrin-based products for malaria control especially at the height of the negotiations for the Stockholm Convention. This was meant to create the impression that there was no product which could replace DDT.

I was appalled at the level of ignorance of some Ministry of Health officials. They are convincing people that DDT wiped out mosquitoes in the US. Have they visited the US in summer? Secondly, in early 2000, there was an outbreak of encephalitis transmitting mosquitoes in New York and Mayor Rudi Giuliani contemplated using DDT but never due to public pressure.

Any entomologist will tell you that IRS can only work in episodic malarial regions and in these places mosquito density peaks at certain (levels) as is the case in South Africa, where contrary to popular opinion they have not wiped out malaria with DDT spraying.

The writer is General Secretary, Uganda Network on Toxic Free Malaria Control.



Chinese Malaria Drugs Recalled in Kenya

BBC News

August 17, 2007

A Chinese pharmaceutical firm plans to recall thousands of anti-malarial drugs supplied to Kenya after discovering a counterfeit syndicate.

The vice-president of Holley-Cotec Pharmaceuticals said 20,000 doses of Duo-cotecxin will be removed from sale. He told the BBC an analysis of the counterfeit product showed it had very low active ingredients and patients taking it would not be cured. An estimated 35,000 people die of malaria in Kenya each year.

Duo-cotecxin is one of the artemisinin-based combination therapy drugs highly recommended by World Health Organization to treat malaria and is widely supplied in government and private hospitals in Kenya. A full dose of Duo-cotecxin costs about \$5 in Kenya, the counterfeited drug is being sold for less than \$1.

New technology

The Ministry of Health has been spearheading a campaign to crack down on counterfeit drugs that are readily available in the Kenyan market.

Dr Willy Akwale, who heads the government anti-malaria control unit, said this is the first case of a counterfeit supply of artemisinin combination therapy drugs. "There have been many counterfeits on the sulphur-based anti-malaria drugs before, forcing us to have difficulties in countering the disease," Dr Akwale told the BBC's Focus on Africa programme.

Eric Law, Holley-Cotec Pharmaceuticals' vice-president,

Continued on page 18

said they are yet to locate the source of the counterfeits, but there is strong evidence linking the supplies to Asia. "We are now going to introduce a new technology to tamper-proof the doses that will be supplied to replace the withdrawn drugs," Mr Law told the BBC News Website.

Health officials warn of a global health catastrophe if a growing trade in fake anti-malarial drugs leads to widespread resistance. Sophisticated trans-national gangs are thought to be behind the counterfeit drugs, a fast-growing multibillion dollar business.

Meanwhile, the Kenyan government said on Thursday that there has been a dramatic rise in the number of children sleeping under insecticide treated mosquito nets. It said that a two-year campaign to provide nets at subsidised prices has resulted in more than two-thirds of under five-year-olds sleeping under them.

<http://news.bbc.co.uk/2/hi/africa/6951586.stm>



Govt Studies Biological Drug for Malaria

Solomon Muyita & Grace Natabaalo

**February 11, 2007
Daily Monitor**

As the debate, on whether or not to spray DDT rages on, the government is negotiating with an international biological research group on the possibility of using an organic larvaecide to fight malaria.

BTI (*Bacillus Thuringiensis* subspecies *Israelensis*) is the new drug being promoted by Xenorex, a Canadian-base organization, It has opened an African branch in Kampala.

Unlike the reported "ecological damage" about the application of DDT, Daily Monitor has learnt that BTI has already been tested by the Uganda Virus Research Institute (UVRI) and found effective without effects on the environment.

"We are working with the Ministry of Health and University of Makerere to commit a multi-faceted approach, to malaria control," explains Xenorex's chief executive officer, Colin Rousseaux.

Prof. Rousseaux, who is also a professor of pathology and experimental medicine at the University of Ottawa,

Canada, has been since around February making visits to the country to work out a country wide programme for use of BTI.

BTI a biological material kills the larvae of the anopheles mosquito, which spreads the killer malaria, and black flies, which carries river blindness, while DDT kills the adult mosquito. The drug, which was discovered in 1977 and its use started in the early 1980s, is sprayed mostly outdoors in mosquito breeding places using a fogging machines.

State Minister for Health (General Duties) Richard Nduhura confirmed the developments yesterday. "We are in touch with Xenorex for a biological method of eradicating malaria," the minister said by telephone.

"Tests of BTI were done by UVRI and I am told it came out well. This will not be a substitute for DDT but a complement. We intend to spray BTI outdoors in the water bodies and footmarks, while DDT will be used indoors.

Mr. Nduhura said as soon as the National Environmental Management Authority (Nema) and the National Drug Authority (NDA) endorses BTI, the government would immediately start using it.

Like for BTI, the use of DDT is still awaiting approval of Nema, which is expected before the end of December. Malaria is the biggest world killer, according to statistics. In Uganda, over 300 people reportedly die of malaria on a daily basis.

The expert on BTI says malaria exists where there is aquatic environment like a wetland, the anopheles mosquito and the third is people, "which give us a triangle. If you remove anyone of those, the disease just disappears. He said Xenorex and the Uganda Malaria Research Institute are working out a multi-faceted approach to see "quick eradication of malaria in the country."



Note

Historical studies have shown that Anopheles funestus and Anopheles arabiensis are the principal malaria vectors in southern Africa. The Anopheles funestus group includes nine African species: An. funestus, Anopheles rivulorum, Anopheles vaneedeni, Anopheles lesoni, Anopheles confusus, Anopheles fuscivenosus, Anopheles brucei, Anopheles parensis and Anopheles aruni. Of these, An. funestus is the only member of the group that is recognized as an important vector of malaria in Africa.

Anopheles vaneedeni was experimentally infected in the laboratory with Plasmodium falciparum but has not been implicated in malaria transmission in nature.



FEATURED ARTICLES

DDT: Survival Weapon or Threat?

Emmanuel Kihale

Daily Monitor, March 13, 2007

While it's true that DDT can successfully kill malaria-causing mosquitoes and thus eradicate the disease, environmentalists warn that the chemical is toxic not only to man but also to birds, fish and mammals

There can never be anything like indoor residual spraying of DDT in Uganda. The poor and temporary nature of the majority of houses countrywide will easily enable DDT to find its way into the environment.

This is how Dr. Vincent Muwanika of the Makerere University Institute of Environment and Natural Resources argues over the recent decision by the Ministry of Health to start spraying DDT in an effort to curb the spread of malaria.

This follows an announcement by the World Health Organisation (WHO) allowing indoor residual spraying (IRS) of DDT (Dichloro-Diphenyl-Trichlorethane) in the fight against malaria.

The Director General for Malaria at World Health Organisation (WHO), Dr. Anarfi Asamoah-Baah, says that "scientific and programmatic evidence" has shown that DDT could be safely be used indoors to fight against the malaria spreading mosquitoes.

"(Outdoor spraying) has proven to be just as effective as other malaria prevention methods, and DDT presents no health risk when used properly," he says.

The move puts annual indoor spraying of DDT alongside drugs and mosquito bed nets as one of the three main tools for controlling the disease, which claims about a million lives every year worldwide most especially in Sub-Saharan Africa.

The Malaria Programme Control Manger at the Ministry of Health, Dr. John Rwakimari says that treatment of malaria has become more complicated with mosquitoes developing high resistance to common malaria drugs.

"Chloroquine and Fansidar are no longer effective

against malaria," he says. So to many countries, the WHO permission has brought a sigh of relief in the war against the disease.

Following this, some African countries such as Tanzania and Uganda decided to relax their bans on DDT use and the latter has officially announced that it will start using the pesticide by June this year in the pioneer districts of Apac, Kanungu and in all internally displaced people's camps (IDPs).

However according to Dr. Muwanika, the fact that most of the houses in rural Uganda and urban slums are built out of poor and weak materials such as mud, wattle, grass, timber and iron scraps should force the proponents of the WHO decision to think twice.

"Such structures are very temporary and can hardly stand throughout the period that DDT continues to be active after spraying. So the so-called "indoor spraying" is virtually direct spray of DDT into the environment," he says.

He also says that a number of studies have shown that DDT could remain persistent in the environment such as in the soil or in water for many years after application and thus endanger lives.

He cites the findings of a 2005 research conducted in Kanungu District, which found traces of DDT in soil, crops and fish from a nearby lake (Lake Edward), human plasma and urine 45 years after a spray had been done. In 1959/60, a WHO malaria control team sprayed DDT in dwelling houses and kraals in the district with the aim of fighting malaria. The research, which was titled Determination of Short and Long Term Residual Concentration of DDT and its Derivatives in Man and Environment in Kihhi Sub-County, Kanungu District, also found DDT in areas miles away from the sprayed areas.

The research report itself admitted that this is in line with the established persistence and slow degradation of DDT in the environment and fatty tissues in animals including human beings.

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Continued from page 19 – DDT Survival Weapon or Threat?

Although the research team concluded, by saying that Uganda may safely use DDT to control malaria using the Kihhihi model, environmentalists still fear that the decision could have health, environmental and economic implications.

The former Chief of the European Union (EU) in Uganda, Sigurd Illing, openly said that there could be dire consequences for Uganda's exports to Europe if DDT would be detected in export commodities such as horticultural produce.

At the moment, Uganda's exports to Europe accounts for about 40 per cent of the total exports. The EU still bans the use of DDT and it has set strict minimum limits of pesticide levels in products meant for animal or human consumption, most especially on prohibited chemicals such as DDT.

However, the new EU chief to Uganda, Vincent De Visscher says that the European Union will support the government of Uganda in its fight against malaria through indoor residue spraying of DDT.

Cases of Abuse

Dr. Muwanika also notes that the absence of a proper enforcement mechanism in the whole process of DDT use could result into people misusing the pesticide for other purposes such as pest control in agriculture and thus affect export of the produce.

Through it is an undisputed fact that DDT could successfully kill malaria mosquitoes and thus eradicate malaria like what it did in Southern Europe, North America and the Caribbean in the 1960s, environmentalists warn that DDT is toxic to birds, fish and mammals. This is because it accumulates in the food chain and stays there for many years.

That is why in the 1970s, growing awareness of these threats led many countries to ban its use especially in agriculture. The conservation organization, World Wildlife Funds says it has found "sufficient evidence of hazards to human health and wildlife to justify a global ban on the production and use of DDT."

According to WWF, the pesticide could harm human health by damaging the developing brain, causing hypersensitivity, behavioural abnormalities and a suppressed immune system.

Vast Consequences

Dr. Muwanik adds that the non-selective nature of DDT poses a risk to the ecosystems (the mutual relationship and dependency between living and non living things) in that it could interfere with the activities of living organisms that uphold it.

He gives examples of pollinators such as birds, butterflies and bees as the likely victims which cannot withstand DDT effects. The chemical could cripple their activities of transporting pollen between plants to enable them (to) produce seeds or fruits.

This means that DDT also poses a risk as far as production of fruits and other crops that are greatly relied on by human beings and other animals for food or medicine, is concerned.

In 2004, the Stockholm Convention on Persistent Organic Pollutants (POPs), global treaty to protect human health and the environment from the negative effects of POPs banned DDT use.

Although the treaty, to which both Tanzania and Uganda are members, includes a opt-out clause for nations that want to permit the use of DDT indoors to protect public health according to WHO guidelines, few nations chose to use it.

Dr Muwanika agrees that malaria is a big development challenge to countries such as Tanzania and Uganda but maintains that it was necessary for them to think of alternative preventive measures that are friendly to both living organisms and the environment.

"It's about time the international community focused on combating malaria, but this approach (DDT use) takes us exactly (in) the wrong direction," he says.

In his opinion, DDT use is a short-sighted response with long-term consequences, and that WHO should be helping countries to fight malaria with safer and more effective alternatives.



DDT Will Not Hinder Exports to EU

**Diana Apio
Kampala**

**October 31, 2006
Daily Monitor**

The European Union has described as "unfounded," recent allegations that Ugandan products would be totally banned from the market as soon as the decision to use DDT is implemented.

"These accusations are entirely unfounded and ignore the reality o the EU's intensive efforts in the fight against malaria across the African continent," a statement from the European Commission Press Officer in Brussels, Mr. Norbert Sagstetter, said recently.

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Continued from page 20 – DDT will not hinder Exports to EU

The pronouncement comes as a breather to exporters and producers in Uganda, most of who have been worrying over the fate of their products.

Earlier reports had insinuated that agricultural products risked being banned from the EU market once Uganda starts using DDT, because of Europe's zero tolerance for it.

A ban from the EU, Uganda's largest trading partner, would come as a blow to the export industry that is already struggling with supply constraints to deliver to the market despite a zero tariff regime to the EU under the 'Everything but Arms' arrangement.

Last month, the World Health Organisation (WHO) okayed the indoor use of DDT for malaria control, almost 30 years after it phased out its widespread indoor spraying.

Following this, the Ministry of Health (MoH) also announced that Uganda would start using DDT in June next year, pending results from the National Environmental Management Authority's investigation into the potential harm of the insecticide.

A cross section of stakeholders including the business community, environmentalists and some politicians strongly criticized the decision.

But the statement says the EU, as a signatory to the global Stockholm Convention on Persistent Organic Pollutants (POPs) to which the US and 149 other countries are party to defend the right of all nations to set their priorities and plans for malaria control within the scope of international agreements.

"Should food consignments from Uganda to the EU be accidentally contaminated with DDT above accepted residue levels, only that particular consignment would be withdrawn from the market," it says.

"Such an incident would certainly not automatically lead to a general import ban."

Conditions

The EU says it permits low levels of DDT contamination in some crops as long as the levels are shown to be safe to consumers and are not being abused by illegal sprayers.

The Commission also says it recognizes each government's choice of malaria control techniques, including DDT and has supported Uganda and other countries' poverty reduction and health strategies with over Euro310 million since 2003.

But even with the assurance, Uganda should not take it

for granted that DDT can be used at her own will.

The EU delegation in Kampala last week said if the government wishes to use DDT for Indoor Residual Spraying (IRS), it should do so in strict accordance with the provision of the Stockholm Convention as well as WHO guidelines.

The Convention, signed in 2001, bans the use of DDT except for public health purposes while WHO also, in its 2006 position statement contained in a publication: Indoor Residual Spraying recognizes that DDT is banned for agricultural use.

However it justifies its use for IRS if used under WHO recommendations alongside a clear national policy and adequate safeguards for storage, transport and disposal.

"It is critical to ensure that adequate regulatory control is in place to prevent unauthorized use of public health pesticides in agriculture," WHO said.

Information from the Uganda Mission in Geneva says the WHO is even willing to supervise Uganda free of charge.

"If our government can arrange, WHO is willing to send its officials to teach and prepare our leaders on how to use DDT the right way," the Head of the mission, Prof. Asene Baliuta, said recently.

However, the EU also clarified that their position does not guarantee the same reaction from their consumers.

"The EU and its institutions have no power over the reaction by EU consumers and consumer protection organizations in the event Uganda would start using DDT," the Head of Economics, Trade and Social Sectors section at the Kampala office, Mr. Tom Vens said last week.

Critics

Some Ugandan critics have also argued that the bias against DDT is in the minds of consumers and that whether the EU officially continues to accept the products, the consumers might just stop buying them.

"We need to consult widely on DDT. The consumers here are sentimental. Some just have hysteria against DDT," a Ugandan living in Brussels said.

One of the European consumers said he did not mind DDT content as long as the products are declared safe for human consumption by the EU. Another, however, said his reaction would depend on how others would react to it. "If others shun it, I will also not buy the products but if they continue to buy, why not?" he said.

They argued that Uganda still does not have the necessary capacity to do controlled indoor spraying and therefore should not rush to implement it.

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Continued from page 21 - DDT will not hinder Exports to EU

“Let us consider products like coffee, which most farmers keep in their houses or cotton, even before we think of flowers and fish. How shall we ensure that these escape the DDT residues?” another critic wondered.

Others say it is no guarantee that Uganda will meet the requirements in the short run therefore DDT would mean putting the stability of the export industry in balance.

According to WHO, Maximum Residue Levels (MRL) for DDT in food products intended for human or animal consumption in the EU usually range from five to ten times lower than equivalent levels for other countries like Japan and the US.

This means that to maintain the market for Ugandan agricultural products there, Uganda should meet the much more stringent EU standards.

Ten sub-Saharan countries including South Africa are currently using DDT, according to WHO.



Natural Pyrethrum the Best Alternative to DDT

Leonard Bantura, UK

September 28, 2005
Daily Monitor

Whilst much emphasis in Uganda is being placed on the provision of insect treated nets, it would be much better to look at a fully integrated mosquito control programme involving: treatment of mosquito breeding sites with larvicides; space spraying of urban areas with safe, but effective, natural insecticides; residual spraying of houses; treatment of mosquito nets; provision of safe, natural, insect repellants.

In the context of space spraying, natural synergised pyrethrum, together with the ultra safe pyrethroids permethrin, can play a very useful role, as it is extremely active against adult mosquitoes.

Similarly, the natural insect repellent for the application to the human body is based on natural pyrethrins, which are considered to be much safer than products containing DEET.

Raw Material

In Uganda, we have *Chrysanthemum cinerariaefolium tanacetum* from which pyrethrum is extracted.

This can be utilized in the formulation of space sprays; for inclusion in insect repellants. The product needs to be refined, as the waxes and taraxasterol irritants have to be removed.

It makes good commercial sense to utilize Ugandan pyrethrum in malaria control campaigns, since it is not only relieving the strain on the health services, the disablement of family members through illness, but also providing much needed income for the farmer.

Advantages

These are the true facts and advantages of natural pyrethrum and its products:

- Pyrethrum products rapidly knock down and kill targeted pests and have a powerful ability to flush crawling insects such as cockroaches, fleas, bed bugs, lice, ticks, mites, etc. from their hiding places.
- Environmentally, pyrethrum products biodegrade rapidly after application and leave no residual deposits due to sunlight, which causes a rapid breakdown of the pyrethrins. For this reason insect resistance to natural pyrethrum formulations have been insignificant.
- Pyrethrum insecticidal properties are usually enhanced by the addition of a synergist piperonyl butoxide. The resulting synergy allows substantially reduced insecticide concentration and application rates. Pesticide exposure and cost therefore is minimized without adversely affecting efficacy.
- The insecticidal constituents of pyrethrum are unstable to light and air and so have virtually no residual effect.
- Pyrethrum and synthetic pyrethroids being very quick acting insecticides are of considerable value in the immediate alleviation of biting nuisance from mosquitoes.
- Pyrethroid insecticides from natural pyrethrins to photostable analogues represent important weapons against insects/pests of both economic and medical importance.
- Natural pyrethrum insecticide is characterized by a negative temperature coefficient, knock down and killing activity resulting from action against the sodium channels of the peripheral and central nervous system of insects, cockroaches, fleas, bedbugs, lice, ticks, mites and others. The improved safety in use, biodegradability in the environment resulting into less detrimental effects on non-target organisms make natural pyrethrum use pleasant for most people and nations.
- Pyrethrum is locally grown in Uganda.

The writer is a medical doctor and Country Representative of Agropharm Ltd. Church Road, Penn, High Wycombe, United Kingdom



Cheap anti-Malaria Drug Coming to Africa

Leonard Bantura, UK

Daily Monitor
July 21, 2007

European medical authorities have approved modalities for ensuring that a new, low-cost anti-malarial drug is fast-tracked and delivered to African countries including Uganda to curb the country's number one killer as soon as possible.

The drug, dubbed Eurartesim, belongs to the Artemisinin-based Combination Therapies (ACTs) and is a combination of dihydroartemisinin (DHA) and piperazine, a combination that has been proven to clear the malaria parasites from the body in just three days.

Save the Children a British charity said in a press release Thursday that the new drug had achieved orphan status in Europe at the 8th meeting of the Committee for Orphan Medical Products of the European Agency for the Evaluation of Medicinal Products (EMA) that took place late last month. The granting of the "orphan drug" status is designed to encourage the development of drugs that are necessary but would be prohibitively expensive/un-profitable to develop under normal circumstances.

Mr. Marco Corsi, the medical director of Sigma Tau Industrie Farmaceutiche Riunite S.p.A. (Italy), which is developing the drug, said the achievement could allow a quicker submission to the health authorities in endemic countries.

"Therefore, this drug is likely to get onto national anti-malarial drug policies much quicker. This is very good news for sub-Saharan Africa but more so for Uganda because this drug is administered once a day for three days and an adult dose is likely to cost less than one US dollar," said Dr. Corsi.

Dr. Ambrose Talisuna, field coordinator of the African Artemisinin Malarial Trial that compared Eurartesim to Coartem said: "Any new, cheap and easy to administer anti-malarial drug is indeed good news." He said recent assessments confirm the persistence of endemic malaria with an estimated 400 million cases and 1.5-2.7 million deaths per year. In sub-Saharan Africa alone, Plasmodium falciparum, the parasite that causes malaria, is responsible for approximately 220 million cases and one million deaths per year, 75 per cent of them being children under 5 years old.

According to the press release, Eurartesim was first developed in China. A clinical development programme was agreed between Hollykin Pharmaceutical and Guangzhou University (China), The University of Oxford in the UK, the Medicines for Malaria Venture (MMV), and Sigma-Tau Industrie Farmaceutiche Riunite SpA to support the international registration of the drug.

The drug is said to have a simpler dosing scheme than Coartem, which experts say will aid better compliance to avoid the development of resistance.



TZ to Get Cheaper Malaria Drug

Reuters, London

Daily Monitor
July 23, 2007

Former US President Bill Clinton is launching a programme to make subsidized malaria drugs available in Tanzania in a test scheme that could serve as a blueprint for Africa as a whole.

The project, that was expected to be announced later on Sunday in Dar es Salaam Tanzania, will make life-saving artemisinin combination therapy (ACT) drugs available at 90 per cent less than the current market price to a national drug wholesaler, which will then distribute them to rural shops.

Malaria caused by a parasite carried by mosquitoes, kills up to 3 million people a year world-wide and makes 300 million seriously ill.

Ninety percent of deaths are in Africa south of the Sahara, mostly among young children.

Many of those lives could be saved with modern ACT drugs, which are far more effective than older treatments such as chloroquine.

But a price of up to \$8 to \$10 per treatment puts them out of reach for many people. Although drugmakers including Novartis and Sanofi-Aventis SA have reduced the cost of ACT medicines to around \$1 when they are used in the public sector, the majority of Africans buy their medicine privately.

In the case of Tanzania, around half of patients with malaria seek treatment through private drug shops instead of public health facilities, and most are unable to afford the ACT drugs.

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Instead, they usually buy older drugs that are 20 to 30 times cheaper but are often ineffective due to drug resistance. The pilot programme by the Clinton Foundation HIV/Aids Initiative is designed to test the practicality of subsidizing ACT drugs as a way to increase their use, a foundation spokesman said.

ACT treatments are derived from a medicinal Chinese plant and are costly to manufacture.

International organizations and governments, including those from the Netherlands and Britain, are currently considering a multimillion-dollar global subsidy plan for ACT medicines.



ICRAF discovers Wonder Plant for curing Malaria

A single wild shrub - Artemisia annua has become the touchstone for hopes that a successful battle can be waged against Malaria in Southern Africa

Singy Hanyona

5 May 2005

At a time when funding to fight malaria is still sorely lacking, a kaleidoscope of research show unprecedented gains over the fight against the killer disease. The World Agroforestry Centre (ICRAF) Southern Africa Programme has discovered a remarkable annual shrub that will now be used to battle the malaria epidemic in the region.

As Zambia joined the rest of the world in celebrating the Africa Malaria Day on 25 April, the traditional shrub joined the conventional Coartem drug, recently approved by the World Health Organization (WHO). In the temperate regions of China, where *Artemisia annua* originated, the leaves have been used to treat fevers for more than 2000 years, and published scientific studies show that the artemisinin content in the blood is high enough after drinking *Artemisia* tea to cure malaria.

Malaria costs African countries US\$ 12 billion every year in lost Gross Domestic Product (GDP). The cost of effective malaria control in Africa would be just US\$ 2 billion per year, according to WHO. Malaria is one of the biggest killer diseases in Africa but for those who cannot afford conventional drugs, there is still hope.

ICRAF Communications Consultant Parkie Mbozi says in rural Mozambique, women are already using tea made from the dried leaves to treat malaria in the nine mobile

health clinics. Mbozi says for both the practitioners of traditional medicine and the pharmaceutical companies, access to the plants is the biggest barrier to using *Artemisia* to cure malaria.

ICRAF-Southern Africa Programme, attracted by the usefulness of *Artemisia* as a medicinal species and its potential to manage pests in agroforests, began growing a special hybrid of *Artemisia*, A-3, with seed provided by the Pressure Group on Action for Natural Medicines (Anamed).

A-3 is especially important for the natural treatment of malaria, because it is adapted for warmer climate. Where as wild varieties of *Artemisia* grow to only 5 cm in the tropics, A-3 can reach heights of 3m and contains 20 times more artemisinin. Mbozi says ICRAF is now facilitating the broad propagation of A-3 by teaching thousands of farmers in its extensive network how to cultivate *Artemisia* from stem cuttings.

The programme has extended to four districts in Tete Province-Angonia, Moatise, Tsangano and Makanga-located in North Western Mozambique - and is soon expected to extend to Malawi, Tanzania, Zambia and Zimbabwe, the other countries where ICRAF Southern Africa Programme is working.

In Zimbabwe vegetative reproduction of the *Artemisia* commenced in October 2004 at Domboshaba Research Station with a single plant from which 200 stem cuttings were planted on-station.

"The cuttings have further multiplied through vegetative propagation and the plant is responding very well to the Zimbabwean weather conditions," says Dorah Mwenye of ICRAF-Zimbabwe. Ms Mwenye says a number of rural families will soon receive cuttings of *Artemisia* for multiplication and use at household level.

Thousands of *Artemisia* plants can be propagated from a single stem cutting. This makes for a lot of cheap and effective medicine. The daily adult dose of anti-malaria tea requires mixing just 5g of dried A-3 leaves in 1L of water. This tincture is split into four parts and taken once every six hours. This is repeated for seven days. Given that each plant yields 200g dry weight, 1000 shrubs can cure malaria in 5700 adults.

Artemisia treatments for malaria create big savings at the pharmacy for cash-strapped farmers. Money spent on malaria medication can be spent elsewhere. There is also an untapped potential for getting much-needed income from selling *Artemisia* medicines.

Anamed- Angonia in cooperation with ICRAF, Medicins sans Frontiers (MSF) and the Mozambique Ministry of Agriculture and Rural Development (MADER) are train-

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ing farmers how to process and manufacture Artemisia medicines. Harvesting and air-drying the leaves, as well as the production of medicines, is a straight forward, non-labour intensive project. Even after three years, dried leaves retain practically 100 percent of their artemisinin content, suggesting that under proper conditions Artemisia medicines can be stored for a long time.

When asked about the scale of Artemisia farming in Southern Africa, Dr Patrick Matakala, Regional Coordinator of ICRAF Southern Africa, replies: "I wouldn't call it large scale production for profit yet, but that is where we are heading as a programme."

Nonetheless, for the ambitious farmers there is a definite possibility of scaling up Artemisia production for sale to pharmaceutical companies in the future. There will certainly be a market. WHO estimates that of the 40 countries-20 in Africa-using Artemisinin-based drugs, five are expected to have shortages due to lack of raw plant extracts. This includes most of the countries in the Southern Africa Development Community (SADC) region. However, scaling up for pharmaceuticals will require resolving a few proprietary issues surrounding A-3, the rights to which are controlled by an undisclosed pharmaceutical player.

Meanwhile, various organizations around the world celebrated the successes of Partnerships as they commemorated Africa Malaria Day 2005. Under the theme "Unite Against Malaria", celebrations focussed on the importance of partnership at the national, regional and global levels for fighting malaria.

"Working with partners has allowed Zambia to make great strides in the fight against malaria, which include exceeding our 2005 target for providing malaria prevention for children under five," said Zambian Health Minister Dr Brian Chituwo, during this year's main regional Africa Malaria Day event.

The Zambian government's roll Back Malaria Initiative intends to achieve reduced deaths due to malaria by 50 per cent, by the year 2010.

http://www.newsfromafrica.org/newsfromafrica/articles/art_10249.html



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Case Study: Synthetic Biology's Poster Child – Microbial Production of Artemisinin to Treat Malaria”

Excerpts from *Extreme Synthetic Genetic Engineering, An Introduction to Synthetic Biology*,
January 2007, ETC Group

Over 90% of malaria deaths occur in sub-Saharan Africa. Global health initiatives have failed to deliver on simple prevention measures such as mosquito netting, and the worsening crisis has led the World Health Organization (WHO) to reverse a 30-year policy – it now backs the use of a 20th-century silver bullet, the controversial pesticide DDT, as a malaria prevention strategy.

WHO regards artemisinin-based drugs as the best hope for treating over one million people – most of them African children – who would otherwise die of malaria each year.

However, a global shortfall in the supply of natural artemisinin, which is extracted from sweet wormwood plants (*Artemisia annua*), has kept the price of this much-prized compound out of reach for poor people.

Using synthetic biology to combat malaria is compelling: a technological fix comes to the rescue when investments in malaria prevention and control in Africa are declining, and failing.

In April 2006, Professor Jay Keasling of the University of California-Berkeley and 14 collaborators announced in *Nature* they had succeeded in engineering a yeast strain to produce artemisinic acid, which is a necessary step in the production of artemisinin itself.

Using sophisticated bioinformatics and screening techniques, the team claims to have discovered the genes involved in *Artemisia annua*'s natural production of artemisinic acid, and managed to insert and express them in a modified yeast strain. The microbe thus behaves like a miniature factory to produce artemisinic acid. According to Keasling, what's left to do is to increase the yields of artemisinic acid, and then use "high-yielding chemistry" to convert artemisinic acid to artemisinin.

The promise of unlimited supplies of a drug that can roll back a global killer has become the *raison d'être* for synthetic biology and given the field a philanthropic sheen – reminiscent of biotech's much-heralded genetically engineered, Vitamin-A rich "Golden Rice" to feed the poor.

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(Since 2000, the biotech industry has used the promise of Golden Rice in public relations campaigns designed to win moral legitimacy for its genetically engineered crops – but the controversial product is not yet available.) Though they've produced only tiny quantities of artemisinic acid so far, Jay Keasling's bacterial factories are already churning out copious amounts of priceless PR for the fledgling synbio industry.

The December 2006 issue of Discover names the Berkeley professor its first-ever Scientist of the Year and the magazine's editors ooze with admiration: "Through his significant synthetic biology advancements, Keasling is changing the world, making it a better place with every new discovery he makes."

But will betting on synthetic biology's medicinal microbes to tackle malaria (backed by \$42.5 million from the Bill and Melinda Gates Foundation) divert attention and resources from other approaches that are less front pagefriendly, but nonetheless sustainable and decentralized? Will promising options for addressing malaria be cast aside in single-minded pursuit of synbio's silver bullet?

The current situation: WHO requires that artemisinin be mixed with other malaria drugs (a drug combination known as Artemisinin Combination Therapies or ACTs) to prevent the malaria parasite from developing resistance.

Novartis's proprietary ACT drug (known as Coartem) is the only one that has received pre-clearance from WHO (meaning that it is approved for procurement by UN agencies), giving Novartis a virtual monopoly on ACT drugs. According to a 2006 study on artemisia conducted by the Royal Tropical Institute of the Netherlands: "This monopoly-like situation has created an imperfect market defined by scarcity of raw materials, speculation and extremely high retail prices.

Under contract to WHO, Novartis provides Coartem at cost (US\$ 0.90 to treat infants; US\$ 2.40 to treat adults) to the public sector in malaria-endemic countries in the South.

A two-tier pricing system allows Novartis to sell their ACT compound for ten times the cost to Northern markets and international travelers. Other drug companies are developing ACT drugs, with Sanofi-Aventis closest to having a marketable product.

Novartis currently buys almost all of the world's wormwood crop, sourcing from thousands of small farmers across China, Vietnam, Kenya, Tanzania, India, Uganda, Gambia, Ghana, Senegal and Brazil.

In East Africa, an estimated 1,000 small-scale farmers (average 0.3 hectares) and 100 larger scale farmers (average 3 hectares) currently grow artemisia. In light of global demand and recent campaigns to reinvigorate the fight against malaria, that figure is expected to grow to approximately 5000 smallholders and 500 larger-scale farmers.

The report by the Royal Tropical Institute of the Netherlands concludes that the current Artemisia shortfall could be met solely by increasing cultivation of wormwood, especially in Africa. Increasing local production is attractive as a sustainable and decentralized approach.

"From a technical point of view, it is possible to cultivate sufficient artemisia and to extract sufficient artemisinin from it to cure all the malaria patients in the world. An ACT could be made available at an affordable price within just 2-3 years."

The report estimates that between 17,000-27,000 hectares of Artemisia annua would be required to satisfy global demand for ACT, which could be grown by farmers in suitable areas of the South.

The Institute's report warns, however, that the prospect of synthetic artemisinin production could destabilize a very young market for natural artemisia, undermining the security of farmers just beginning to plant it for the first time: "Growing Artemisia plants is risky and will not be profitable for long because of the synthetic production that is expected to begin in the near future."

Sold on synbio's synthetic vision:

Keasling's team believes that using synthetic microbes to manufacture artemisinin could increase supplies more quickly and reliably than planting new crops. "You would need to plant the state of Rhode Island to meet demand," quips Jack Newman, co-founder – along with Keasling – of Amyris Biotechnologies, the company that will bring synthetic artemisinin to market.

Amyris predicts that microbial production will lower the cost of artemisinin to 25 cents per dose.

The company's non-profit partner, OneWorld Health, will steer the product through the regulatory process and conduct preclinical studies to determine the safest artemisinin derivatives.

However, large-scale production of synthetic artemisinin still faces significant technical difficulties. OneWorld Health explains that "the yield of artemisinic acid would need to be improved several hundred fold to be economically acceptable for large-scale manufacturing."

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Meanwhile, WHO notes that “clinical trials have not yet begun, and filing for regulatory approval will probably not occur before 2009 to 2010.”

Keasling, too, sees late 2009 or early 2010 as the earliest realistic target for mass distribution.

If microbial production of synthetic artemisinin is commercially successful, pharma giants like Novartis would benefit because it will allow them to replace a diverse set of small suppliers with one or two conveniently located production factories. The Royal Tropical Institute notes that, “pharmaceutical companies will accumulate control and power over the production process; artemisia producers will lose a source of income; and local production, extraction and (possibly) manufacturing of ACT in regions where malaria is prevalent will shift to the main production sites of Western pharmaceutical companies.”

Could artemisia be a viable crop for small farmers in sub-Saharan Africa?

Are local production, extraction and even manufacturing of ACTs possible in regions where malaria is prevalent? The Dutch researchers who studied this possibility conclude that it won't be easy – requiring not only a hefty capital investment, but also “a total redesign of the supply and distribution chain.” They suggest a number of policies that could be implemented to promote cultivation of *Artemisia annua* while at the same time protecting farmers from un-due risk. For example, a procurement fund could be established in Africa to stabilise the market for artemisia; quality seed could be made available to African farmers; other medicinal crops could be promoted to reduce the economic risk to farmers; a task force could be established to enhance transparency, coherent policy making and knowledge sharing.

Where ACT drugs are not accessible or affordable, community-based efforts are focusing on local production of artemisia plants for use in herbal tea to treat malaria. Conventional health systems such as WHO do not sanction the use of *Artemisia* tea because of the difficulty of establishing a standard dosage and quality control.

However, Anamed (Action for Natural Medicine), a Christian-based group of scientists and health workers, believes that the tea is effective in treating upwards of 80 percent of malaria cases. Anamed's ‘grow your own’ approach to fighting malaria provides artemisia seeds, community workshops and agronomic support for small-scale plots based on mixed farming methods across Asia and Africa.

Anamed promotes a method of combining the tea with other compounds (either cheap medicines or locally adapted herbs) to mimic the combination effect of pharmaceutical ACTs, but without using proprietary drugs. Anamed believes that compounds found in *Artemisia* leaves, including 36 different flavonoids, enhance the anti-malarial properties of the tea (which they say are lost when the compound is purified for drug use).

While the use of artemisia tea may be controversial, the need to increase the world's supply of *Artemisia* is not. Anamed has developed a variety of artemisia adapted to African conditions known as *Artemisia annua* anamed (A-3) and the group has introduced over 715 artemisia growing projects in 75 countries.

Their partners include the World Agroforestry Center (ICRAF) in Mozambique, which has taught thousands of southern African farmers in their network how to grow artemisia from stem cuttings.

Anamed's seeds are sold for \$.01 per seed and each plant can treat up to eight malaria sufferers. Those plants can then be further propagated by taking stem cuttings.

No one knows if synthetic biology will ultimately deliver safe and sufficient quantities of low-cost artemisinin for controlling malaria in the developing world. The Gates Foundation should insure that its focus on a synbio anti-malarial drug does not foreclose options for community-based, farmer-led approaches.

http://www.etcgroup.org/upload/publication/602/01/synbiorepo_rtweb.pdf



Scientists Toll to Transform Bug's Fatal Bite

Tweaking mosquito's genes could prevent it from spreading malaria

By Michael E. Ruane

October 6, 2006
Washington Post

Blood stains the walls of the cage where the deadly creatures are kept.

They look agitated and eager to escape, but they've just been fed, and David A. O'Brochta figures it's safe to stick his hand inside. Normally they would bite. Especially if you're a person. Put yourself in a room full of cows, and these things will single you out, O'Brochta says.

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Not on this day, however, and not in this new University of Maryland biotech laboratory in Rockville. At the moment, the hundreds of captive *Anopheles gambiae* mosquitoes, the kind that most often infect people with deadly malaria parasites, are not hungry.

But they will be soon. And that will never change. So O'Brochta, head of the lab's new Insect Transformation Facility, is trying to change something else about *Anopheles gambiae* to prevent it from claiming a million lives a year.

O'Brochta creates mutant insects.

Not the kind in the horror movies that grow 30 feet tall and menace the city.

He's trying to create the kind whose genes have been tweaked just enough, in just the right way that the insect's bad habits are made benign. Just enough so that it can't harbor the parasite.

That is not easy: *Anopheles gambiae* is about as small as an eyelash. Hundreds of its minute, gray, banana-shaped eggs resemble a pinch of gunpowder.

But the state-of-the art lab, which made its debut last month, is designed and equipped for the microscopic tasks of gene-tweaking. Injections into mosquito eggs are done with a quartz glass needle the size of a strand of hair.

'We're building a bug'

"We're building a bug," in much the way inventors would design a new airplane, says O'Brochta, 51, an insect molecular geneticist. "We know we can do it."

The new lab, the only one of its kind in the world, has been designed to perfect the process.

The lab has an insectary where mosquitoes such as *Anopheles gambiae* and *Aedes aegypti*, which can carry yellow fever, are reared in warm, humid chambers that look like walk-in freezers.

There's also a vivarium, an enclosure in which technicians raise the lab mice used to feed the mosquitoes. "We used to use graduate students," O'Brochta jokes.

A mouse is first anesthetized, then laid on the mesh cover of a mosquito cage for about five minutes so the insects can dine. The technicians are careful. If the mouse is left too long, or if there are too many mosquitoes, the mouse could be "exsanguinated," or drained of blood.

Female mosquitoes — the ones that bite — require "blood meals" every few days to nourish their eggs, and it is their excretions that stain the plastic buckets in which

they are kept. After the feeding, the mouse is removed, revived and "given a two-week vacation" to replenish its blood supply, O'Brochta says.

'Flying syringe'

None of the feeding mosquitoes is infected with pathogens that cause disease, he says. And the mice don't develop mosquito "bites" as humans do. But *Anopheles gambiae* remains a "flying syringe," O'Brochta says, and a superb vector for *Plasmodium falciparum*, the deadliest form of the parasite that causes malaria.

The mosquito picks up the parasite by biting an infected person. The parasite mates and produces offspring that are deposited in the next person the insect bites. The insect's taste for people is baffling. "They smell us," O'Brochta says. "They specialize on us." It is not clear why.

But the cycle is devastating. Malaria is believed to have killed more people than all the wars and other illnesses combined.

The Washington region, now malaria-free, once harbored the disease, and George Washington and Abraham Lincoln are believed to have had it. Malaria is thought to have killed Dante, Saint Augustine and Genghis Khan and to have sickened Mother Teresa, Ho Chi Minh and Christopher Columbus.

"Nothing really tops malaria in terms of an insect-borne disease, in terms of deaths," O'Brochta says, sitting in a conference room near his lab. Nowadays, those it kills are "mostly kids in Africa, under the age of 5."

'It's getting worse'

"The magnitude of the problem really hasn't changed in decades," he says. "In fact, it's getting worse. The number of deaths from malaria is actually going up worldwide, not going down, which is kind of a startling statistic in this day and age."

Although drugs to combat the disease exist, economics and politics, along with drug and insecticide resistance, have hampered the fight, O'Brochta says. There is no malaria vaccine, he says. Scientists at Walter Reed Army Institute of Research in Silver Spring and scores of their colleagues elsewhere are seeking to develop one.

O'Brochta's work, along with the work of others around the world, has focused on breaking the disease cycle by altering the characteristics of the mosquito. And much of that focus is on the mosquito's ability to harbor the parasite.

"Most mosquitoes in Africa do not serve as a host for *Plasmodium falciparum*," O'Brochta says. "The ability to serve as a host for malaria parasites is a very narrow,

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restricted trait." So the question is: Could *Anopheles gambiae* be made to resist the parasite?

"That's kind of the big idea," he says. Science has learned how to alter the mosquito's genome and has learned, roughly, which gene to add to make it resist the parasite, O'Brochta says.

But this new mosquito must also be made able to transmit the beneficial traits rapidly among the rest of its population. And that part has been difficult to engineer. "With mosquitoes, we've had virtually no success," he says.

One day last week, O'Brochta and his research colleagues, Robert A. Harrell II, 39, and Channa Aluvihare, 40, were running tests to make sure their procedures and equipment worked. They were injecting mosquito eggs with genetic material that would make the mature mosquitoes glow under ultraviolet light. It had worked before, and they hoped to repeat the process.

Aluvihare used a plastic tube to suck about 20 mosquitoes out of a cage. He placed them in a vial and put the vial in a darkened incubator, where they would lay eggs. Harrell then performed the injections.

Predictable outcome — in part

As the men peered into microscopes, a mosquito trap whirred on a counter nearby. Although none of the insects is infected, the workers didn't want escapees buzzing around. No transgenic insects have ever been released in the wild.

It's not that the mutants would be dangerous. "You're not going to just, all of a sudden, produce huge, huge insects out of these," Harrell said.

The scientists pretty much know the outcome of the genetic changes they're making. "It's not just, throw something in, and 'Let's see what this does,' " Harrell said. "We're not really creating monsters."

But the bug builders can't know everything.

"As a scientist, you're never going to know all the outcomes," O'Brochta says. "We need to know what the risks are, and then we need to be able to manage those risks. . . . Unfortunately, people demand that we often know everything. But when you think about it for more than really just a minute, I think, we realize that . . . [with] everything we do, there's a degree of uncertainty, and there's risk involved."

<http://www.msnbc.msn.com/id/15163360/>



Uganda: Chimps Eat Herbs to Cure Malaria – Expert

**Gerald Tenywa
Kampala**

**New Vision
January 19, 2007**

CHIMPANZEES eat plants similar to the ones used by traditional healers to treat malaria and diarrhoea, researchers have said.

Sabrina Krief, a researcher at Kibale National Park said: "The chimps and human beings around Kibale use similar plants to overcome sickness."

She was speaking at Makerere University's Faculty of Science at the launch a memorandum of cooperation between the university, the Uganda Wildlife Authority and French institutions.

In her five-year research at Kanyawara research station at the edge of Kibale, Krief found that chimps carefully select plants like mululuza, that do not have nutritive value but have medicinal properties that help them overcome malaria, diarrhoea and expel worms from their intestines. Her research included analysing the dung and urine of the chimps.

She also monitored the chimps' behaviour to find out if there was an improvement when sick chimps ate the plants.

"It was stunning to see that traditional healers use the same plants to treat the diseases. Studies on great apes, the closest relatives to humans, will help us discover plants with medicinal properties."



Did You Know!

Due to a lack of Duffy antigens, most Africans and Blacks from the Diaspora are resistant to Plasmodium vivax, a mosquito parasite that causes recurring malaria. Duffy antigens are race sensitive. Black people, depending upon ethnicity and region, are 68% to 90% immune to the recurring malaria infection caused by Plasmodium vivax.

People that have Type O Blood are relatively resistant to the severe malaria caused by Plasmodium falciparum infection. Anopheles Funestus and Anopheles Gambiae, carriers of P. falciparum, are both present in Uganda.



Mission Statement

Our aim at The African Traditional Herbal Research Clinic is to propagate and promote the awareness in Afrikan peoples at home and abroad of their health, biodiversity, history and cultural richness. We gather pertinent information on these issues and disseminate these freely to our people in Uganda, the rest of the continent, and anywhere in the Diaspora where Afrikans are located.... One of the main ingredients for increasing poverty, sickness, exploitation and domination is ignorance of one's self, and the environment in which we live. Knowledge is power and the forces that control our lives don't want to lose control, so they won't stop at anything to keep certain knowledge from the people. Therefore, we are expecting a fight and opposition to our mission. However, we will endeavor to carry forward this work in *grace and perfect ways*.

“Where there is no culture, there is no indigenous knowledge. Where there is no indigenous knowledge, there is no history. Where there is no history, there is no science or technology. The existing nature is made by our past. Let us protect and conserve our indigenous knowledge.”

CALENDAR OF EVENTS

SPECIAL EVENT: CLINIC OPENING

PLACE: AFRIKAN TRADITIONAL HERBAL RESEARCH CENTRE

TIME:

Afrikan Traditional Herbal Research Centre
1175A Mukalazi Road, P.O. Box 29974
Bukoto, Kampala, Uganda East Africa
Phone: +256 (0) 41 530 456
Email: clinic@blackherbals.com

ADDRESS CORRECTION REQUESTED

Herb of the Month African Wormwood

Artemisia afra (Asteraceae)

COMMON NAMES: Wormwood

PARTS USED: Berries, fruits, flowering tops and leaves.

MEDICINAL ACTIONS: Analgesic, Purgative, Stomachic, Antimicrobial, Antioxidative, Decongestant, Antihelminthic, Antihistamine

Artemisia is one of the most extensively used herbal medicines by indigenous populations. This is the bitterest of herbs. Wormwood's name is derived from its medicinal property of expelling intestinal worms for which it has been well known since ancient times. An Egyptian papyrus dated 1,600 years before Christ describes this bitter herb. It is been used for coughs, colds, chills, flu, croup, whooping cough, loss of appetite, dyspepsia, stomachache, for gout and as a purgative. It is usually used in the form of either a decoction or an infusion, and often this is made into syrup by adding sugar, especially as a remedy for bronchial troubles. Infusions are also used as a lotion to bathe haemorrhoids, in the ear for earache and as a hot bath to bring out the rash in measles. It is used in the mouth to ease the pain from gumboils and is taken for fevers and "blood poisoning". Artemisinin, developed in China from the wormwood plant, is the leading pharmaceutical treatment for malaria.



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