

# Malaria

## return of a deadly foe

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### An old weapon renewed

Malaria, the disease that 20 years ago became the target of a worldwide eradication program, is now on the upsurge. An estimated 200 million people are affected and an even larger number are carrying the infection. In Africa alone, where one patient out of eight is a malaria case, the disease is reckoned to kill one million children a year. The World Health Organization (WHO) no longer believes that malaria eradication is possible.

What happened? The chief problem is the resistance of mosquitoes to DDT and other insecticides used against them. The first mosquito species became resistant to DDT in 1951. Now, 43 species are resistant, and the resistance has spread to other chemicals. Of the 25 percent of the world's population who live in malarial areas, one-third of them — some 260 million people — live in areas where insecticide resistance is a growing problem. Latin America and Asia are the areas at greatest risk.

A second problem is that the principal antimalarial drugs, chloroquine and related substances, have little effect on the parasite that causes the most severe form of the disease, *Plasmodium falciparum*. Fortunately, drug resistance and insecticide resistance have not coincided in one area, but sooner or later such a situation is bound to occur.

An important cause of insecticide resistance in mosquitoes is the widespread use of insecticides on food crops. Because of the initial success of DDT, research and development of other insecticides has been slow, and the available alternatives are

much more costly, and often much more toxic. Unfortunately also, research has failed to turn up any dramatic new weapon against malaria. Techniques for genetic control have turned out to be extremely costly. And despite a breakthrough made in 1976 at Rockefeller University in New York, where researchers succeeded in maintaining the malaria parasite in laboratory conditions, the development of a vaccine is still a long way off.

Humans, albeit inadvertently, have helped the resurgence of malaria: man-made ditches and irrigation ponds have provided new mosquito breeding grounds; roads and improved means of transportation have brought travelers and goods from malarial areas to regions where it didn't exist before or where it had been eradicated. And because of the trust in insecticides, no systematic destruction of mosquito breeding grounds has been carried out.

Renewed interest in malaria research brings new hope. The WHO created the Special Programme for Research and Training in Tropical Diseases in 1976 in an attempt to bring malaria and five other major tropical diseases under control. Many organizations, including the IDRC, have contributed to this programme, whose activities include efforts to revive research in affected countries as well as to provide support for research on new tools for the prevention, diagnosis, and treatment of tropical diseases.

If malaria is to be brought under control, however, countries will need to go back to destroying mosquito breeding grounds as well as other measures used before the advent of DDT. Earthscan, a media information unit on environment-development issues supported by the UN Environment Programme, reports, for instance, that experiments in Mexico have shown that one species of mosquito can be almost totally eliminated by increasing the flow of water in paddies, so as to sweep away the mosquito larva resting on the water's surface. In the Peoples' Republic of China, carp are grown in paddy fields so they can eat the mosquito larvae.

If these efforts are to succeed, education and community involvement in affected areas are necessary. Only a concerted effort on the part of scientists, politicians, and the people themselves will bring the disease under control. □

A new antimalarial drug has been successfully extracted in the Peoples' Republic of China from a medicinal herb. This is the first major drug breakthrough since the discovery of chloroquine, which is now generally accepted as the most effective drug against malaria.

The new drug, Ching Hao Su, is an antimalarial substance obtained from common apiaceous wormwood. According to ancient Chinese medical records, the plant was used for malaria more than a thousand years ago.

The research was first conducted by the Institute of Chinese Materia Medica under the Academy of Traditional Chinese Medicine. Its staff members extracted Ching Hao Su in 1972, and dozens of scientific organizations later joined the research effort. Clinical tests and experiments in chemical pharmacology and into the forms of prepared drugs were carried out, production processes were studied, and herbal resources surveyed during the course of work on the drug. During this process, the clinical effectiveness and the chemical structure of the drug were ascertained. Because of its crystalline chemical structure, which is entirely different from those of the known antimalarial drugs used throughout the world, Ching Hao Su has proved to be a completely new discovery, reports China Features, an official news service of the PRC.

The new drug can be administered orally or by intramuscular injection, and is reliable and effective. It does have a shortcoming, however: the inability to prevent short-term relapses. Efforts are now being made to overcome this defect.



Photo: Neill McKee

Malarial mosquitoes breed in any convenient body of water and constant care must be taken to eliminate such breeding grounds.