# *WHO PUBLISHES GUIDELINES ON CULTIVATING ESSENTIAL PLANT USED IN ANTI-MALARIA MEDICINES*

**Medicine**

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The World Health Organization (WHO) today publishes guidelines for the cultivation and collection of Artemisia annua L, a Chinese traditional medicinal plant which is the source of artemisinin, used to produce the most effective medicines for malaria. The guidelines will contribute to improving the quality of Artemisia annua L to further develop artemisinin-based medicines, and help ensure a sustainable supply to meet market demand.

Artemisia annua L, used in Chinese traditional medicine for centuries, is today considered part of the solution where malaria has become resistant to other medicines. Artemisinin-based combination therapies (ACTs) have been recommended by WHO since 2001 in all countries where falciparum malaria - the most resistant form of the disease - is endemic.

Since then, the world market for products containing artemisinin derivatives has grown rapidly. However, not all artemisinin meets the required standards to produce quality medicines, making it all the more urgent to promote best practices in the cultivation and collection of the raw material used to make the combination therapy.

About 40% of the world's population is at risk of contracting malaria which is resistant to other medicines. Of the 76 countries needing artemisinin-based treatment today, 69 have adopted the WHO recommendation to use this therapy.

The availability of these treatments still falls short of what is needed. Of an estimated 600 million people needing ACTs worldwide, only about 82 million are receiving the treatment through public sector distribution systems (which constitute 90% of antimalarial distribution in developing countries).

The "WHO monograph on good agricultural and collection practices for Artemisia annua L." provides a detailed description of the cultivation and collection techniques and measures required for a harvest to meet quality requirements. The information is based on research data and the practical experience of several countries where successful cultivation practices have led to a high yield of good quality Artemisia annua L.

As with most medicinal herbs, artemisinin's contents and efficacy are subject to climatic, geographical and environmental conditions. Not all Artemisia annua plants necessarily contain artemisinin and in some places, depending on the quality of the soil and rainfall, the content may be very low and without industrial value. These factors make it necessary to run pilot tests of cultivation on small areas of land to ensure that the land selected is suitable for growing high-yield plants before large-scale cultivation begins.

Cultivation of Artemisia annua requires a minimum of 6 months and extraction, processing and

manufacturing of the final product require at least 2–5 months depending on the product formulation. High temperatures during post-harvest handling can damage the quality of the plant. After harvesting or collection, the artemisinin content of the leaves will gradually decrease. The value of the raw material for extraction can be lost after six to twelve months' storage.

The authors of the guidelines caution governments on two fronts. First, they must ensure that farmers work with manufacturers to determine the actual market demand for the plant. Recent experience in some countries has shown that overproduction not only wastes money and time, it can also have a negative effect on the plant's future yield. Second, they must ensure the availability of the technical skills and know-how needed to extract artemisinin from dried leaves.

The WHO monograph also aims to provide a model for countries and researchers to develop further monographs on good agricultural and collection practices for other medicinal plants, and promote the sustainable use of the plant as part of the larger aim of protecting the wild resources of medicinal plants.

Recent estimates of the global malaria burden have shown increasing levels of illness and death caused by malaria, reflecting the deterioration of the malaria situation in Africa during the 1990s. About 90% of all deaths from malaria occur in Africa, in the areas south of the Sahara, and the great majority of these are in children under the age of five.

Key among the factors contributing to increasing malaria mortality and morbidity is the widespread resistance of Plasmodium falciparum to conventional antimalarial drugs, such as chloroquine, sulfadoxine–pyrimethamine and amodiaquine. The rising tide of counterfeit and substandard malaria medicines in parts of Africa and Asia contributes to the problem of resistance. Multidrug-resistant Plasmodium falciparum malaria is also widely prevalent in south-east Asia and South America.

The Guidelines can be found at:
http://www.who.int/entity/medicines/publications/traditional/ArtemisiaMonograph.pdf

www.who.int.