Artemisia Annua Anamed Tea
a revolution in the history of tropical medicine

The golden opportunity that, because of economic and bureaucratic interests, the world is likely to miss

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Each year 300 million people suffer from malaria, and between 1 and 3 million people die of malaria. The rediscovery of the plant *Artemisia annua* is therefore a matter of joy in the world of tropical medicine. Artemisinin, extracted from the plant, acts 10 to 100 times more quickly than all other known malaria medicines (1).

The key question is, is it necessary to first extract the artemisinin from the dried leaves with an organic solvent, and then to manufacture tablets, or is it possible more simply to grow artemisia and to make tea from the dried leaves?

Let's think: A reduction in the death-rate due to malaria in Africa of only 20% would result in an economic benefit equal to the entire development aid Africa receives (20 billion USD per year) (2). Or, if we could show that artemisia could heal 80% of malaria cases, then this Natural Medicine, that costs almost nothing to produce, could bring a financial benefit equal to 4 times the entire development aid budget for Africa!

In reviewing artemisia, the German television channel RTZ announced „Malaria: Victory in sight!" and the „Sueddeutsche Zeitung" (a newspaper for southern Germany) described it as "The plant that could save Africa" (3). We say, quite simply, yes, victory is in sight, not in the sense of the destruction of the enemy, but in the sense of co-existence. Humanity will never eradicate malaria, and malaria need no longer threaten to eradicate mankind! Our vision is that malaria can be treated, that it can be treated for the next thousands of years, and that also the poorest people may have malaria treatment for thousands of years. That is the golden opportunity.

For this purpose we have proposed detailed treatment guidelines (4). We recommend using dried and powdered artemisia leaves as a tea for internal use, and in the form of an aqueous extract as an enema for unconscious patients. For those cases in which artemisia alone is not enough, we describe how artemisia may be combined with old, patent-free and therefore cheap, synthetic anti-malarials, particularly for example with AIDS patients or children under 5 years old. Using these malaria treatments, based on artemisia tea, an African country can build an effective front against the threatening advance of malaria, without either suffering ever increasing drug prices or holding out the begging cap to Bill Gates.

There are many who disagree with our recommendations. We take their comments seriously. We answer our critics as follows:

1.) *"You have not examined sufficient numbers of malaria patients to claim that artemisia tea is effective"*. During recent years, *anamed* partners have collected a wealth of experience. For example, Ralph Wiegand in Arba Minch, Ethiopia, Maike Ettling in Musoma, Tanzania. **Both have treated over 1000 malaria patients with a success rate of between 80 and 100%** (5).

2.) *"The healing rate with the whole plant extract is too low"*. In the scientific literature, three Chinese studies showed up to 100% effectiveness when powdered artemisia leaves were administered directly as powder, or mixed with oil, or extracted with alcohol (1). These are all procedures that even the most basic and most remote African clinic could follow.

3.) *"The tea does not kill every last plasmodium"*. The most important thing for the African is not that every last plasmodium is destroyed, but the freedom from symptoms. Many Africans always have plasmodia in their blood, which provide a protection against new infections. The study of Dr Mueller (6) in the University of Tübingen showed that 7 days after the start of treatment with artemisia tea, 77% of the patients no longer had an elevated temperature, in 88% the tiredness disappeared, and in 92% muscle pain and nausea disappeared. In

fact, the experience of anamed groups in many African countries is that the cure rate, and the rate of loss of symptoms, is much higher than this. If at this stage the patient has not recovered, at least he should now have enough strength to walk to the nearest clinic for a full medical examination to determine what his disease really is. (In the Congo that could easily be 100 km (7), or in Amazonia a 3 day journey by boat (8)).

4.)"*The artemisinin level in the blood is too low. To treat malaria properly, patients would have to drink 20 litres of tea every day"*. The University of Tübingen (6) has shown that after drinking 1 litre of artemisia tea each day for 7 days, antimalarial effective blood levels were reached. Volunteers that drank tea made from 9 grams of dried artemisia leaves had a peak plasma level of 240 nanograms of artemisinin per ml. This is 26 times higher than the minimum artemisinin concentration required for growth inhibition of *Plasmodium falciparumin vitro* (14). This university, however, does not recommend artemisia tea for the treatment of malaria because, within four weeks of being treated many patients in the clinical study suffered a new malaria attack. This may, however, be due to new infections. We would like to point out that artemisinin has a very short half-life, only 1½ hours, in comparison with, for example, Fansidar, which has a half-life of up to 3 weeks! For this reason we insist that the tea is drunk for 7 days, even sometimes 12 days, and that everything possible be done to prevent a new infection.

It is also important to remember that the artemisinin in artemisia tea has the additional **effect of strengthening the immune system** (1). Many patients, including those who suffer from quite different diseases such as **typhoid fever, AIDS, rheumatism or bronchitis**, tell us that, after drinking the tea, they feel new strength.

5.) *"Worldwide the greatest fear is that the malaria parasite might develop resistance to artemisinin, and this danger will increase through the use of artemisia tea. That would render the last weapon in the fight against malaria useless"*. We also share this concern, but we have absolutely no fear that by using artemisia tea we are increasing this risk. The tea has been used in China for 2000 years, without resistance developing. Now the pharma industry has become involved. Drug companies have isolated artemisinin and produced tablets of this single antimalarial component, and in less than 20 years the first signs of resistance have been observed (9). If artemisinin were to become ineffective, then, sorry, it is industry and not natural herbal therapy that would be to blame.

Throughout history there is in fact no record of any parasite becoming resistant to a whole plant extract. For example, there is resistance to synthetically made chloroquine, but tea made from the bark of the cinchona tree is just as effective today as it has been for hundreds of years.

6.) *With modern artemisinin based drugs we have an absolutely reliable therapy for malaria – why use a primitive tea?* In our opinion, the opposite is true! Firstly, a tea made of home-grown artemisia can be trusted much more than tablets bought in a pharmacy in a tropical country. Artemisinin or its derivates (e.g. artesunate, dihydro-artemisinin) worldwide are expensive and not available in sufficient quantities. This has proved to be the ideal situation for the illegal production of counterfeit medicines. (See "Manslaughter by Fake Artesunate", 15). That means that these firms add just enough of the declared ingredients, maybe as low as 1%, so that the tablets pass the quality checks. This is tantamount to murder. It also gives the malaria plasmodia every opportunity to develop resistance. In contrast, the characteristic taste of artemisia tea is such that no fakes have ever yet been reported.

Secondly, today, even the majority of Artemisinin Combination Therapy (ACT) drugs (i.e. isolated artemisinin combined with another antimalarial drug) sold in Vietnam and Cambodia are fakes (12)!
Thirdly, in ACT preparations, we have two different antimalarial drugs that have different half-lifetimes in the blood. The ACT drug is usually taken during 3 days. The first component is a artemisinin derivate that always has a half-life of one to two hours. This means, on the evening of the third day, there is no more artemisinin in the blood of the patient. The second drug however is lumefantrine with a half-life of 5 days, or even mefloquin with a half-life of 3 weeks! This means, if a patient takes the artemisinin derivate + lumefantrine, on day 4 to day 9 he has only lumefantrine in his blood. If he takes the combination artemisinin derivate plus mefloquin, on day 4 to day 25 he has only mefloquin in his blood, and sub-therapeutic doses of it many weeks more. This means that if a person is bitten by a mosquito during this later "window" period, (and many patients are bitten by mosquitoes every day) the plasmodium encounters only a monotherapy. The plasmodium has, therefore, enough time to develop resistance to this second product. We quote, "reports of treatment failure emerged soon after artemether – lumefantrine was introduced in Zanzibar, with genetic evidence for selection of lumefantrine resistant parasites" (16).
It is, therefore, absurd to demand that we do not use artemisia tea to treat malaria so as not to endanger the effectiveness of the tablets: the artemisia tea is a far more sustainable solution!

7.) *"Compared with the use of a single isolated substance, the effect of a whole extract cannot be accurately quantified and therefore gives too many uncertainties"*. We should learn from history. For decades scientists have condemned valerian tincture because no single, effective substance could be isolated. The conflict was resolved by the acknowledgement that valerian tincture is only effective because of the synergy of all the various constituents, and to isolate one ingredient makes no sense. Many independent scientists confirm that this is also true for artemisia tea (13).

8.) *"Artemisia tea is a monotherapy and should therefore not be used."* Artemisia tea is certainly no monotherapy. Antimalarial substances in the plant include artemetin, casticin, chrysoplenetin, chrysosplenol-D and cirsilineol (1). The effectiveness of the tea depends upon the synergistic effect of 29 sesquiterpenes, 36 flavonoids und a variety of essential oils (1). The effect of artemisia tea depends only to a low extent on the artemisinin content. It has even been demonstrated several times that extracts from the tea containing no artemisinin at all are still effective against malaria. There are in fact varieties of artemisia that contain no artemisinin at all, and still have some anti-malarial activity, e.g. *A. absinthium, abrotanum* and *afra*.

9.) *After 6 months the dried leaves have lost most of their artemisinin content and are then useless.* We have shown that the artemisinin content of a properly dried sample of artemisia tea remains stable for three years. The research scientist Dr. Pedro Mellilo of the University of Campinas in Brazil has even shown that, in a properly stored sample the artemisinin content actually increases with time, as a result of the conversion of the precursors (9). We in*anamed* take care to ensure that our African partners dry and store their artemisia tea properly.

10.) *"anamed should recommend that people in Africa grow artemisia only for sale to industry."* There is today a worldwide shortage of artemisinin. The price of isolated artemisinin has exploded, because farms cannot produce enough artemisia leaves. It is in our view irresponsible, out of the available harvest, only to extract the artemisinin and to throw the rest of the plant away. The precursor of artemisinin, artemisinin acid, can be present in the plant in a concentration eight times higher than artemisinin itself (1), but in extracting artemisinin alone this is all thrown away. Many more people could be treated if these same plants were used for artemisia tea. African farmers can sell their dried tea as a medicine for around 20 Euro per kilo to hospitals but for less than half a Euro to the pharmaceutical industry (our experience in Tanzania).

11.) *"In comparison to tablets, it is too difficult to measure the correct dosage of tea."* In our *anamed* publications we have clearly defined the minimum quality of "*Artemisia annua anamed*" tea. Artemisia tea can be given in dosages that are just as precise as those for tablets. *Anamed* Tanzania fills artemisia tea manually into tea-bags. *Anamed* South Africa uses a machine to fill tea bags or capsules, and now produces 3 tonnes a year (10).

Our work would be made very much easier, if:

(1) African governments were more interested in the health of their people and the economic development of the country, rather than government income. When a commercial drug is imported, the government receives income from two sources; the import tax and the registration fee. When a Natural Medicine is produced locally, the government can only benefit, at most, from a low registration fee. For example, governments have much more income from imported Voltaren for rheumatism treatment, than from locally produced chilli ointment. This is equally true for the import of Coartem to treat malaria, as compared with if local clinics grow and use artemisia tea.

(2) The WHO were to free itself from the tentacles of industry, by having its administration costs paid out of public funds and not by courtesy of the pharmaceutical industry. The world urgently needs an independent WHO, not a WIO (World Industry organization)! The WHO would appear to be so poor that it receives a fee of one million USD, just for acting as an intermediary for the supply of Coartem to Kenya, according to the Kenyan newspaper Daily Nation (11). How could the WHO possibly have any interest in healing plants or conduct any research in this area, when for putting counter-arguments in their favour they receive so much money from industry? And, worldwide, how can doctors remain neutral and advise their patients with a clear conscience, when they are legally obliged to give recommendations that arise out of such vested interests?

(3) University research worldwide were to be paid out of public funds, so that it became more problem orientated than product orientated in the interests of the pharma industry.

In summary, **Artemisia tea** is ready for the market, not from big industry but in a way that thousands of small projects can take on. *Anamed* does not patent anything. Only this way can tropical countries develop their own

production capability. A European military organisation offered to finance our research, on condition that we did not publish the results. We declined this generous offer!

***Anamed* offers humanitarian organisations worldwide**: 1) freedom to grow appropriate varieties of artemisia without the payment of any royalties, 2) freedom to use artemisia tea without the payment of royalties and 3) access, completely free of charge, to the instructions for its use for the treatment of malaria and other diseases (available on the internet www.anamed.net).
On the other hand, as is clear from our series of books "Natural Medicine in the Tropics", *anamed* is not fixed on one single plant. We encourage all countries to examine further locally available antimalarial plants, for use alone or in combination with *Artemisia annua*. RITAM has recorded over 1000 medicinal plants that are used for malaria. We look forward to the results of research that is being conducted in many tropical countries into their locally available medicinal plants. Some of these may in the future be used in a combination with *Artemisia annua*, which would be an example of "herbal combination therapy" (HCT). For the few cases in which artemisia tea alone is not effective, such an HCT could be the answer.

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Anamed partners look after 650 artemisia fields in 75 countries.

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