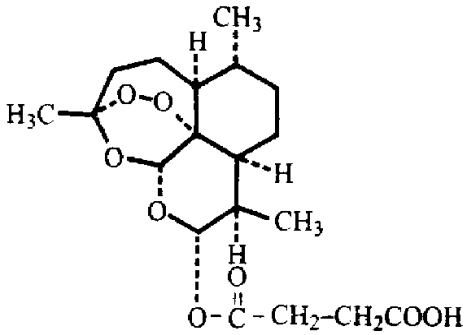
Cancer and A-3

1. How does *Artemisia annua anamed* (A-3) cure malaria?

Artemisinin is described in chemical terms as a sesquiterpene lactone peroxide. Its lethal effect on the plasmodium is due to its two oxygen atoms in the peroxide bond. The plasmodium attack and digest the red blood cells, but because they cannot excrete the iron this accumulates within the plasmodium. When this iron comes into contact with the peroxide in the artemisinin, it breaks the peroxide bond, the oxygen atoms become charged and as such are called free radicals. These free radicals immediately attack the protein in the plasmodium, and the plasmodium are destroyed.



2. Why is it thought that A-3 may cure cancer?

Many cancer cells have a high content of iron. If it were available, they would absorb even more iron. Singh and Lai[1] describe this as follows: "To accommodate a rate of iron intake greater than normal cells, cancer cells surfaces feature greater concentrations of transferrin receptors - cellular pathways that allow iron into a cell". The hypothesis is that artemisinin will react with iron in cancer cells and kill those cells in just the same way as it reacts with iron in plasmodium.

3. First research results – in animal experiments

In 1995 J C Moore et al[2], researchers in the USA, published the results of *in vivo* (i.e. in animals) experiments on rats in which cancer cells (fibrosarcoma) had been implanted. They administered ferrous sulphate in the morning, and six hours later three doses of dihydroartemisinin were given at two hourly intervals. Dihydroartemisinin, sometimes referred to as ARH, is a form of artemisinin that is soluble in water, and was produced from artemisinin extracted from *Artemisia annua*. (ARH is also produced within humans after taking artemisinin, whether as tablets or in the form of A-3 tea.)

They observed that the growth rate of the tumour was significantly retarded in rats treated in this way. Animals given only ferrous sulphate, or only dihydroartemisinin, showed no such effect. There were no apparent toxic effects. The authors concluded that an "artemisinin analog-ferrous salt combination may provide a novel approach for cancer therapy".

4. Further research results – in human cells

In 2001 T. Efferth et al[3] published the results of *in vitro* (i.e. test-tube) experiments in which the effect of Artesunate ("ART", another water soluble artemisinin derivative) was observed on a variety of cancer cell lines. They found that ART was most active against leukaemia and cancer of the colon, less active against melanomas and breast, ovarian, prostrate, central nervous system (CNS) and renal cancers. ART was observed to be least effective with lung cancer. With leukaemia, ART was effective in cases where the leukaemia cancer cells have become resistant to other plant based drugs, e.g. vincristine. The authors concluded that "ART may be a promising 3 for cancer chemotherapy".

Singh and Lai[1] conducted research into breast cancer cells, which they say have 5 to 15 times more transferrin[4] receptors on their surface than normal breast cells. Both breast cancer cells and normal

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[1] Singh N P and Lai H (2001), "Selective toxicity of dihydroartemisinin and holotransferrin toward human breast cancer cells". Life Sciences, 70:49-56.

[2] Moore J C, Lai H, Li J R, Ren R L, McDougall J A, Singh N P and Chou C K (1995), "Oral administration of dihydroartemisinin and ferrous sulfate retarded implanted fibrosarcoma growth in the rat", Cancer Letters, 98(1):83-7.

[3] Efferth T, Dunstan H, Sauerbrey A, Miyachi H and Chitambar CR (2001), "The anti-malarial artesunate is also active against cancer", International Journal of Oncology 18: 767-773.

[4] Transferrin is an iron-transporting protein found in blood plasma.

cells were exposed to artemisinin. The results showed that artemisinin effectively killed radiation-resistant breast cancer cells *in vitro*. However, the effects on the normal breast cells were minimal. This simply goes to show that this herb might be a simple, effective and economical treatment for cancer.

5. Further research results – in humans

A patient suffering cancer of the larynx was given Artesunate injections and tablets over a period of nine months. His tumour was significantly reduced by about 70 percent just after two months of treatment. The patient also reported that he benefited much from this treatment. It actually prolonged his life and improved his quality of life. Once again, artemisinin had proven its amazing properties in killing cancer cells[5]. A German clinic has also told us of some good experiences with Artesunate in treating tumours.

6. The response of academia and governments

The response of the University of Washington, USA, to the research of Lai and Singh in 1996 was to file the following patent[6]:

"All cancer cells need plenty of iron to multiply. In other words, cancer cells have a much higher iron concentration than normal cells. During the study, the researchers pumped cancer cells with maximum iron concentrations and then injected artemisinin into them. The results revealed that artemisinin had the properties of killing and inhibiting cancer cells." *(US Patent Document 5,578,637, University of Washington, inventors Dr H.Lai and Dr NP Singh, November 26 1996.)*

In contrast, ***anamed*** continues its research with artemisia, not for the purpose of profit, but for the benefit of the people of Africa.

7. The significance for *anamed*

a) As with all scientific research we must assess the results carefully. For example it is not always the case that what works with animals works equally well with humans.

b) Artesunate is expensive. Such a treatment for cancer would be very cheap for Europeans in comparison with conventional chemotherapy, but would still be very expensive in Africa.

c) We have proven that A-3 tea is just as effective as Artesunate in treating malaria. It may well be the case that A-3 tea is just as effective as Artesunate in treating cancer cell lines.

d) On an experimental basis, consenting cancer patients could be given iron tablets in the morning and A-3 tea in the late afternoon. This may certainly be an attractive proposition in the absence of chemical treatments, as is often the case in the rural areas of developing countries. Usually hospitals and health centres there have a plentiful supply of iron tablets, which are used in treating anaemia, and can grow A-3 themselves in their own garden.

8. The role of *anamed* Germany

anamed Germany will;

1. not treat cancer patients.
2. collaborate with research institutes that are seeking natural treatments for cancer.
3. provide seeds of A-3 so that researchers and Natural Medicine practitioners have a plentiful supply of A-3 leaves.
4. work in these ways only with the understanding that no patents will be taken out on the results or the processes.

9. Preliminary results with cancer patients and A-3 tea

Preliminary results with patients known to *anamed* who suffered various forms of cancer have shown that the tea sometimes has no effect, and sometimes the general health of the patient improves. This may be due to the stimulation of the immune system, or it may be due to a reduction

[5] Singh and Verma (2002), "Case report of a laryngeal squamous cell carcinoma treated with artesunate", Archive of Oncology, Vol 10(4), 279-80

[6] See Artemisinin Study Abstracts, http://www.drlam.com/opinion/artemisinin_study_abstracts.cfm

in the number of tumour cells. It would be interesting to see whether A-3 tea has an effect on the level of tumour markers.

We request that all reports of your experiences be returned to *anamed* (see the form). Thank you!

Observations of the use of *Artemisia annua* (A-3) with cancer

Record Form

Date…….

Patient: (Name or number)……

Address (optional)…….

Age……. Height……..… Sex: m/w……..…

Type of the tumour…….

Was an operation performed?……

If so, when?…….

Was chemotherapy administered?……

If so, from……to ……..

Was radiation therapy administered?……

If so, from……to ……..

Present condition

In your judgement, what is the prognosis as the artemisia treatment was administered:

Date……Prognosis…….

Date……Prognosis…….

Date……Prognosis…….

Use of artemisia* Scheme A / B / C / D** (please circle)

	1st date (Condition before therapy commenced)	2nd date	3rd date	4th date
Date				
Body weight (kg)	…….	…….	…….	……
Tumour marker	…….	…….	…….	……
General condition*	…….	…….	…….	……
Possible side effects**	…….	…….	…….	……
1. dizziness	…….	…….	…….	……
2. vomiting	…….	…….	…….	……
3. other	…….	…….	…….	……
4. other	…….	…….	…….	……

* Please indicate as follows:
1 = very good, 2 = good, 3 = moderate, 4 = poor, 5 = bad, 6 = very bad

** Please indicate as follows:
1 = no side-effects, 2 = slight side-effects, 3 = moderate side-effects, 4 = marked side-effects, 5 = strong side-effects, 6 = very strong side-effects.

*** Please see over the page.

Remarks of the patient:

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Schemes for the administration of artemisia:

Scheme A: Each day, pour 250 ml of boiling water over one teaspoon (1.5g) of dried leaves of *Artemisia annua anamed*. Allow to draw for at least 15 minutes. The patient drinks this slowly over the course of the day.

Scheme B: On each of the first seven days of each month; pour 500ml of boiling water over 4 teaspoonfuls (about 5 grams) of dried leaves of *Artemisia annua anamed.* Allow to draw for at least 15 minutes. The patient drinks this slowly over the course of the day.

Scheme C: Each day, before breakfast, the patient takes 25 drops of Ferrosanol or 1 dragee of Ferrosanol. After about 2 hours this treatment is repeated. In the afternoon, pour 250ml of boiling water over 1 teaspoonful (about 1½ grams) of dried leaves of *Artemisia annua anamed.* Allow to draw for at least 15 minutes. The patient drinks this before the evening meal.

Scheme D: On each of the first seven days of each month, before breakfast, the patient takes 25 drops of Ferrosanol or 1 dragee of Ferrosanol. After about 2 hours this treatment is repeated. In the afternoon, pour 500ml of boiling water over 4 teaspoonfuls (about 5 grams) of dried leaves of *Artemisia annua anamed.* Allow to draw for at least 15 minutes. The patient drinks this before the evening meal.

Notes for doctors

These doses of Ferrosanol correspond to a daily dosage of about 100g of bivalent iron, or about 300 mg of ferric sulphate (Fe_2SO_4). You can in fact make this iron treatment very economically yourself. Buy 250 gram of pharmaceutical ferric sulphate[1] and mix this very thoroughly with 2250 gram of normal sugar. The patient should take in the morning a total of 3 grams of this mixture; that means, before and after breakfast half a level teaspoonful. Please check the size of the teaspoons in your country – they vary quite a lot!

Caution!

This is valid for all our observational studies.

The purpose of this report form is to help us evaluate the results of the use of *Artemisia annua anamed* with patients who have agreed to follow this treatment. It does not imply that *anamed* can recommend any of the treatments described. There are, as yet, no clinical results to confirm the success of these treatments. As treatment with artemisia is not a legally recognised therapy, patients and doctors use it at their own risk. Both doctors and patients have the responsibility to inform themselves about the risks, effects and side effects of artemisia therapy and artemisia / iron therapy. *anamed* cannot guarantee success, neither can *anamed* take any responsibility in the event of a serious outcome or unexpected side-effects.

Doctors working overseas must work in cooperation with the local health authorities.

[1] In Germany, the pharmacist will find this under number PZN 1790731. The package carries the warnings: “dangerous to health” and “explosive”. Do not let this worry you!