

## Artemisinin - an ancient Chinese remedy fights cancer

Artemisinin is a secondary plant substance, chemically a sesquiterpene, that occurs in the leaves and flowers of the annual mugwort (*Artemisia annua*). The artemisinin structure is characterized by a trioxane ring system and a peroxide bridge. It is used in Vietnam, China, and Africa to treat infections with multi-resistant strains of *Plasmodium falciparum*, the causative agent of tropical malaria, were used.

For us, mugwort is only known to many as the main component of absinthe and wormwood. A type of wormwood, *Artemisia annua*, has been used as a medicinal plant in China for centuries. A few years ago, Henry Lai and Narendra Singh from the University of Washington discovered the wormwood derivative artemisinin as a very promising anti-cancer agent. The Chinese used artemisinin to treat malaria. Its use was long forgotten. Not until the seventies during an archaeological dig in the last century, ancient remedy recipes were found, including the one for artemisinin. Since then you have to speak of a great success story of the substance, as it is now widely used in Asia and Africa to fight malaria.

The secret of its effect lies in its reaction with iron, which is found in high concentrations in malaria pathogens. If artemisinin comes into contact with iron, a chemical reaction occurs that creates free radicals, which are the real weapon against malaria parasites. They attack the cell membrane, literally tear them apart and thus destroy the pathogen.

Since cancer cells use large amounts of iron in order to reproduce their DNA during cell division, the concentrations in it are also significantly higher than in normal cells. The cancer cells can absorb more iron because there are many transferrin receptors on their surface.

These bind the iron particles and channel them into the interior of the cell. Cancer cells are pumped full of iron as possible. If you give artemisinin, the same reaction is set in motion as with malaria, there is a massive release of oxygen radicals in the cancer cell, so that this leads to their demise: they are destroyed.

These findings were confirmed in breast cancer cell cultures. Eight hours after exposure to artemisinin, 75 percent of the cells were destroyed, according to there were almost no more 16 hours. Tests with leukemia cells were even more impressive. These were completely destroyed after just eight hours.

In addition to its high effectiveness, artemisinin has many advantages:

- It's selective. It works on
- Cancer cells toxic, but on
- normal cells, it has almost no negative effect. Even
- Cancer cells that are resistant to cytotoxic drugs react or are killed.

All types of cancer are reactive and sensitive!  
(Intern. J. Oncology 18: 767-773, 2001 Effert et al.)

It was also important in these experiments that one experiment used breast cancer cells that had not previously responded to radiation treatment responded, but were sensitive to artemisinin.

This means that cancer treatment with artemisinin could also be successful in cancers for which conventional therapies have not yet worked.

From the idea to treatment for more aggressive types of cancer, such as pancreatic cancer, or acute leukemia, the test results are very promising.

These cancers are extremely rapid

cell division and thus by even higher iron concentrations. Recent research has shown that artemisinin also affects the

neoangiogenesis takes. This means that the substance can possibly prevent the tumor from creating new paths in the organism and from forming metastases.

#### Artemisinin as part of complementary tumor therapy

As part of a complementary tumor therapy, cancer patients are primed with iron before the use of artemisinin (1–2 days e.g. Ferinject, Ferlecitin). Then 3 - 6 milligrams of artemisinin are given per kilo of body weight. After six weeks, priming with iron is carried out again, followed by another six-week administration of artemisinin. Artemisinin can target cancer cells while killing normal cells. "In cell cultures, artemisinin alone is about 100 times more effective at killing cancer cells than known cytostatics," said Lai.

Because cancer cells multiply so quickly, most cancer cells need more iron than normal cells to replicate DNA. So that cancer cells can also take up more iron, they have more transferrin receptors on their surface, significantly more than healthy cells. These receptors enable iron to be transported quickly into the cancer cell. Transferrin is an iron-binding protein. Transferrin serves as a Trojan horse: because the cancer cells recognize transferrin as a natural protein, they take up more iron, then the applied artemisinin can then release aggressive oxygen radicals from its bound hydrogen peroxide.

Artemisinin works similarly in malaria because the malaria parasites accumulate high iron concentrations, at which artemisinin then releases hydrogen peroxide on contact, which leads to the death of the parasites.

Artemisinin was well tolerated a thousand times over in the treatment of malaria under Evidence.

We use artemisinin from Euronutrador.

The capsule contains 100mg, for a 70 kg patient the daily dose is approx. 420 mg daily, i.e. 2 x 2 capsules

At the beginning we start after the initial iron priming with double the dose of artemisinin, 2 x 2 capsules.

The therapy costs are thus initially 1.80 €.

Then 1 capsule twice a day for about 6 weeks.

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