



Journal of Medical Sciences

ISSN 1682-4474

science
alert

ANSI*net*
an open access publisher
<http://ansinet.com>

More Evidence That Malaria Drug Could Help Combat Cancer, and That Breaks from Treatment Could Improve Results

Scientists investigating the cancer-fighting properties of artesunate -- a drug commonly used to treat malaria -- have found early evidence that combining it with an existing cancer drug has the potential to make each drug more effective than when used alone. They also found that regular treatment breaks could improve success levels.

The findings, recently published in the International Journal of Cancer, are the result of tests on human cancer cells studied outside the body (in vitro studies) by Dr Wai Liu and Professor Angus Dalglish at St George's, University of London.

Artesunate is well-known for combating malaria by reducing the amount of malaria-infected cells in the body that cause the disease -- and a number of scientific studies have already found that it may have the same effect on cancerous cells, consequently reducing the size of the cancer. This latest study adds further evidence to this theory. It also suggests that, in addition to actively killing infected cells to reduce the size of the cancer, artesunate may have the ability to prevent the disease from developing further by stunting the growth of the individual cancerous cells that cause the disease. They found that which effect it takes to combat the disease varies depending on the type of cancer.

The researchers analysed how four different types of human cancer cells -- two of which represented cancer of the colon, and the others breast and lung -- reacted to artesunate when it was used both alone and in combination with other anti-cancer drugs.

They found that artesunate prevented the cancer from growing in all four types of cell lines tested, in addition to reducing the size of the cancer in those cell lines derived from breast and lung cancer.

The researchers then combined artesunate with other common anti-cancer drugs in an attempt to boost activity, and this showed favourable responses with a drug called lenalidomide. When used together, these two drugs increased the effectiveness of the treatment in all four types of cancer cells tested, and had the largest effect on the lung cancer cells. When used separately, artesunate reduced the amount of lung cancer cells, or the size of the cancer, by 20 per cent, whilst lenalidomide reduced its size by 10 per cent. However, by using the two together, at the

same concentrations, the cancer was reduced by around 60 per cent.

Dr Liu says: "We combined our lead drug called lenalidomide with the widely available drug artesunate, and showed that the overall activity of the drugs was boosted to a point that was greater than the sum of the two individual drugs, indicating that the two drugs have a cooperative relationship."

The research also indicates that artesunate could be made more effective at reducing the size of the cancer if used in shorter bursts, separated by drug-free periods. The researchers showed that with this treatment pattern, the cancer's size was reduced where artesunate had previously only been preventing the cancer from growing. The introduction of drug-free periods was also shown to further reduce the size of the cancerous mass where it was already being reduced without the drug-free periods. For example, in the breast cancer cell lines, a continuous exposure to artesunate achieved just a 10 per cent reduction in the size of the cancer, but the reduction with drug-free period was increased to over 50 per cent.

Dr Liu says: "Whilst stunting cell growth is a useful effect, destroying the cells to reduce their numbers is the preferred effect. These two processes are actually linked together, to the extent that if a drug inhibits cell growth it will inadvertently inhibit the ability of the cells to be destroyed. We have shown that by using short bursts of artesunate, the cancer cells regain the ability to be destroyed."

He concludes that: "Whilst these studies are conducted on cells outside the body and reactions can vary in the human body, this research provides new insight into how artesunate interacts with cancer drugs and different treatment patterns to combat cancer, and provides a starting point from which studies can be based."

Source: International Journal of Cancer, 2010; DOI: 10.1002/ijc.25707