

Tapeworm drug inhibits colon cancer metastasis

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A compound that for about 60 years has been used as a drug against tapeworm infection is also apparently effective against colon cancer metastasis, as studies using mice have now shown. The compound silences a gene that triggers the formation of metastases in colon cancer. Professor Ulrike Stein (Experimental and Clinical Research Center, a joint cooperation between the Charité Medical Faculty and the Max Delbrück Center for Molecular Medicine, (MDC)) and her research group made this discovery in collaboration with Professor Robert H. Shoemaker of the National Cancer Institute (NCI) in Frederick, Maryland. Plans are already underway with Professor Peter M. Schlag (Charité Comprehensive Cancer Center) to conduct a clinical trial.

Colon cancer is one of the most common tumor diseases in Western countries. In Germany alone, there are approximated 73 000 new cases of the disease every year. Despite surgery, chemotherapy and radiation therapy, only about half of the affected patients are cured.

The reason is that around 20 percent of the [colon cancer](#) patients already have [metastases](#) at diagnosis and in about one third of the patients, metastasis occurs despite successful initial treatment. Of these patients with metastatic colon cancer, the five-year survival rate is only about 10 percent. By contrast, for nonmetastatic colon cancer patients the survival rate is 90 percent.

Scientists have known for several years that the gene S100A4/metastasin can initiate colon [cancer metastasis](#). Five years ago Professor Stein,

working together with Professor Schlag and Professor Walter Birchmeier (MDC), showed how this gene is regulated. They found that the beta-catenin gene, when mutant, activates this S100A4/metastasin gene, thus triggering colon cancer metastasis. Beta-catenin normally regulates cellular adhesion.

The scientists looked for compounds that block the expression of the metastasin gene. They screened 1280 compounds and found what they were looking for: niclosamide, a drug until now approved for use to treat intestinal parasite infections from tapeworms.

Surprisingly, the researchers discovered that niclosamide inhibits the beta catenin-driven expression of the S100A4/metastasin gene, both in the cell culture and in mice. The animals had fewer metastases. Next, the researchers want to conduct clinical trials to find out whether the compound is also effective in patients with metastasizing colon cancer.

More information: *Journal of the National Cancer Institute*, Vol. 103, No. 12, June 17, 2011.

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