

## **Prostate Cancer: Curcumin Curbs Metastases, Study Shows**

*Source: Science Daily*

Powdered turmeric has been used for centuries to treat osteoarthritis and other illnesses. Its active ingredient, curcumin, inhibits inflammatory reactions. A new study led by a research team at Ludwig-Maximilians-Universität (LMU) in Munich now shows that it can also inhibit formation of metastases.

Prostate cancer is one of the most prevalent malignancies in the Western world, and is often diagnosed only after metastatic tumors have formed in other organs. In three percent of cases, these metastases are lethal. A research team led by PD Dr. Beatrice Bachmeier at LMU Munich has been studying the mode of action of a natural product that inhibits the formation of metastases. The compound is found in turmeric, a plant that has been used for medicinal purposes for thousands of years, and is a major ingredient of curry.

Bachmeier's research centers on curcumin, the polyphenol responsible for the characteristic color of curry. Curcumin is well tolerated and is therefore, in principle, suitable both for prophylactic use (primary prevention) and also for the suppression of metastases in cases where an established tumor is already present (secondary prevention). In a previous study Bachmeier and her colleagues had demonstrated that the substance reduces statistically significantly the formation of lung metastases in an animal model of advanced breast cancer.

### **Mitigating metastasis**

The new study was designed to investigate the efficacy of curcumin in the prevention of prostate cancer metastases, and to determine the agent's mechanism of action. The researchers first examined the molecular processes that are abnormally regulated in prostate carcinoma cells. Breast and prostate cancers are often associated with latent or chronic inflammatory reactions, and in both cases, the tumor cells were found to produce pro-inflammatory immunomodulators including the cytokines CXCL1 und CXCL2.

The researchers went on to show that curcumin specifically decreases the expression of these two proteins, and in a mouse model, this effect correlated with a decline in the incidence of metastases. "Due to the action of curcumin, the tumor cells synthesize smaller amounts of cytokines that promote metastasis," says Bachmeier. "As a consequence, the frequency of

metastasis formation in the lungs is significantly reduced, in animals with breast cancer, as we showed previously, or carcinoma of the prostate, as demonstrated in our new study."

### **Curcumin and chemoprevention**

Bachmeier therefore believes that curcumin may be useful in the prevention of breast and prostate cancers -- which are both linked to inflammation -- and in reducing their metastatic potential. "This does not mean that the compound should be seen as a replacement for conventional therapies. However, it could play a positive role in primary prevention -- before a full-blown tumor arises -- or help to avert formation of metastases. In this context the fact that the substance is well tolerated is very important, because one can safely recommend it to individuals who have an increased tumor risk."

A daily intake of up to 8g of curcumin is regarded as safe, and its anti-inflammatory properties have long been exploited in traditional oriental medicine. Men with benign hyperplasia of the prostate (BHP) are one possible target group for prophylaxis, as are women who have a family history of breast cancer. The agent might also be valuable as a supplement to certain cancer therapies. At all events, curcumin's beneficial effects must first be confirmed in controlled clinical tests. Bachmeier is now planning such a trial in patients who suffer from therapy-resistant carcinoma of the prostate.