

## Cancer Killer Chemical in Curry Leaves

Curry leaves do not just satiate taste buds. Scientists have discovered a new aspect to the leaves, the possibility of curing prostate cancer. Researchers from Santiniketan-based Visva-Bharati University, Kolkata's Indian Institute of Chemical Biology and Georgetown University Medical Center in Washington, US, have isolated mahanine- a plant derived carbazole alkaloid from curry leaves- which has caused mass death of prostate cancer cells through apoptosis, a type a controlled cell death mechanism.

"Mahanine did not cause death of liver cells, heart of skeletal muscle cells, indicating that this alkaloid selectively kills prostate cancer cells," says Samir Bhattacharya the lead researcher. "Mahanine promises a new chemotherapeutic option for prostate cancer treatment," says Bikas C Paul, a co-researcher. The findings of the study were published in the journal *The Prostate* (Vol. 66, No.12)

The research team exposed LNCAP and PC3, two types of cultured human prostate cancer cells to mahanine extracted and purified from curry leaves. The cancer cells were treated with 1 mg/ml, 2mg/ml and 3mg/ml mahanine for 1, 2 and 3 days. And by 72 hours, at 2mg/ml dose, mahanine reduced the viability of both types of cancer cells by 50 percent. At 3mg/ml dose, mahanine destroyed almost all the cancer cells within 48 hours.

Studying the effects of machine on PC3 cancer cells, the team found that mahanine inhibited the activity of AKT-a protein that fuels the growth of prostate cancer cells. It also blocked the generation of Bcl-xL- a type of protein that helps cancer cells' survive. "At 60 hours, mahanine completely abolished Bcl-xL," says Bhattacharya. Reduction in the levels of Bcl-xL releases cytochrome C, a protein of mitochondria. Cytochrome C activates caspase, an enzyme that further accelerates the death of cancer cells without damaging any neighbouring healthy cells.

Mahanine has also been shown to cause death of human leukaemic cells. "But the concentration of machine we used were well below the concentration used to kill leukaemic cells," says Bhattacharya. This suggests that prostate cancer cells are more sensitive to mahanine induced cell death compared to leukaemic cells," he adds.

Prostate cancer has been found to be one of the ten leading male cancer cases in India. According to population based cancer registry, prostate cancer is on the rise in cities like Pune,

Delhi, Chennai, Bangalore and Kolkata. In the US, prostate cancer is the second leading cause of death in men.

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***Source: Down to Earth,  
December 31, 2006.***