

# A compound in peanuts, olive oil may help fight cancer

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**MUMBAI:** A chemical compound present in pomegranate, peanut, avocado, olive oil and almond could have the potential to fight cancer without causing severe side effects in patients.

Biological experiments and computer simulations has for the first time identified potential molecular mechanism through which the compound beta-sitosterol works inside cancer cells and prevents them from dividing uncontrollably.

"Beta-sitosterol has long been known for its health benefits and potential clinical utility against several diseases, including diabetes, asthma and atherosclerosis," said Manu Lopus, principal investigator, Experimental Cancer Therapeutics and Chemical Biology laboratory, University of Mumbai's Department of Atomic Energy Centre for Excellence in Basic Sciences.

"This compound has also been proposed as a potential anti-cancer drug because of its ability to kill different types of tumour cells. However, the molecular mechanisms with which beta-sitosterol destroy tumour cells are poorly understood," said Lopus.

The four-member team is now working on evaluating the anti-tumour efficacy and potential side

## STUDY FINDS

- A study has for the first time identified potential molecular mechanism through which beta-sitosterol works inside cancer cells and prevents them from getting divided uncontrollably
- Many anti-cancer drugs administered during chemotherapy which target tubulin are known to cause toxic side-effects such as neurotoxicity
- A four-member team is from the University of Mumbai-Department of Atomic Energy Centre for Excellence in Basic Sciences and Jaypee Institute of Information Technology, Himachal Pradesh
- The study was conducted by Manu Lopus, Tejashree Mahaddalkar, Charu Suri, and Pradeep Naik, and was published in European Journal of Pharmacology on April 23.

effects of the compound against different types of cancers.

"The findings are promising since the compound is derived from a natural product, which means less toxic effects," said Dr Milind Vaidya, faculty, Advanced Centre for Treatment Research and Education in Cancer, Navi Mumbai. "Some that show promising results at the lab level may not stand the test of scrutiny. But if it undergoes all clinical trials successfully, the implications will be good for cancer treatment."

Laboratory experiments played out the interactions of beta-sitosterol with its major cellular target – a protein called tubulin. In cells, tubulin builds arrays of thread-like polymer called microtubules which capture chromo-

somes and segregate them during cell division.

"When the cell divides, microtubules ensure that the chromosomes of the parent cell are equally distributed to the resulting daughter cells. Since cancer is a disease of uncontrolled cell division, microtubule-targeting drugs have been emerging as an attractive option for the treatment of a variety of tumours," said Lopus.

According to researchers, experiments indicated that beta-sitosterol has a strong affinity to target tubulin. "Computer simulations showed that the compound binds at a novel site on tubulin. At present, no other drug is known to do that," said Tejashree Mahaddalkar, first-author.