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Bihar researcher finds anti-breast cancer property in red sandalwood seeds

10 September 2020

Discovery of anti-cancer properties of the red sandalwood tree seeds is being hailed as a progressive development for cancer treatment.(HT photo)

A recent peer-reviewed study, done by a Bihar youth, claiming presence of anti-breast cancer properties in red sandalwood seeds has been published in a US journal. The success of the study, conducted on rats, using sandalwood seeds is said to be significant for its potential use in cancer treatment without harming the endangered tree.

The study, done by 29 year old Vivek Akhouri, who did his masters in biotechnology from Magadh University in Gaya, was published last month by the SAGE Publishing, a US journal with publications on science, medicine, humanities and other nonfiction topics. The study with headline--Antitumour property of Pterocarpus santalinus seeds against DMBA-induced breast cancer in rats—was published in its journal of Breast Cancer: Basic and Clinical Research.

Researches in the past have found sandalwood tree's heartwood (the wood at the centre of the trunk) to possess anti-cancer property but Akhouri's study claims that even the seeds of red sandalwood have anti-cancer properties, a significant finding since unlike heartwood, using seeds of red sandalwood do not damage the tree, classified as endangered species.

"We found 49.5% regression in tumour size after inducing cancer cells in rats using dimethyl benzo anthracene, a chemical carcinogen, and orally inducing them daily for five weeks a single dose of red sandalwood seeds, collected from Simri village in Buxar district," said Akhouri.

"The other set of rats, which was given carcinogen and not administered the formulation, began to die after five weeks," he said in response to a peer reviewer's query why he did not continue the dose beyond five weeks to see if the cancer cells were completely decimated, before SAGE published the findings.

"The potency of seeds, their requirement for cancer treatment and side-effects, if any, are still a subject of research and pharmacological study, which pharmaceutical firms have to undertake as part of pre-clinical and clinical trials before launch of any drug," said Akhouri.

Akhouri is now researching the pulp of Aegle marmelos ('bel' in common parlance), a fruit found throughout Tamil Nadu, Sri Lanka and Thailand, to establish it has better properties to reduce cancer tumour size.

The study is co-authored by Manorma Kumari, professor, department of botany, Anugrah Narayan College, Patna, and Arun Kumar of the Mahavir Cancer Sansthan and Research Centre, Patna, where the research was undertaken.

"We will isolate the active molecule from the seeds and go for patenting before approaching pharmaceutical firms for pre-clinical and clinical trials," said Kumar.

He added that their study was inspired by an earlier research on heartwood of red sandalwood trees by Li and colleagues of China in 2018.

"The Chinese research had shown that the tree's heartwood contains some compounds (sesquiterpenes of canusesnol K [1], canusesnol L [2] and 12, 15-dihydroxycurcumene [3], along with five others) which help in retarding the growth of cancer cells grown under 'in vitro condition' by up to 35.07% in case of liver cancer, breast cancer and cervical carcinoma," said Kumar.

Another study by Wu and colleagues of Taiwan in 2011 reported that the heartwood contains compounds (pterolinus B, pterolinus D, pterolinus Ha, pterolinus Hb and melanoxoin) that also inhibit the growth of liver and breast cancer cell grown under controlled conditions," he said.

"Since earlier studies were 'in vitro' (within laboratory) research, their findings cannot be compared with ours on Charles Foster rats," added Kumar.

Ashok Sharma, associate professor, department of biochemistry (laboratory of Chromatin & Cancer Epigenetics), AIIMS Delhi, termed the research a progressive step to establish Ayurvedic medicines worldwide.

"Generally, plant-based molecules have less chance of side-effects as compared to allopathic drugs. However, we need to do pharmacological study to establish this fact before using red sandalwood seeds for their anti-cancer property," Sharma said.

He added that the scientific evidence of medical benefits of natural resources existed but the need was to publish it. The government of India was now promoting research and boosting the use of Ayurvedic medicines, as in management of coronavirus disease, he added.

MM Singh, a former emeritus medical scientist of ICMR and ex-chief scientist and head, endocrinology division of Council of Scientific and Industrial Research (CSIR) - Central Drug Research Institute (CDRI), Lucknow, praised the findings.

"The good thing about this research is that anti-cancer property has been found from natural resources without damaging the tree. The challenge, however, will be to source a large amount of seeds, given the increasing disease burden and the long-term therapy involved in cancer," he said.

"We need to increase the cultivation of red sandalwood trees and identify its active compound, which can then be synthesised in a laboratory," added Singh.

The Bihar government, however, has no plan to propagate the cultivation of red sandalwood.

"Red sandalwood, common in south Indian states like Karnataka and Andhra Pradesh, is not found in natural forests of Bihar. We do not have any immediate plan to propagate its cultivation. The best of red and white sandalwood require laterite soil (Bihar has Gangetic alluvial soil). However, some nurseries may have brought seeds of red sandalwood tree and sowed them for specific purposes," said AK Pandey, principal chief conservator of forest, Bihar.

According to GLOBOCAN 2018, an online database providing estimates of incidence and mortality of cancer in 185 countries, breast cancer was the most common cause of cancer-related deaths among women in India, with an estimated 27.7% (1,62,468) of all new cancer cases among women and 23.45% (87,090) of cancer-related deaths in 2018.

The Indian Council of Medical Research (ICMR) has already projected the disease burden to increase by 12% in the next couple of years.

“The incidence of breast cancer has been rising in Bihar by almost 23.5% annually among females in the last five years,” said Dr Rita Rani, senior consultant oncologist and principal investigator for hospital-based cancer registry, Mahavir Cancer Sansthan project under the ICMR.

Source: https://www.hindustantimes.com/india-news/bihar-researcher-finds-anti-breast-cancer-property-in-red-sandalwood-seeds/story-97Qf84QZY1i2XmSUDiJl5N.html