

# IIT-I study on betel nuts claims to aid in early diagnosis of oral cancer

TIMES NEWS NETWORK

**Indore:** A study by the Indian Institute of Technology, Indore (IIT-I), has claimed to aid in early diagnosis of oral cancer caused due to extensive consumption of betel nut in a malnourished population.

The institute in a statement released on Tuesday said a team of professors and students carried a study on betel nut, one of the key causes of an oral precancerous condition called Oral Submucous Fibrosis (OSMF), that leads to loss of elasticity in cheeks and restricts mouth opening. The condition, if



not unaddressed, can progress into oral cancer.

The institute used the Raman micro-spectroscopy technique to study the biomolecular mechanisms behind the pathogenesis of OSMF and to identify the pathways that can be targeted to prevent its transformation to cancer.

The results of the study were verified using established sophisticated methods such as metabolomics and lipidomics by liquid chromatography-mass spectrometry.

IIT-I biosciences and biomedical engineering associate professor Dr Hem Chandra Jha said, "The study is based on a non-invasive spectroscopic technique, Raman micro spectroscopy. Such studies can help doctors and scientists to develop methods for early diagnosis of cancer. Moreover, they can help in cancer therapy to treat in early stages and improve the over-

all quality of life of the patients".

Jha said, the study found that with a lack of appropriate nourishment, the betel nut dysregulates several cancer-causing pathways associated with molecules like acetyl-coA and carbohydrate metabolism. In the future, such molecules can be potential biomarkers for detecting whether a patient is susceptible to developing oral cancer.

Other members of the team included Dr Tarun Prakash Verma, Siddharth Singh, Sonali Adhikari from the department of biosciences and biomedical engineering and professor Rajesh Kumar and Dr Chanchal Rani from department of physics.

The study was supported by the department of science and technology (DST) and was published in the Journal of Raman Spectroscopy.

Professor Rajesh Kumar said, "Methods like Raman Spectroscopy can serve as non-invasive methods in identification of the signature molecules for early diagnosis of cancer and various other diseases. Such techniques can be fast and reliable for mass screening in public health centres".