

IIT-I develops compact, affordable device to help detect cancer at early stages

TIMES NEWS NETWORK

Indore: The Indian Institute of Technology, Indore, (IIT-I) has developed a compact and cost-effective cancer screening device using photoacoustic technology that will facilitate the detection of cancer in its early stages among patients.

The device is set to significantly reduce the cost of diagnosis to roughly one-tenth of the price of conventional diagnostic methods and could be easily portable to conduct cancer screenings in rural and remote areas with limited medical infrastructure, said the institute in a press release on Wednesday.

The device developed by Professor Srivathsan Vasudevan from IIT-I electrical engineering department in collaboration with Dr Sramana Mukhopadhyay, lead in-

HOW THE TOOL WORKS

➤ The compact and cost-effective device will use **photoacoustic technology for detection of cancer in its early stages among patients**



➤ A compact pulsed laser diode is used in the device to generate light, which interacts with the tissue. **The response is then analysed to identify whether the tissue is normal, benign, or malignant**

vestigator from AIIMS Bhopal department of pathology and lab medicine. Dr Saikat Das, faculty of the department of radiation oncology, will be deployed at AIIMS Bhopal for clinical trials.

IIT-I director Professor Suhas Joshi said, "Most diagnostic tools used in India, such as MRI and CT scanners, are imported and expensive, making them inaccessible to a large portion of the population. By developing a cost-effective and indi-

genous cancer screening device, IIT-I is addressing a critical need in the healthcare system. The device has the potential to significantly improve cancer detection in rural and underserved areas, where early diagnosis can make a life-saving difference".

The device, based on the principle of Photoacoustic Spectral Response (PASR), synergize optical and acoustic signals to detect abnormal tissue changes, thereby add-

ressing the growing need for early cancer detection in India, particularly for breast cancer.

Professor Vasudevan said, "The heart of the device lies in its ability to distinguish between cancerous and non-cancerous tissues. A compact pulsed laser diode (PLD) is used to generate light, which interacts with the tissue. The response is then analysed to identify whether the tissue is normal, benign, or malignant. This cost-effective screening tool is designed to reduce the need for expensive diagnostic methods and is particularly useful for breast cancer screening, as it can differentiate between malignant tumours, fibrocystic changes, and normal breast tissue".

Currently, ultrasound is the most prevalent technique for diagnosing breast and

thyroid cancer, although it had limitations in detecting certain types of tumours. The photoacoustic technique could be integrated with ultrasound technology to provide supplementary information about tissue vascularity and other characteristics, enabling a more precise diagnosis, IIT-I said.

The device would undergo rigorous clinical trials before it is ready for mass production and licensing. Once these trials are completed, the technology would be made available to the healthcare industry for commercialisation.

IIT-I has inked an MoU with the executive director and CEO of AIIMS Bhopal, Prof Ajai Singh, to collaborate on research in biomedical engineering and its applications in the healthcare system.