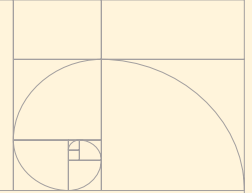


Health Heritage Innovations

Category: Product

Stage: Pilot

Country (region): India (South-East Asia)



Bridging Traditional Medicine and oncology

Using plant phytochemicals, AI and machine learning
to treat oral cancer harbouring genetic mutations

Oral cancer is a major public health challenge in India, particularly among men – and many patients have aggressive disease symptoms with limited treatment options. About half of oral cancers carry mutations in a crucial gene called TP53, which normally protects cells from turning cancerous. When TP53 is mutated, cancer cells grow faster, spread more easily and become more resistant to treatment.

Our innovation bridges India's traditional knowledge of medicinal plants and cancer science to advance affordable precision oncology. We have developed a suite of oral cancer cell models containing the most common TP53 mutations found in patients. Using these models, we employ a multi-omics platform – including metabolomics, transcriptomics and proteomics – to generate comparative data that reveal how each TP53 mutation alters cancer cell behaviour and treatment response.

Artificial intelligence (AI) and computational screening enable us to match natural plant-derived compounds to specific TP53 mutation types. Many of these phytochemicals have long histories of safe use, allowing fast and low-risk evaluation. By identifying low-toxicity, low-cost compounds that selectively target TP53-mutant cancers, this project supports accessible and culturally resonant cancer care. Integrating scientific validation with Traditional Medicine in this way can create new therapeutic options, improve quality of life, and bring hope to patients dealing with the challenges of oral cancer.



Innovator:
Dr Vikram Gota

Department of Clinical
Pharmacology, Advanced
Centre for Treatment,
Research & Education in
Cancer (ACTREC), Tata
Memorial Centre, Navi
Mumbai, India

Contact:
vikramgota@gmail.com

Project
resources



Disclaimer: WHO played no role in the development of this innovation.