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Telomerase: A biomarker in oral cancer cell proliferation and tool for its prevention at initial stage

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As cancer populations is increasing sharply, the incidence of oral squamous cell carcinoma (OSCC) has also been expected to increase. Oral carcinogenesis is a highly complex, multistep process which involves accumulation of genetic alterations that lead to the induction of proteins promoting cell growth (encoded by oncogenes), increased enzymatic (telomerase) activity promoting cancer cell proliferation. Telomerase activity has been readily found in most cancer biopsies, in premalignant lesions or in germ cells. Activity of telomerase is generally absent in normal tissues. It is known to be induced upon immortalization or malignant transformation of human cells such as in oral cancer cells. Maintenance of telomeres plays an essential role during transformation of pre-cancer to malignant stage. Mammalian telomeres, a specialized nucleoprotein structures are composed of large conctamers of the guanine-rich sequence 5'-TTAGGG-3'. The roles of telomeres in regulating both stability of genome and replicative immortality seems to contribute in essential ways in cancer initiation and progression. Its expression will also prove to be an important diagnostic tool as well as a novel target for cancer therapy. The activation of telomerase may be an important step in tumorigenesis which can be controlled by inactivating its activity during chemotherapy. There are no drugs which can effect extremely to treat oral cancers. There is a general call for new emerging drugs or methods that are highly effective towards cancer treatment possess low toxicity and have a minor environment impact. Some novel natural products also offer opportunities for innovation in drug discovery. Natural compounds isolated from medicinal plants, as rich sources of novel anticancer drugs, have been of increasing interest with some enzyme (telomerase) blockage property. The alarming reports of cancer cases increase the awareness amongst the clinicians and researchers pertaining to investigate newer drug with low toxicity.

Biography

Swati Das has completed her BDS (Bachelor of Dental Surgery) from India and MDS (Masters of Dental Surgery) in Periodontology and Oral Implantology. She has received numerous training in esthetic dentistry and certified in Implant Prosthesis. She runs her own dental clinic, Helios Dental Clinic in Kolkata, India.

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