

# DENTAL HEALTH FORUM

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## Theragnostic strategies for early diagnosis and management of oral cancer.

**Dr. J. Vijayashree Priyadharsini**

Saveetha Dental College and Hospitals, India

Oral cancer (OC) is the most common type of cancer with a steep increase in the incidence rate across the world. According to the global cancer observatory, GLOBOCAN, 2018, cancer of lip and oral cavity remains the primary cause of mortality due to cancer in males belonging to the south-Asian countries. The risk for oral cancer is precipitated by several factors such as tobacco chewing, chronic alcoholism, smoking, sharp tooth in addition to the genetic makeup. Lack of awareness and ease of access to rapid diagnostic procedures have hampered the management of oral cancer in developing countries. In line with the above fact, diagnostic or prognostic applications should involve less invasive methods, cost-effective, precise and rapid. The rationale behind choosing exosomes as “theragnostic” tools are appropriate, as the duality nature of these biological cargos can be harnessed to develop more sensitive kits with high precision. The present report briefs about the newer trends and advancements in exosome biology in connection with oral cancer. Exosome based approach requires a knowledge on the origin and functions of exosomes in the biological system. The membrane-bound nano-vesicles of size 30-150 nm in diameter are derived from the intraluminal vesicles (ILVs) of several types of normal and tumour cells including stem cells. Exosomes are isolated from body fluids such as breast milk, blood plasma, saliva, urine, serum and cerebrospinal fluid. These biological cargos aids in communication and transport of contents from the donor cell to the recipient cell either directly or indirectly. A potent therapeutic target aimed against oral cancer is deemed to possess control over epithelial mesenchymal transformation, metastasis, angiogenesis, drug resistance, cancer stem cell differentiation and dedifferentiation. The exosomal transport of genetic information (proteins, microRNA, RNA) from the donor to recipient cell forms the core of therapeutic approach employing exosomes. Exosome-derived therapeutic leads and diagnostic biomarkers based on differential expression of the exosomal contents are being discovered for several diseases such as autoimmune disorders, hypertension and cancer. Albeit, exosome research related to oral cancer is still in its juvenile state, standardization of exosome isolation, characterization and quantification process will immensely increase its value as a novel “theragnostic” component targeting oral cancer.

### Biography:

Dr. J. Vijayashree Priyadharsini, is a Geneticist, working as a research scientist at Saveetha Dental College and Hospitals, Chennai, India. Her thrust areas of research include cancer biology, exosome research, human genetic variations associated with complex diseases and computational biology. She has received grant from the Government of India, for her research on the development of theragnostic leads for oral cancer.