

Short Review

Chlorhexidine and oral cancer: A short review

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Owing to the ever westernizing lifestyles in developing countries like India, the escalation of oral cancer patients are in need of urgent plan of action. With tobacco being the commonest cause for causation of oral cancer, Global Adult Tobacco Survey, 2016-17 revealed that almost 28% of whole population of India is consuming tobacco in either smoking or smokeless form. With these increasing numbers, the expected death toll to be expected to touch 1-2 million mark by the year 2035 [1].

Although, the current Onco-medicine fraternity excels in rendering care to oral cancer patients in the form of surgeries, chemotherapy and radiation-therapy. Often, these treatment modalities impart some unwanted adverse effects like, docetaxel (DCT) is known for its hepatotoxicity [2,3] whereas, one of the commonly used cisplatin (CIS) presents with nephrotoxicity, neurotoxicity, bone marrow suppression and vomiting [4,5]. Literature suggests of many non conventional medicaments being tested in past for their anti onco-genic effect, where few being effective and others being questionable ones. Chlorhexidine being one among them showing some how promising anti onco-genic activity with feeble amount of studies being conducted in past.

Chlorhexidine, one of the most commonly prescribed mouthrinse in the field of dentistry, with varying concentrations of 0.12% and 0.2% concentrations. Although, apart from being broad spectrum antibiotic, its capability to dismantle the protein – protein bond between anti – apoptotic Bcl-2 family protein Bcl-x_L and its pro – apoptotic binding partners [6]. The current study was conducted on three cell lines of squamous cell carcinoma (SCC-4, SCC-9, SCC -15) and two pharynx carcinoma cell lines (FaDu and Detroit 562). The compounds induced apoptosis through mitochondria dependent apoptotic pathway in oral tumour cell lines. Another study conducted to assess the similar anti – oncogenic activities of chlorhexidine mouthrinse along with cranberry [7]. It was evident from results that, with increasing concentrations of chlorhexidine mouthrinse, there was increase in mean percent growth

More Information

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inhibition. The authors concluded saying, chlorhexidine has showed both anti cancerous as well as anti bacterial activity required to tackle common oral infections, part of common anti cancer therapy. Fernando Martínez-Pérez et al (2019) conducted study, where antitumor activity of Lipophilic Bismuth Nanoparticles (BisBAL NPs) and chlorhexidine on human squamous cell carcinoma was assessed using energy dispersive X – ray spectroscopy in conjunction with scanning electron microscopy (EDS-SEM). Study revealed, BisBAL NPs and chlorhexidine both showed cell growth inhibition on both cancer cell line (CAL-27) and human gingival fibroblasts (HGFs). Although, chlorhexidine showed non specific cytotoxicity for both tumoral and non tumoral control cells. The suggestive mechanism of action might be loss of cell membrane integrity [8].

Although Eliot MN (2013) conducted study, to assess the risk of head and neck squamous cell carcinoma secondary to use of alcohol containing and non alcoholic mouthwashes including chlorhexidine. The study was concluded with an assumption based on chlorhexidine mouthwash alters the oral flora [9], thus resulting in increasing risk exponentially through diverse change in oral bacteria and altered immune response with contribution towards genesis or promotion of cancer [10]. On the contrary, alcohol consumption and smoking are predisposing factors towards upper digestive tract cancer. The main causative factor being the first metabolite of alcohol, acetaldehyde. And much higher levels

are derived from oral bacteria and thus, same can be altered in favour through usage of chlorhexidine mouthwash, to avoid excessive production of acetaldehyde intra orally.

In conclusion, chlorhexidine mouthwash has been into dental practice since long and the role it plays in either ways has to be assessed by a multi dimensional study with cell lines including that of control to derive better compared conclusions

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