

## Study of Early Diagnosis of Oral Cancer by Non-invasive Saliva-On-Chip Device: A Microfluidic Approach

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**Abstract :** The oral cavity is home to a wide variety of microorganisms that lead to various diseases and even oral cancer. Despite advancements in the diagnosis and detection at the initial phase, the situation hasn't improved much. Saliva-on-a-chip is an innovative point-of-care platform for early diagnosis of oral cancer and other oral diseases in live and dead cells using a microfluidic device with a current perspective. Some of the major challenges, like real-time imaging of the oral cancer microbes, high throughput values, obtaining a high spatiotemporal resolution, etc. were faced by the scientific community. Integrated microfluidics and microscopy provide powerful approaches to studying the dynamics of oral pathology, microbe interaction, and the oral microenvironment. Here we have developed a saliva-on-chip (salivary microbes) device to monitor the effect on oral cancer. Adhesion of cancer-causing *F. nucleatum*; subsp. *Nucleatum* and *Prevotella intermedia* in the device was observed. We also observed a significant reduction in the oral cancer growth rate when mortality and morbidity were induced. These results show that this approach has the potential to transform the oral cancer and early diagnosis study.

**Keywords :** microfluidic device, oral cancer microbes, early diagnosis, saliva-on-chip

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