

The Effect of Polymicrobial Interaction on the Adhesion of OKF6 and H357 cell lines

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Introduction: Oral cancer is classified as the sixth most common cancer in the world. It has been suggested that polymicrobial infection may have a role in oral carcinogenesis.

Objective: To determine the effect of mono-culture and polymicrobial biofilms effluent from *C. albicans*, *Streptococcus mutans* and *Actinomyces naeslundii* to the adhesion of normal and oral cancer cell lines on extra-cellular matrix (ECM) molecules coated surfaces.

Methods: Initially, OKF6 cell line isolated from healthy oral cavity was incubated in serum free medium containing effluent from mono-culture or polymicrobial biofilms of *C. albicans* (ALC3), *S. mutans* (Ingbritt), *A. naeslundii* (NCTC 10301) for 90 minutes. Following that, the suspension was added into CytoSelect 48-well Cell Adhesion Assay ECM Array kit to determine the adhesion of the cell to fibronectin, collagen I, collagen IV, laminin and fibrinogen. Fold change of adhesion of the cells incubated in biofilm effluent in comparison to that incubated in non-effluent (NE) was enumerated. Similar protocol was repeated with H357 cell line that was isolated from patient with oral squamous cell carcinoma (OSCC).

Results: The majority of OKF6 cells incubated in biofilm effluent exhibited significantly decreased adhesion to ECM molecules compared to the cells incubated in NE ($P < 0.05$). Only when incubated with *S. mutans* effluent, OKF6 cells exhibited significant increase in adhesion to fibronectin ($P < 0.05$). The incubation of H357 with *C. albicans* effluent exhibited significant increase of adhesion to collagen IV and laminin I when compared to NE ($P < 0.05$). Furthermore, the adhesion of H357 cells to laminin I were also found to increase when incubated with *C. albicans* (15.07-fold), *S. mutans* (6.54-fold), *A. naeslundii* (1.31-fold) and polymicrobial biofilms (10.69-fold) effluents.

Conclusions: The adhesion of OKF6 and H357 to ECM are biofilm effluent-dependent and that biofilm effluent enhance the malignant phenotype of H357 when grown in medium containing biofilms effluent.

Selection for category:

- a) **Oral (3-minutes pitching)**
- b) **Competing**
- c) **Researcher**
- d) **Age < 35**