

The effect of *Candida albicans*, *Actinomyces naeslundii* and *Streptococcus mutans* biofilm effluent on the expression of interleukin-6 and interleukin-8 from normal and oral cancer cell lines

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Oral cancer is the sixth most common cancer worldwide. It is suggested that polymicrobial infection may involve in oral carcinogenesis. This study aimed to determine the effect of mono-culture and polymicrobial biofilms effluent from *C. albicans*, *Streptococcus mutans* and *Actinomyces naeslundii* to the expression of Interleukin-6 (IL-6) and Interleukin-8 (IL-8) from normal and oral squamous cell carcinoma (OSCC) cell lines, with the hypothesis that biofilm effluent promote oral carcinogenesis. OKF6 cell line isolated from healthy oral cavity was grown to 80% confluent in 12-well plate and incubated with 80% (v/v) serum free medium (SFM) containing biofilm effluent from mono-culture of *C. albicans* (ALC3), *S. mutans* (SM), *A. naeslundii* (AN) or polymicrobial (TRI) for 2 h and 24 h. Incubation of the cell line with 100% SFM (NE) was conducted to represent the negative control. To quantify the amount of IL-6 and IL-8 secreted by epithelial cells in response to biofilm effluent, the conditioned medium was col-

lected and analysed using Bio-Plex protein array system and Bio-Rad cytokine multi-plex panel. Similar protocol was repeated with H357 cell line that was isolated from patient with OSCC. The results showed that OKF6 cell line that was incubated with ALC3 had significant decrease IL-8 expression while incubation with SM exhibited significantly increase IL-6 expression when compared to NE after 2 h incubation ($P < 0.05$). In addition, significant increase of IL-6 and IL-8 expression were observed after 24 h incubation of OKF6 cell line with TRI effluent when compared to NE ($P < 0.05$). The incubation of H357 with AN, SM and TRI effluent exhibited significant increase of IL-6 and IL-8 expression after 2 h incubation, whereas significant increase of the similar cytokines were observed when incubated with all effluent after 24 h in comparison to NE ($P < 0.05$). In conclusion, biofilm effluent promotes malignant phenotype of OSCC cell line.