

Comprehensive measurements of salivary pellicle thickness formed at different intraoral sites on Si wafers and bovine enamel

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The salivary pellicle is a thin acellular film formed on orally exposed surfaces by adsorption of macromolecules from the oral fluids and serves as a protective layer in the maintenance of oral health. It has been shown that loss of minerals and enamel surface alterations after acid attack was less pronounced on enamel covered with a pellicle as compared to those without pellicle [1]. The pellicle's protective properties have been related to its composition, formation time and thickness [2]. Therefore pellicle thickness measurements are an important tool helping to understand how exogenous manipulations may influence pellicle formation. In the present study we determined the kinetics of the *in situ* pellicle thickness formation at different intraoral sites and investigated how pellicle formation occurs in different individuals. To address the kinetic aspect, the thickness of the *in situ* pellicle was determined after formation periods of 3, 30 and 120 min. The thickness of the pellicle was either measured on Si wafers by ellipsometry or on bovine enamel by transmission electron microscopy (TEM). We found a physiological important rapid pellicle formation phase within the first minutes and a slow pellicle formation phase between 30 and 120 min. Furthermore, our results identify significant inter-individual differences both for the pellicle thickness and for the formation kinetics.

[1] M. Hannig and A. Joiner, *Monogr. Oral Sci.* 19 (2006).

[2] D. Vukosavljevic et al., *Arch. Oral Biol.* 59 (2014).