

INTERACTIONS OF HUMAN ENDOTHELIAL CELLS WITH *STREPTOCOCCUS MUTANS*

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Streptococcus mutans (*S. mutans*) is the major etiological agent for dental caries. Nicotine is the addictive ingredient present in tobacco and has been shown to affect the growth and metabolism of oral bacteria, specifically *S. mutans*. Cigarette smoke condensate (CSC) contains all the chemicals present in cigarette smoke. Dissolvable tobacco products are new tobacco products that do not require one to light up, but may still harm oral tissues. This project examines the effects of *S. mutans* exposed to these chemicals on human endothelial cells in terms of cytotoxicity and cytokine/growth factor expression. *S. mutans* treated with these tobacco components are hypothesized to increase the expression of pro-inflammatory cytokines/growth factors from endothelial as compared to the controls. *S. mutans* was grown with each of the reagents for eight hours and then the bacterial cells and supernatants separated. Protein assays were used to determine the protein amounts of the cells and in the supernatant. The cytotoxicity of each will be determined by lactate dehydrogenase (LDH) assays. Non-toxic amounts of the bacterial cells and supernatants will then be used to treat endothelial cells for three days before the conditioned media collected and analyzed by cytokine/growth factor protein arrays.

The protein assays showed that the protein levels were lower in tobacco treated cells, while the supernatants showed similar protein concentrations throughout. It is hypothesized that the treated bacteria cell will increase cytokines/growth factors that increase inflammation and lead to vascular issues.