

INHIBITION OF SALIVARY AMYLASE ACTIVITY BY CIGARETTE SMOKE ALDEHYDES

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Cigarette smoke (CS) is involved in the pathogenesis of cardiovascular and respiratory diseases additionally to its local toxic effect on the oral cavity. The deleterious effects of cigarette smoke compounds rationalize the high incidence of periodontal diseases and neoplastic diseases of oral tissues in smokers. Some noxious compounds of cigarette smoke like unsaturated (acrolein, crotonaldehyde) and saturated aldehydes (acetaldehyde), could interrelate with thiol compounds of salivary proteins, leading to structural and functional alteration of these molecules. Prior studies have established an *in vitro* significant decrease of some salivary enzymatic activities, following exposure to cigarette smoke. Additionally, it was found that glutathione (GSH) has protective effect against the damaging role of CS to salivary enzymes, emphasizing the role of thiol groups in the mechanism of inactivation of some salivary enzymes. In this study salivary amylase activity showed a significant inhibition following an external addition of purified aldehydes known to be present in CS, probably due to the interaction between aldehydes and -SH groups of the enzyme. Our results indicate that although saturated aldehydes are the chief aldehydes present in CS, the significant decrease in amylase activity was due to unsaturated aldehydes, reacting, probably, through the double bond with the thiol group of proteins by the Michael addition reaction.