Proteomic Analysis of Whole Human Saliva Detects Enhanced Expression of Interleukin-1 Receptor Antagonist, Thioredoxin and Lipocalin-1 in Cigarette Smokers Compared to Non-Smokers

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Abstract: A gel-based proteomics approach was used to screen for proteins of differential abundance between the saliva of smokers and those who had never smoked. Subjecting precipitated proteins from whole human saliva of healthy non-smokers to two-dimensional electrophoresis (2-DE) generated typical profiles comprising more than 50 proteins. While 35 of the proteins were previously established by other researchers, an additional 22 proteins were detected in the 2-DE saliva protein profiles generated in the present study. When the 2-DE profiles were compared to those obtained from subjects considered to be heavy cigarette smokers, three saliva proteins, including interleukin-1 receptor antagonist, thioredoxin and lipocalin-1, showed significant enhanced expression. The distribution patterns of lipocalin-1 isoforms were also different between cigarette smokers and non-smokers. The three saliva proteins have good potential to be used as biomarkers for the adverse effects of smoking and the risk for inflammatory and chronic diseases that are associated with it.