

## HIV-infected patients with oropharyngeal candidiasis and HIV-associated salivary gland disease: A salivary proteomic analysis

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**Background:** HIV-infected patients remain susceptible to oral opportunistic infections, most commonly oropharyngeal candidiasis (OPC) and salivary gland disease (SGD). Currently, serum viral load and CD4 count continue to provide good indications for the severity of the systemic infection, however not all HIV-infected individuals presenting with similar viral load and CD4 count exhibit the same opportunistic infection or similar degree in the severity of the infection. Additional local environmental factors, i.e. saliva and salivary proteins, may fulfill a critical role in the progression of certain oral opportunistic infections.

**Methodology:** Two mass spectrometric platforms were applied, the Orbitrap LC-MS and the Water Snapt systems, to compare the salivary proteomes of ten HIV-infected patients with OPC and ten HIV-infected patients with SGD. Age, gender, race, viral load, and CD4 count were each used to match subjects within each group. Additionally, the presence of candida and BK virus of each saliva sample were also examined. The two mass spectrometric platforms were used independently to analyze the salivary proteomes of unstimulated whole saliva obtained from each subject using a label-free quantitative approach. A total of 18 and 22 protein biomarkers were found using the Water Snapt and Orbitrap systems, respectively ( $p < 0.01$ ). Biomarkers identified include proteins from salivary glands, serum, and mucosal tissues. When comparing the OPC to SGD, 3 and 11 biomarkers are up-regulated while 15 and 11 biomarkers are down-regulated (in the Water Snapt and Orbitrap systems, respectively). Cluster analysis and principle component analysis demonstrate that each mass spectrometry system combination of salivary protein biomarkers can be used to distinguish OPC and SGD saliva samples from HIV-infected individuals.

**Conclusion:** Elucidating the complex role of salivary proteins in the progression of OPC and SGD associated with HIV infection may facilitate the development of novel diagnostic and therapeutic tools for these vulnerable populations.

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