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Salivary inhibition of HIV: Broad antiviral activity of salivary mucin and correlation of antiviral activity with the recovery of infectious virus. D. H. Coppenhaver and P. S.-Woo. Dept. of Microbiology, Univ. of Texas Medical Branch, Galveston, TX, USA.

Human immunodeficiency virus [HIV], the etiologic agent responsible for AIDS, has been found in a wide variety of normal body fluids and secretion, including saliva. Casual contact with fluids such as saliva is a frequent occurrence in families and persons sharing the same household. As such, there is public apprehension about the possibility of becoming infected by HIV through contact with saliva, which has been intensified by the apparent transmission in a Florida dental practice. In spite of these concerns, evidence points to a low risk of transmission of HIV through the oral cavity. It is known that human saliva can reduce HIV infectivity in vitro . These observations lead to the hypothesis that salivary virus inhibitors can inhibit HIV replication. We tested human saliva and authentic submaxillary-submandibular mucin for the ability to inhibit HIV and other viruses in vitro, and show that the antiviral spectrum of saliva and authentic mucin are coincident. In addition, the major activity of both saliva and authentic mucin appears to be at an early stage in viral replication, probably at attachment. Like the salivary antiviral activity, authentic mucin is removed by filtration through 100 kDa MWCO membranes. These results indicate that a major part of the antiviral activity of saliva is due to the presence of salivary mucin. We have also investigated salivary antiviral levels within the HIV-positive population. We show that this activity is variable within the population, and that the presence of low or undetectable levels of salivary antiviral activity significantly correlates with the ability to isolate infectious HIV from saliva.

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RAPID EVALUATION OF EXPERIMENTAL ANTIRETROVIRAL THERAPY BY QUANTITATIVE COMPETITIVE POLYMERASE CHAIN REACTION (QC-PCR) ASSESSMENT OF HIV-1 VIRAL LOAD IN PLASMA *J. D. Lifson, M.S. Saag, L.C. Yang, J. Kappes, S. Gosh, G.M. Shaw, M. Piatak, Genelabs Technologies, Inc., Redwood City, CA, USA and University of Alabama at Birmingham, Birmingham, AL, USA.*

Direct evaluation of viral load in HIV-1 disease is an intuitively attractive approach for assessment of disease status, and for direct monitoring of *in vivo* antiviral effects of treatment. Levels of virus in plasma should correlate with the overall level of viral replication in all anatomical sites in continuity with the plasma compartment, serving as a useful index of viral and disease activity. However, direct assessment of viral load has been problematic for monitoring many HIV-1 infected patients, in whom conventional viral load assays such as p24 antigen tests and viral culture may be negative. We have developed a method, QC-PCR, that uses a stringent internally controlled titration approach to harness the exquisite sensitivity of PCR, while maintaining excellent quantitative precision and accuracy *(Piatak, et al, Science, 259:1749-54, 1993).* QC-PCR-determined plasma virion-associated HIV-1 RNA levels correlate well with disease stage and CD4 counts, and QC-PCR-determined plasma viral load correlates well with other viral load parameters such as p24 Ag, ICD p24 Ag, and viral cultures, when these less much sensitive assays are positive. We have subsequently applied QC-PCR measurement of plasma viral load to the evaluation of the effects of antiretroviral treatment. Within one week of initiation of zidovudine, levels of circulating virus decreased by approximately 10-fold, and remained decreased for the six week duration of treatment, with a prompt rebound to essentially baseline levels within one week following temporary discontinuation of treatment. In patients treated with non-nucleoside reverse transcriptase inhibitors, initial decreases in levels of circulating virus were followed, in some cases, by rebound of plasma virus to pretreatment levels, despite continued treatment. This appeared to correlate with the emergence of resistant virus, *in vivo,* with genotypic and/or phenotypic evidence of resistance demonstrable *in vitro.* QC-PCR also appears useful for monitoring viral load in studies of combination treatment regimens, where the sensitivity and broad dynamic range of the method can be used to document the exact extent of large treatment-associated changes in viral load. Finally, preliminary data suggest that plasma HIV-1 RNA viral load may be a useful parameter for stratification of patients for analysis of data from clinical trials, and may be a useful entry criterion for clinical studies. An update on the current status of the use of QC-PCR for evaluation of antiretroviral treatment will be provided.