The biological importance of Human Immunodeficiency Virus Type 1 (HIV-1) Circulating Recombinant Form (CRF) CRF02_AG.

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Abstract

This thesis focused on the diagnosis, pathogenesis (fitness) and prevention of CRF02_AG a Circulating Recombinant Forms (CRF) of Human Immunodeficiency Virus Type 1 (HIV-1). CRF02_AG is associated with rapidly spreading new epidemics in western African countries where until recently this epidemic was maintained at relatively low level. This recombinant is also predominant in West Central and East African countries where other subtypes co-circulate.

We developed and validated a relatively simple oligonucleotide probe hybridization assay that can be used for monitoring the spread of CRF02 in the pandemic. We showed that CRF02 has a replicative advantage on the parental A and G strains. This property may explain the preferential spread of this recombinant in West-Central Africa amongst other co-circulating strains. Finally, we showed that pretreatment of primary virus isolates of the most prevalent strains (including CRF02) could effectively prevent infection of monocyte-derived DC and T4 cells. The antiviral activity was determined in the nanomolar range, far beneath the toxic and immunosuppressive dose, that offers a favorable perspective for the development as microbicide.