Evolutionary analyses support that ASP (Anti Sense Protein) overlapping ORF is the 10th gene of HIV-1 M pandemic group

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Résumé

The existence of overlapping genes encoded by the antisense strand of retroviruses is an old concept but actually demonstrated for the last ten years with the discovery of HBZ in HTLV-1 and recent results on the ASP protein of HIV-1. ASP gene is an overlapping gene which is embedded in the anti-sense reading frame -2, relatively to the Env gene. New research is conducted on this protein to understand its expression and functionality. We searched using bioinformatic analysis to identify the existence conservation, and selection pressure of this protein in the group M of HIV-1. Our aim is to show that the presence of the ASP ORF is not just induced by mechanical constraints caused by the sense strand (Env gene), but there is a selection pressure induced by ASP. However, it has been shown that selection pressure between the frame +1 and -2 are correlated. We developed original methods for assessing the presence / absence of the ASP ORF in the HIV-1 and SIV groups, and for measuring the selection pressure induced by the ASP protein. We have shown the presence of ASP ORF in the most prevalent HIV-1 M sub-types, and results of our method for detecting selection pressure seem to confirm ASP protein is subjected to a selection pressure.

Mots-Clés: HIV, 1, overlapping gene, selection pressure

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