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# UPLC-MS lipidomic approach to evaluate potential biomarkers for the differentiation of HIV/HCV progressive stage

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Human immunodeficiency virus (HIV) and Hepatitis C virus (HCV) have been diagnosed in millions of people worldwide with very high mortality rates and, on the other hand, has a very pronounced impact on the quality of life of HIV-positive patients [1]. In addition, the disease mechanisms have remained poorly understood for a long time. Thus, tardive intervention in the diagnosis, prevention, control and treatment of viral outbreaks has accompanied the growth and spread of this disease.

Antiretroviral treatments used to reduce the plasma viral load of HIV and HCV viruses are capable of causing drastic changes in lipids, causing alteration of the lipid metabolism of the infected organism and developing diseases such as dyslipidaemia, hypertriglyceridemia, hypercholesterolemia and insulin resistance, among other diseases [2-4].

This study aimed to identify altered lipid levels in plasma samples from HIV-infected patients with different stages of infection and co-infection with HCV using the analytical platform UPLC-MS. At the same time, the results obtained allowed us to suggest and establish possible biomarkers of the diseases analysed. The cohort groups were selected based on the stage of the disease: i) asymptomatic patients infected with HIV (21); ii) patients infected with HIV who had developed AIDS (11); iii) nine patients infected with HIV and co-infected with hepatitis C (HIV/HCV); iv)13 patients with AIDS and co-infected with HCV (AIDS/HCV) and v) 20 control subjects (Control).

The results obtained with the UPLC-MS platform, the multivariate analysis of chromatograms and the study of discriminant lipids through ROC curves have allowed the discovery of lipid alterations in patients with different stages of HIV and co-infected with HCV. Among the lipid families that showed the most significant discriminating power to differentiate the different stages of the disease, triglycerides and phosphatidylcholines stood out since they underwent significant changes in their concentrations. For this reason, the key biomarkers of the diseases studied are these two families. However, using other lipid families that, in combination, act as biomarkers is required to define each disease more precisely and the differences between them. Therefore, this study should be considered a reasonable basis for future studies where a more significant number of samples are included and analysed.

**Referencias**

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