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Profiling of plasma esterified fatty acids contents in dengue fever patients applying optimized GC-MS method

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Previous studies justified the alteration in lipid metabolism of dengue fever infected cells and the changes in the plasma lipids profile in dengue fever cases (DF). However, no reports have addressed the potential differences in esterified fatty acids (EFA) plasma profile that could be used to distinguish between DF patients and health controls. In the present study, we applied an improved gas chromatography-mass spectrometry (GC-MS) method, using myristic acid ethyl ester as internal standard, to highlight EFA profile in DF versus controls. Twenty-four adult DF volunteers and 24 healthy controls were included in this study. The extraction rate and sensitivity of GC-MS method were validated and optimized for determination of EFA as methyl ester. The results indicated 4 saturated fatty acids (C14:0, C15:0, C16:0 and C18:0; p value <0.05), 8 unsaturated fatty acids (C16:1, C18:3n6, C18:2n6, C18:1n9, C20:3n3, C20:4n6, C20:2 and C22:6n3; p value <0.05) where mean levels in blood from DF patients were significantly lower than controls. The average percentage decrease of Omega-6 fatty acids in DF cases was 50±10%. The results highlighted that the concentrations of Omega-6 fatty acids, including C18:3n6, C20:4n6 and C18:2n6, are considered as the potential biomarkers in early diagnosing DF.

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