Fatty Acids and Inflammatory Protein Biomarkers in Freshly Frozen Plasma Samples from Patients with and without COVID-19

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Abstract : The Coronavirus disease 2019 (COVID-19) is a viral infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and associated with systemic inflammation. Inflammation is an important process that follows infection and facilitates the repair of damaged tissue. Polyunsaturated fatty acids play an important role in the inflammatory process. These lipids can target transcription factors to modulate gene expression and protein function. Here, we evaluated whether differences in basal levels of different types of biomarkers can be detected in freshly frozen plasma samples from patients with and without COVID19. Fatty acid methyl ester (FAME) analysis showed a decrease in arachidic acid and myristic acid, but an increase in caprylic acid, palmitic acid, and eicosenoic acid in the plasma of COVID-19 patients compared to non-COVID19 patients. Multiple chemokines, including IP-10, MCP-1, and MIP-1 beta, were increased in the COVID-19 group compared to the non-COVID-19 group. Similarly, cytokines including IL-1 alpha and IL-8, and cell adhesion and inflammatory response markers including ICAM-1 and E-selectin were greater in the plasma of COVID-19 patients compared to non-COVID-19 patients. A baseline signature of specific polyunsaturated fatty acids, cytokines, and chemokines present in the plasma after COVID-19 viral infection may serve as biomarkers that can be useful in various applications, including determination of the severity of infection, an indication of disease prognosis and consideration for therapeutic options.

Keywords : MARKS, COVID 19, UEVS NON COVIDS, kidneys, nanoparticles
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