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Sulfated Bile Acids in Serum as Potential Biomarkers of Disease Severity and Mortality in COVID-19

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The fight against coronavirus disease 2019 (COVID-19) continues. Since the pandemic's onset, several biomarkers have been proposed to assess the diagnosis and prognosis of this disease. This research aimed to identify potential disease severity biomarkers in serum samples of patients with COVID-19 during the disease course. Data were collected using untargeted and targeted mass spectrometry methods. The results were interpreted by performing univariate and multivariate analyses. Important metabolite classes were identified by qualitative untargeted metabolomics in 15 serum samples from survivors of COVID-19. Quantitative targeted metabolomics on a larger patient cohort including 15 non-survivors confirmed serum 3-sulfate bile acids (i.e. GLCA-3S) were significantly increased in non-survivors compared to survivors during the early disease stage (p-value < 0.0001). Notably, it was associated with a higher risk of mortality (odds ratio of 26). A principal component analysis showed the ability to discriminate between survivors and non-survivors using the BA concentrations. Furthermore, increased BA-S is highly correlated with known parameters altered in severe clinical conditions.

Biography

Dr. Cristiana Caliceti, born in Bologna, Italy, earned her degree in Chemistry and Pharmaceutical Technologies in 2007 and a PhD in Biochemistry in 2011 from the University of Bologna. Her research spans cardiovascular health, redox signaling, and solid tumors. She is a senior researcher at the University of Bologna, with expertise in bioanalytical chemistry and nutraceuticals for disease prevention. She has authored 45 papers and presented at over 50 international conferences. Currently, she leads several projects, including early colon cancer detection and biomarker studies. Dr. Caliceti holds national qualifications as an Associate Professor in Biochemistry and Analytical Chemistry.

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