

METABOLIC CHANGES IN PATIENTS WITH SEPSIS: A LIPIDOMIC APPROACH

Final Degree Project

BIOCHEMISTRY AND MOLECULAR BIOLOGY

SPECIALIZATION IN CLINICAL AND FORENSIC BIOCHEMISTRY

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Metabolic changes in patients with sepsis: A lipidomic approach

This Final degree project is based on the results obtained during my external internship at the Infection and Immunity group (INIM) of the *Institut d'Investigació Sanitària Pere Virgili* (IISPV) under the supervision of Anna Rull Aixa and Alba Sánchez Morillo.



ABSTRACT

Sepsis is a life-threatening organ dysfunction caused by a dysregulated immune response to an infectious agent. With millions of cases and deaths occurring globally each year, sepsis represents a significant public health challenge that requires further study to improve diagnosis and treatment.

The aim of this study is to identify lipid profiles and metabolic pathways linked to sepsis progression and clinical severity.

Study cohort comprised 186 plasma samples from 49 patients with sepsis collected on admission (T0) and days 1 (T1), 5 (T5) and 10 (T10) of hospitalization. Lipidomics was performed by methanol extraction followed by LC-MS analysis. Short-chain fatty acids (SCFAs) were determined by GS-MS/MS. Data was analyzed using IBM SPSS Statistics (version 15.0.1) and MetaboAnalyst (version 6.0).

Keywords: Sepsis severity, longitudinal analysis, lipidomics, SCFA.

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