

## Surface HLA-DR Dynamics and Functionality of Monocytes in Pneumonia-Induced Sepsis

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Sepsis-induced immunosuppression is a major concern in critically ill patients, and one of the hallmarks of this phenomenon is the decreased expression of the human leukocyte antigen (HLA)-DR on antigen-presenting cells, such as monocytes.

This study aimed to investigate the relationship between HLA-DR expression on monocytes and their cytokine production abilities in patients with sepsis.

Conducted as part of the MENDSEP project at Mater Dei Hospital, the research involved 14 sepsis patients and 16 age- and sex-matched controls. The sepsis patients were over 18 years old, suffering from either hospital or community acquired pneumonia. Monocytes were isolated from blood samples and analysed using flow cytometry for CD14 and HLA-DR expression. After exposure to *E. coli* lipopolysaccharide (LPS), the levels of IL-1 $\beta$  were measured.

The results demonstrated that monocytes from septic patients exhibited significantly reduced levels of CD14+ HLA-DR+ expression and produced less IL-1 $\beta$  compared to the control group. A direct correlation was established between HLA-DR expression and IL-1 $\beta$  production in both sepsis patients and controls. These findings highlight the potential of HLA-DR as a biomarker for detecting immunosuppression in sepsis and suggest that monitoring HLA-DR levels could inform therapeutic strategies.