# The Regulation of Septin 9 in Malaria-Associated Acute Respiratory Distress Syndrome

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**Introduction:** In 2024, malaria caused 610,000 deaths, with 75% occurring in under 5 children. Acute Respiratory Distress Syndrome is a severe and fatal form of malaria. Recently, we identified 32 proteins that were overexpressed exclusively in *P. berghei* ANKA-infected DBA/2 mice that developed ARDS on the 7$^{th}$ and 9$^{th}$ days post-infection. Septin 9 was among these overexpressed proteins. We hypothesize that it may play an important role in ARDS pathogenesis. **Objectives:** Our objectives were to validate the expression of septin 9 in lung tissue from animals that developed ARDS and compare it with those that did not develop ARDS and with non-infected animals; to identify septin 9 isoforms in mouse lung tissue; evaluate whether septin 9 could serve as an early biomarker of ARDS or of imminent death; and analyze septin 9 expression in primary mice lung endothelial cells exposed to *Plasmodium berghei*-infected red blood cells. **Materials and Methods:** Septin 9 expression was quantified by RT-qPCR and ELISA and compared with non-infected controls; Isoforms were identified using conventional PCR from lung tissue of DBA/2 mice. Septin 9 labeling was performed by immunofluorescence. **Results:** We observed that Septin 9 in the lung tissue of DBA/2 mice that developed ARDS was overexpressed compared to non-infected animals. We were able to identify three isoforms of Septin 9. Serum levels of Septin 9 in DBA/2 mice infected with *P. berghei* ANKA changed throughout the course and outcome of the disease. However, Septin 9 expression in primary pulmonary endothelial cells from DBA/2 mice stimulated with *P. berghei*-infected red blood cells did not show significant difference. On the other hand, we were able to detect septin 9 labeling in pulmonary endothelial cells isolated from DBA/2 mice. **Conclusion:** The validation of septin 9 expression is promising, and targeting this signaling pathway could help prevent patients from developing severe malaria.

**Keywords**: malaria, ARDS, septin 9.

FUNDING STATEMENT: This work was funded by the São Paulo Research Foundation (FAPESP) the Brazilian National Council for Scientific and Technological Development (CNPq) and Coordination of Superior Level Staff Improvement (CAPES).