Inflammasome modulation by *Cryptococcus neoformans* extracellular vesicles produced in different conditions

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Introduction:

Cryptococcus neoformans (Cn) is a human pathogenic fungus that infects mainly immunocompromised individuals causing cryptococcosis. Among others, one of its strategies of virulence is the secretion of extracellular vesicles (EVs). It's known that different serotype of *C. neoformans* produce different inflammatory responses when incubated with macrophages and, depending on the growth condition, these fungi differentially release metabolites and virulence factors. In our current project, we show that the culture medium composition significantly impacts the production and biological activity of *C. neoformans* EVs.

Methods

Results

EVs characterization

Figure 1. Hydrodynamic diameter measured with DLS of extracellular vesicles of *C. neoformans* varying according to the culture medium used in fungus growth.

Figure 2. Scanning electron microscopy of the EVs. Cap 67 EVs obtained from SDB 10% (a), 50% (b) and 100% (c). B3501 EVs obtained from SDB 50% (d)

Conclusion

Therefore, we can conclude that the culture medium composition significantly modulates the characteristics of the extracellular vesicles produced by the yeasts. The fact that they are higher when obtained from a poor medium corroborate the hypothesis that these vesicles are virulence factors and are different under nutritional stress situations. Furthermore, the treatment of the infected mice with Cn vesicles caused a down regulation on several inflammasome genes including IL-1B, TNF- α and IL-18. Hence, these findings are consistent with the loading and release of EVs playing an important role in the fungal stress response, and further link EVs to pathogenesis.

EVs influence on the activation of Inflammasome:

In vivo experiment: infected mice treated with EVs

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