Abstract for Ph.D. Proposal Presentation

Evaluation of the Immunogenic potential of Extracellular Vesicles of *Candida* spp. in a murine model of Vulvovaginal Candidiasis

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Vulvovaginal candidiasis (VVC) is the most common fungal infection of the female reproductive tract. Its high prevalence among women of reproductive age, coupled with a strong tendency to recur, makes VVC a significant health concern that compromises the quality of life of millions of women worldwide. Among *Candida* species, *C. albicans* is the principal etiological agent of VVC; however, up to 30–40% of recurrent cases are now attributed to non-*albicans Candida* (NAC) species such as *C. glabrata*, *C. krusei*, *C. tropicalis*, and *C. parapsilosis*. Current clinical management of VVC relies predominantly on antifungal agents, which has led to increasing drug resistance, lack of sustained mucosal protection, and poor efficacy against NAC species.

To address these limitations, emerging strategies including probiotics, prebiotics, and small molecules targeting specific virulence factors of *Candida* spp. are being explored as alternative therapeutic approaches; however, these remain largely in their early stages of development. In addition, prophylactic immunomodulatory strategies such as recombinant protein constructs (NDV-3A), virosomal formulations (PEV7), lipid nanoparticle platforms, and pan-fungal candidates (NXT-2) have demonstrated promising systemic and mucosal protection against *C. albicans*.

Recent focus on extracellular vesicles (EVs) as immunogens has revealed their potential as novel vaccine candidates. The ability of *Candida*-derived EVs to elicit protective immune responses and modulate host immunity has been documented in models of systemic candidiasis. These findings underscore not only the promise of EVs as a vaccine platform but also the urgent need for rigorous optimization and broad-spectrum targeting. Developing an EV-based vaccine capable of inducing durable mucosal immunity while providing protection against both *C. albicans* and NAC species represents a critical next step in advancing preventive strategies for VVC.

In this context, we aim to investigate the immunogenic potential of multi-*Candida* species EVs in murine models of VVC. The outcomes of this study may ultimately contribute to the development of a safe, effective, and broad-spectrum EV-based vaccine formulation against VVC.