

# ABSTRACT

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**Study program:** Pharmacy

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**Title of thesis:** Analysis of protein cargo of extracellular vesicles isolated from the yeast *Candida albicans*

**Background:** The aim of this diploma thesis was to analyze the protein cargo carried in extracellular vesicles released from the yeast *Candida albicans* (*C. albicans*), which is one of the most important mycotic agents. Extracellular vesicles (EVs) are utilized as „transport vehicles“, for the delivery of effector molecules into extracellular milieu. These molecules and primarily proteins can play different roles in host-pathogen interactions. Proteins isolated from EVs and identified by proteomic approach were sorted into categories according to their molecular function and localization for the purpose of finding out, which proteins are predominantly distributed *via* extracellular vesicles into extracellular space after induction of nutrition starvation. Analysis of EVs protein cargo with focus on virulence factors could extend the knowledge about extracellular vesicles and their potential role in pathogenesis.

**Methods:** Chosen *C. albicans* yeast strain was a clinical isolate strain isolated from a premenopausal women suffering from recurrent vulvovaginal candidiasis. This strain was cultivated in nutrient-limited cultivation medium. After cultivation was the yeast suspension processed with aim to isolate and purify yeast extracellular vesicles. Proteins isolated from yeast extracellular vesicles were analysed through liquid chromatography with tandem mass spectrometry and gained data were evaluated by bioinformatic tools.

**Results:** In summary, 382 proteins were identified in this study. 50 of them were directly or indirectly linked with pathogenesis of *C. albicans* candidiasis.

**Conclusions:** The chosen *C. albicans* clinical isolate strain was cultivated under conditions of nutrition starvation. The protein cargo carried in extracellular vesicles was analyzed with focus on virulence factors, which are proposed to promote pathogenesis of candidiasis.

**Key words:** extracellular vesicles, *Candida albicans*, virulence factors, vulvovaginal candidiasis