

ABSTRACT

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Title of diploma thesis: New fungal fucosidases and their synthetic potential

The literary research focuses on α -L-fucosidases, their occurrence, functions, and use in the synthesis of fucosylated compounds, which were also a part of the research, particularly their presence in the human body and involvement in pathological conditions. Furthermore, it explores the oligosaccharides found in human milk, their impact on infant health, and their synthesis, which can be facilitated through the use of α -L-fucosidases.

The experimental section involves the analysis of a library of filamentous fungi with the aim of identifying a representative strain with α -L-fucosidase activity towards *p*NP- α -L-fucoside. Recombinant α -L-fucosidases were selected based on searches in genetic databases and prepared. The feasibility of their production in *Pichia pastoris* and *Escherichia coli* was tested, and the produced enzymes were purified by ion exchange chromatography, characterized and their regioselectivity and synthetic potential for the synthesis of fucosylated oligosaccharides were examined.

Keywords: fucosidase, enzyme, oligosaccharides, synthesis, human milk