

Abstract in English

β -*N*-Acetylhexosaminidase (EC 3.2.1.52) is an exoglycosidase, which exhibits unique properties in filamentous fungi. Enzymes from these organisms are dimeric, inducible and secreted extracellularly. It is expressed as a preproprotein, consisting of a signal sequence, a large propeptide and a catalytic subunit. Although the enzyme is widely distributed, its structure differs in various organisms. Bacteria have only monomeric hexosaminidase. Human enzymes are dimeric as well as fungal, but only hexosaminidase from filamentous fungi have the catalytic subunit noncovalently associated with the propeptide. The propeptide is essential for the enzyme activity. It exists as a homologous model of the catalytic subunit of β -*N*-acetylhexosaminidase from *Penicillium oxalicum*, but the structure of the propeptide has not yet been solved.

The first part of this diploma thesis deals with the optimization of production and purification conditions. The second part deals with structural studies of β -*N*-acetylhexosaminidases from the filamentous fungi *Penicillium oxalicum* CCF 3438. These studies were carried out using chemical cross-linking and high resolution mass spectrometry. The combination of these methods revealed the region of the noncovalent interaction of the catalytic subunit with the propeptide.