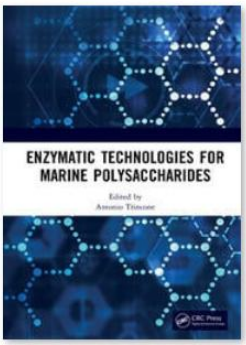
ENZYMATIC TECHNOLOGIES FOR MARINE POLYSACCHARIDES

Edited by
Antonio Trincone



Book

Enzymatic Technologies for Marine Polysaccharides

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chapter sixteen

Role of carbohydrate active enzymes (CAZymes) in production of marine bioactive oligosaccharides and their pharmacological applications

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16.1 Introduction

CAZymes are implicated in synthesis, breakdown, and modification of complex polysaccharides (CPs) or glycoconjugates. CAZy classification is a sequence-based classification of CAZymes and is recorded in the CAZy database. On the basis of the amino acid sequence, CAZymes are classified under five different families: glycoside hydrolase (GHs), polysaccharide lyase (PLs), glycosyl transferase (GTs), carbohydrate esterase (CEs), and enzymes with auxiliary activities (AAs) (Cantarel et al. 2009). GHs and PLs are class of CAZymes that are involved in degradation of CPs. The GHs are the largest family of CAZymes that hydrolyze the glycosidic bond between two or more carbohydrate or between carbohydrate and noncarbohydrate moieties via overall retention or by overall inversion of an anomeric carbon mechanism (Figure 16.1). On the contrary, PLs