

Development of a fully enzymatic conversion process from marine chitin to chitosan oligomers

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Propositions

belonging to the dissertation:

Development of a fully enzymatic conversion process from marine chitin to chitosan oligomers

1. Chemo-catalytic and biocatalytic chitin-degradation processes can both coexist dependent on product demands and application area.
2. Biocatalytic processes offer the opportunity to generate molecules with unique functions that classical chemistry cannot achieve.
3. Marine environments are a virtually inexhaustible biome to discover novel bacteria and technical enzymes. (**Chapter 2 and 3** of this thesis).
4. Recombinant expression of proteins is an efficient method to yield single target enzymes rapidly (**Chapters 4 and 5** of this thesis).
5. Different enzymes may not result in different product properties (**Chapter 4 and 5** of this thesis)
6. The design-of-experiments approach is the method-of-choice for process optimization and mixture fine-tuning. (**Chapter 6** of this thesis).
7. Product distributions of chitosan oligomers are not prone for changes when combining multiple enzymes in one-pot reactions. (**Chapter 6** of this thesis).
8. Chitosan oligomers are versatile functional molecules and the discovery of novel structures will potentially expand future application spectra. (**Chapter 2** of this thesis).
9. Sustainable upstream valorization approaches of chitin-waste could contribute significantly to a more circular and biobased economy