



SEAMARK DELIVERABLE 6.3: SCALABLE BIOPROCESS FOR PRODUCTION OF LAMINARIN OLIGOSACCHARIDES

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Public summary of
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6 / T6.1 Refining of laminarin

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Summary:

The report describes a bioprocess for production of laminarin from brown algae, and subsequent enzymatic refinement for production of laminarin oligosaccharides. A basic extraction protocol for laminarin from different *Saccharina/Laminaria* species was established, scalable to high volume production. Furthermore, partial enzyme digestion was carried out to produce a set of laminarin oligos of different size and branching structure. This was intended for downstream studies of the structure of laminarins from different kelp species and subsequently, for immunomodulatory analysis, where the immunology activity can be affiliated with certain size and structures. A purification protocol was established which can be applied in making laminarin oligosaccharide products of pharmaceutical relevance, for future commercialisation. Furthermore, specific oligosaccharides were tailor-made using a beta-glucan transferase. The purpose was to investigate the bioactivity of the specific trans-glycosylation products (described in D6.4) and show how the different size and structure has an impact on the bioactivity. The outcome of the bioprocess trials were protocols for production and purification of laminarins and laminarin oligosaccharides, applicable for future manufacturing of commercial products. Further, the outcome was pure laminarin saccharides and oligosaccharides produced either with hydrolysing enzyme or with a trans-glucosidase enzyme for downstream applications in Task 6.6 (D6.3) and Task 6.5 (D6.4).



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