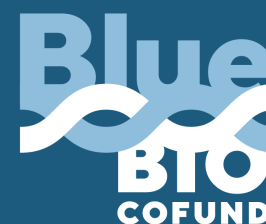


MARIKAT

New catalytic enzymes and enzymatic processes from the marine microbiome for refining marine seaweed biomass

About the project

The technological objective of MARIKAT is to unlock the potential of microbiomes in providing tools for emerging biorefineries of Europe to establish an unique marine bioresource, seaweed polysaccharides as a feedstock. Enzymatic refining of macroalgal polysaccharides to added value products on industrial scale is near to non-existent today – robust enzymatic tools are lacking. MARIKAT entails retrieval, evaluation and industrial development of enzymes identified in novel marine microbial genomes and metagenomes. Enzymes will be developed for different steps of a biorfinery seaweed value chain, from enzyme aided fractionation of the biomass, to conversion of different components to value added derivatives. Besides carbohydrate active degrading enzymes various auxiliary enzymes will be targeted e.g. enzymes for removing or changing substituent patterns of polysaccharides, e.g. sulfatases for de-sulphating recalcitrant polysaccharides; and modifying enzymes such as trans glucosidases that can add sugar moieties to different oligo-saccharides and aglycones. MARIKAT will provide enzymes and expand the range products that can be derived from seaweed to include added value products such as highly bioactive oligosaccharides, rare sugars, novel polyphenol derivatives and food grade surfactants from seaweeds. Advanced methods will be used to define the structural determinants of bioactivity in various enzymatic products, and the applicative potential of enzymes in modification and synthesis of synthetic pharmaceutical oligosaccharides will be evaluated. The targeted markets are food (specifically the food beverage and the health food markets); pharma and the skin-care industry. The developed enzymes and enzymatic processes will be introduced to the market through commercial channels within the consortium, partners networks as well as through outreach and dissemination to stakeholders and potential third-party collaborators and clients.



Project Overview

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Exploring new bioresources

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