



D4.6 Protocol for production of polyphenols

Macro Cascade -Project

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Summary

This deliverable report 4.6 provides a protocol of extraction and identification of polyphenols from *S. latissima* from the Faroe Islands. DTI's subcontractor ALGAIA helped to review the deliverable report.

Different solvent extraction methods were evaluated for extraction of polyphenols from *S. latissima*. Among them, polyphenol extraction using aqueous ethanol (80%) solution is recommended since it is used for pretreatment of *S. latissima* before extracting the polysaccharides of *S. latissima*. However, purification steps need to be added since the purity of extracted polyphenols is low due to co-extraction of other compounds (mainly mannitol). To overcome this drawback, supercritical CO₂ extraction method was used as an alternative method and evaluated for extraction of polyphenols from *S. latissima*. The results in this study showed that the purity of the extracted samples obtained by SC- CO₂ was higher than that in the extracted samples obtained by the ethanol solvent extraction method. Also, different conditions for maximum polyphenol extraction by SC- CO₂ were investigated and the optimum condition was obtained by response surface methodology (RSM) using MODDE 10.1 software (Box-Behnken type).

Identification of the purified extract obtained by aqueous ethanol (80%) solution using UHPLC/MS showed the presence of one phlorotannin in *S. latissima* with the formula of C₁₂H₁₀O₇ which can be bifuhalol which is a phlorotannin in brown algae.

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