

III3. Bioeconomy and Sustainable Development

P179. The potential of ohmic heating for agar extraction from seaweed

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Agar is a polysaccharide with a high commercial value due to its wide range of applications in several industries. *Gracilaria* is used as the raw material by the agar production companies, being around 54% of the agar commercialized worldwide obtained from this seaweed. Traditional extraction is a process that requires high solvent and energy consumptions and generates large amounts of waste creating the need for greener and more efficient technologies. Ohmic heating consists in a process where an electric current is passed through materials heating them uniformly with a rapid rate. The process has high energy conversion efficiencies, resulting in lower operational costs and in an environmental-friendly system. The ohmic heating can be applied to obtain sub-critical water conditions for extraction of compounds from vegetal tissues, joining the energy and time efficiency with the selective power of sub-critical water. In this context, the aim of this work was to evaluate the effect of ohmic heating on seaweed agar extraction, as an alternative extraction technology. The extraction was performed using a frequency of 25 kHz at 82 °C, during 1 and 2 h, for different proportions of water: ethanol. The extraction yield and sugars composition were identical in all extracts when compared with a conventional extraction, under the same conditions of solvent, temperature, and time. However, the gel strength of agar was significantly higher for the extracts obtained with ohmic treatment in water. These results show the potential of ohmic technology as a low cost and an environmental-friendly alternative for agar extraction from seaweed.

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