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TOPIC(s) : Alternative technologies / Alternative solvents

Green extraction methodologies applied to the extraction of bioactive diterpenes from *Bifurcaria bifurcata*

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PURPOSE OF THE ABSTRACT

Macroalgae (~10000 species) have been used for centuries, particularly in Asian countries, as low-value commodities, viz. as food, hydrocolloids source, fodder or fertilisers. Although macroalgae aquaculture reached over 30 million ton wet weight farmed in 2016, this market is mostly focused on polysaccharides, pigments or minerals, neglecting less abundant bioactive molecules, namely lipophilic compounds, polar lipids, proteins, carbohydrates, vitamins, fibers, or phenolic compounds [1].

Among the variety of promising high-value compounds which can be obtained from macroalgae, linear diterpenes commonly found in the Sargassaceae family, and particularly in *Bifurcaria bifurcata* species have attracted attention due to their health-promoting properties such as anti-inflammatory, antibacterial or antiproliferative activities [2] which makes them very promising for high-value applications, such as nutraceutical or pharmaceutical fields. However, these applications have been hindered due to the lack of eco-friendly and efficient extraction methodologies.

In this vein, different methods were used to extract linear diterpenes from *B. bifurcata*. Indeed, high-pressure assisted extraction (HPE) [3], microwave-assisted extraction (MAE) and extraction with alternative solvents, namely switchable solvents, were used to obtain diterpenes enriched fractions from *B. bifurcata*. Extracts were evaluated regarding their total extraction yield and diterpenes content. The different extraction methodologies were optimised by response surface methodology and finally compared. In conclusion, these results pointed out different promising green methodologies, comparatively to conventional ones, to obtain bioactive diterpenes enriched extracts from the macroalga *B. bifurcata*.

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FIGURES

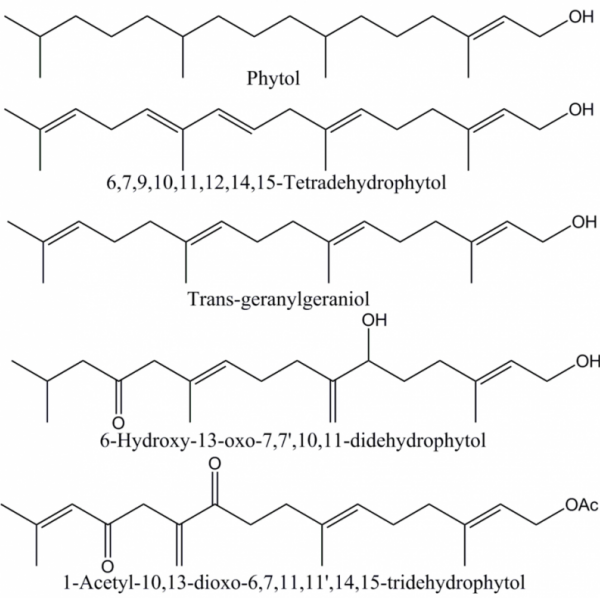


FIGURE 1

Figure 1
Linear diterpenes extracted from *Bifurcaria bifurcata*.

FIGURE 2

KEYWORDS

Biorefinery | Macroalgae | Bioactive compounds | Green extraction methodologies

BIBLIOGRAPHY