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PHENOLIC CONTENT AND ANTIOXIDANT ACTIVITY OF EXTRACTS FROM *BIFURCARIA BIFURCATA* ALGA, OBTAINED BY DIVERSE EXTRACTION CONDITIONS USING THREE DIFFERENT TECHNIQUES (HYDROTHERMAL, ULTRASOUNDS AND SUPERCRITICAL CO_2)

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Abstract

Extracts of *Bifurcaria bifurcata* seaweed were obtained by diverse conditions. Different extraction techniques, such as hydrothermal and ultrasounds, and three different solvents (water, ethanol and water/ethanol (50:50)) depending on technique were used. Moreover, supercritical CO_2 (SC-CO_2) with 10% of ethanol as co-solvent using different extraction times (30, 45 and 60 min) was also used as extraction technique. Extraction yield, phenolic content and antioxidant activity were measured for each extract. Hydrothermal extraction obtained better extraction yields than ultrasound extraction. Regarding the effect of solvent composition, water/ethanol (50:50) in hydrothermal treatment (HW50E50) and water/ethanol (50:50) in ultrasound treatment (UW50E50) showed the highest extraction yields. The worst extraction yields were shown by the extraction with SC-CO_2. Water/ethanol (50:50) showed to be more efficient extracting phenolic compounds than water, although the highest extraction was achieved by ethanol. On the other hand, ultrasound-assisted extraction seemed to be more efficient extracting phenolic compounds than hydrothermal extraction. From the results obtained, it can be concluded that the use of ultrasound extraction technique and the use of water/ethanol as extracting solvent seemed to be the best extraction condition.

Key words: Bifurcaria bifurcata, hydrothermal, supercritical CO_2, ultrasound

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