Optimization of alginate alkaline extraction technology from Sargassum latifolium and its potential antioxidant and emulsifying properties

Mustafa A. Fawzy, Mohamed Gomaa, Awatief F. Hifney, Khayria M. Abdel-Gawad

Abstract:

Alginate was recovered from Sargassum latifolium biomass using different conditions of alkali treatment. Box-Behnken experimental design was evaluated to study the influence of alkali:alga ratio, temperature and time on alginate yield, and its molecular weight (MW) and mannuronic/guluronic acid ratio (M/G). The second-order polynomial equations were analyzed by appropriate statistical methods. Extraction temperature and time were the most important factors during alginate alkaline extraction. MW and M/G ratio played an important role in controlling the reducing power of alginate. Increasing pH of the alginate solutions enhanced its reducing capacity, while thermal treatment showed a negative effect. Additionally, alginate exhibited good emulsion stabilizing capacities with diverse hydrophobic compounds. Emulsifying activity was less sensitive to temperature, ionic strength and more stable at acidic pH.

Keywords:

Sodium alginate, Alkaline treatment, M/G ratio, FTIR, Antioxidant stability, Emulsifying activity

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