Extraction and physicochemical properties of refined kappa-carrageenan from Kappaphycus Alvarezii originated from Semporna, Sabah

ABSTRACT

In this research, the influence of different solvents (1.0 M KOH and 1.0 M NaOH) and different drying methods (freeze dryer and oven) towards the chemical and physical properties of refined carrageenan by using kappaphycus alvarezii collected from Semporna, Sabah were determined. The physical characterizations involved were viscosity, surface morphology and functional group while, the chemical characterization was sulphate content. The result showed that the carrageenan yield were 12% (carrageenan extracted using 1.0 M KOH) and 18% (carrageenan extracted using 1.0 M NaOH) respectively for oven as a drying method. The carrageenan yield using freeze dryer were 10% (carrageenan extracted using 1.0 M KOH) and 12% (carrageenan extracted using 1.0 M NaOH). The functional groups identification for sulphate ester, anhydro-galactose and galactose were analyzed by using FT-IR. The surface morphology of carrageenan was analyzed by using SEM for different drying method and carrageenan extracted using 1.0 M KOH (Oven as drying method) showed a smooth surface compared with other sample. The sulphate content was analyzed by using UV-Vis spectrophotometer. The concentration of sulphate were 22.5 mg/L (carrageenan extracted using 1.0 M KOH) and 69.4mg/L (carrageenan extracted using 1.0 M NaOH) for oven as drying method. The result for freeze dryer method were 33.8 mg/L (carrageenan extracted using KOH) and 44.9 mg/L (carrageenan extracted using NaOH), respectively.