

## **Effect of process conditions on the gel viscosity and gel strength of semi-refined carrageenan (SRC) produced from seaweed (*Kappaphycus alvarezii*)**

### **Abstract**

*Kappaphycus alvarezii* or commonly known *Euchema cottonii* is a good source of kappacarrageenan and can be found cultivated in the coastal areas of Malaysia, Philippines and Indonesia. Carrageenans have many applications and are utilized in human food and pet-food industry. Carrageenans are also utilized in non-food industry such as pharmaceuticals, cosmetics, printing and textile formulations. Currently, the Southeast Asian region is producing semi refined carrageenan (SRC). There are various works in producing SRC; however, there are limited efforts to develop the optimization of cooking process parameters. Hence, the present study features on the cooking process (alkaline treatment) where the parameters (concentration of potassium hydroxide solution, cooking time and cooking temperature) and the ranges are identified experimentally. The effects of these parameters on carrageenan quality such as gel viscosity and gel strength were studied. The optimization of cooking process parameters and the experimental design was conducted based on the Central Composite Design (CCD) of Response Surface Methodology (RSM). The experimental result showed that gel viscosity increases with the decrease of cooking time, cooking temperature and potassium hydroxide (KOH) concentration (% w/w). In contrast, gel strength increases as cooking time, cooking temperature and KOH concentration (% w/w) increases. From the optimization, the best conditions for alkaline treatment found were cooking