

SYNTHESIS AND CHARACTERIZATION OF CARBOXYMETHYL CELLULOSE FROM WASTE NATA DE COCO

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In this study, the waste nata de coco, food industrial residue of the production of commercial nata de coco, was used as alternative cellulose source because of not only inexpensive source but also ability to be modified. The utilization of cellulose has been getting attention due to their spectacular properties such as bio-renewability, ubiquitous availability in a variety of forms and low cost. In addition to cellulose, cellulose derivatives which are produced by chemical modification of cellulose are also extensively used in many areas. Carboxymethyl cellulose (CMC) is the most widely used cellulose derivative for various applications such as textiles, paper, detergents, foods, drugs, and cosmetics. In the present study, the cellulose extracted from waste nata de coco was then modified to CMC by etherification process using sodium hydroxide (NaOH) and monochloroacetic acid (MCA) for being used as a food stabilizer. To achieve the optimal conditions for the CMC production, the concentrations of NaOH and MCA, reaction time, and reaction temperature were optimized. The degree of substitution (DS) was analyzed with respect to the reaction conditions using a chemical method. Structural information and chemical composition of cellulose and CMC were obtained by using Fourier transform infrared spectroscopy (FTIR). The surface morphology and crystallinity were studied with field emission scanning electron microscopy (FESEM), and X-ray diffraction (XRD), respectively. From the results, the obtained CMC were good water soluble with optimal DS of 0.7 to 0.8, which exhibited their potential for food industrial applications.

Biography

Lalita Narkyos has received her BSc degree in Chemistry, Chulalongkorn University (Second class with Honours). Chemistry program at Chulalongkorn University greatly developed her skills and also improved her character such as hardworking, punctual and assiduous. However, she realized the necessity of polymer industries which directly influenced economy because polymer is the main composition in various objects and also several new innovations. Therefore, she has furthered her study by studying MSc in Polymer Science at the Petroleum and Petrochemical College, Chulalongkorn University. Her research is on cellulose which is a biopolymer and is able to be used in various applications. Her research focuses on using the alternative source of cellulose which is of industrial wastes and modification of that cellulose for food application.

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