EFFECTS OF GLYCEROL SORBITOL CONCENTRATION AS PLASTICIZER IN SAGO BASED MEMBRANE

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ABSTRACT

The effect of glycerol sorbitol concentration as plasticizer in sago based membrane was investigated. Sago starch membrane was plasticized with different percentage of glycerol/sorbitol which are 0% (as a control membrane), 25/75, 50/50, and 75/25. However, the total of plasticizer and sago content were maintained at 50% on the weight basis. The objectives of this study is to develop and modify the biodegradable sago starch membrane, characterize the FTIR, swelling test and mechanical properties of the developed membrane and also to determine the effect of blending ratio of sago starch and plasticizers on the FTIR, swelling test and mechanical properties of the membrane. The pure sago membrane and sago/plasticizers with ratio of 80:20 was left for constant stirring for 30 minutes in order to make a homogeneous solution. The chemical structure of the membrane was determined by using Fourier Transform Infrared Spectroscopy (FTIR). The different spectra of the membrane characterization was obtained and FTIR also shows the membrane prepared was blended homogeneously. The mechanical properties of membranes were tested for tensile strength and percentage of elongation break. From the results, the plasticized sago starch membranes are much stronger but a little bit more brittle compared to the non-plasticized membranes. It was found that the sorbitol plasticized sago membrane have better mechanical resistance compared to glycerol plasticized sago membrane. The hydrophilicity of the plasticized membranes was also studied through the swelling tests by using water. The obtained results show that the degree of swelling increase with the increase of the glycerol in the plasticizer solution.
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