Edible Film Berbasis Glukomanan dengan Asam Sitrat sebagai *Cross-linking Agent*

Glucomannan-based Edible Film with Citric Acid as a Cross-linking Agent

Dr. Titik Budiati, S.TP., M.T., M.Sc., *and* Enny Sholichah, S.Si., M.Sc.

Cindya Putri Arisyida
Study Program of Food Engineering Technology
Majoring of Agriculture Technology
Program Studi Teknologi Rekayasa Pangan
Jurusan Teknologi Pertanian

ABSTRACT

Edible film is a thin layer used as the main packaging for food products that contain edible ingredients. The purpose of edible film is to prevent the entry of air, water vapor, and other foreign substances, in addition, edible film functions as food packaging that allows it to be consumed directly with the packaged commodity. Glucomannan flour is one of the substances that can be used to make edible films. The characteristics of edible film can be improved by adding plasticizers which are additives to help the film become more elastic, flexible, and resistant to damage easily. Besides plasticizer, crosslinking agent can also be added to edible film to increase its density and improve its physical strength and water resistance. The purpose of this study was to determine the effect of plasticizer addition and citric acid variation on the physical and chemical characteristics of edible film, and to determine the conformity of edible film characteristics with JIS standards. The research method used T-test and completely randomized design, namely the addition of glycerol and variation of citric acid addition. This research was conducted using glucomannan concentration of 0.75%. Glycerol was added as plasticizer, and citric acid variation as cross-linking agent. The variation of citric acid addition was done with three kinds, namely 0.3 ml, 0.45 ml, and 0.6 ml. The results of the characterization test showed that the addition of glycerol to edible film had a significant effect on thickness, opacity, elongation, WVTR, WVP, light transmittance, and tensile strength, but had no significant effect on water content and water uptake, and the addition of citric acid as a cross-linking agent had a significant effect on thickness, opacity, tensile strength, water uptake, and light transmittance, but had no significant effect on water content, WVTR, WVP, and elongation. The addition of citric acid has the effect of generating new functional groups, namely ester groups.

Keywords: *edible film, glucomannan, glycerol, citric acid*