Isolasi Glukomanan dari Tepung Porang (*Amorphopallus muelleri* Blume) dengan Menggunakan Etanol

(Isolation of Glucomannan from Porang Flour (Amorphopallus muelleri Blume) Using Ethanol)

Dr. Titik Budiati, S.TP., M.T., M.Sc *as chief counselor and* Nok Afifah, ST, MT. *as a member counselor*

Fitri Wulandari
Study Program of Food Engineering Technology
Majoring of Agriculture Technology
Program Studi Teknologi Rekayasa Pangan
Jurusan Teknologi Pertanian

ABSTRACT

Porang, which belongs to the Araceae family, is a type of tuber plant that has a very high glucomannan content. Commercially, the use of glucomannan is very wide, especially in the pharmaceutical industry, it is used as a filler, tablet binder, thickener, gelling agent, film former, coating materials, emulsifier, stabilizer and drug delivery system. The aims of this research are: (i) to find out the best time to achieve balance in the rate of swelling of porang flour with different variations in ethanol concentration and (ii) to determine the effect of ethanol concentration on the yield, physicochemical properties and rheology of glucomannan flour and impurity flour isolated from porang flour. The swelling rate of porang flour was tested at various ethanol concentrations (40%, 60%, 80%, 96%), stirring speed 18,000 rpm, and stirring time 0.5; 1; 1.5; 2; 2.5; 3 minutes. Isolation of glucomannan from porang flour using the same variation of ethanol concentration, flour:solvent ratio was 1:10, stirring time 2 minutes (18,000 rpm). The results of this research showed that the swelling rate of porang flour at various ethanol concentrations reached an equilibrium point in the 2nd to 2.5th minute and obtained an n value of less than 0.5, which means it followed the Fickian diffusion mechanism where the diffusion of water molecules does more work. Isolation of glucomannan from porang flour using varying concentrations of 40% ethanol was able to produced higher glucomannan levels and viscosity compared to ethanol concentrations of 60%, 80% and 96%. Varying 40% ethanol concentration resulted in a glucomannan flour yield of 63.21 ± 0.07% with a glucomannan content of 80.07 ± 0.35% and a viscosity of 9050 cP. In the rheological properties of glucomannan flour, the flow behavior followed a shear thinning pattern where the fluid viscosity decreased with increasing shear.

Keywords : *Porang, Glucomannan, Swelling, Glucomannan Isolation, Ethanol*