ABSTRACT

STUDY OF THE USE OF α-AMILASE ENZYME ON GLUCOMANNED LEVELS AND CALCIUM OXALATE PORANG GLUCOMANAN FLOUR (*Amorphopallus onchopillus*)

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Porang is one of the tubers in Indonesia which contains glucomannan and can be used as raw material for the food industry, cosmetics, biopharmaceuticals, etc. Porang contains calcium oxalate which is a compound that can cause an itchy reaction in the body. The minimum requirement for calcium oxalate content in glucomannan flour is 0.05-0.35%. The removal of starch by hydrolysis of the α-amylase enzyme will increase the glucomannan content along with a decrease in the calcium oxalate level of the resulting glucomannan flour product. This study aims to determine the effect of adding various concentrations of α-amylase enzymes and heating time on the levels of glucomannan and calcium oxalate in porang glucomannan flour. This study used 2 factors, namely various concentrations of the α-amylase enzyme (0%, 0.5%, 1%, 1.5%, and 2%/100g porang flour), and heating time (30 minutes, 60 minutes, and 90 minutes) and repeated 3 times. The glucomannan obtained was tested for glucomannan and calcium oxalate levels to obtain glucomannan flour with the best glucomannan and calcium oxalate levels. Glucomannan flour with the best treatment then chemical analysis including solubility in alcohol, water content, starch content, crude fiber content, water holding capacity, viscosity analysis, and ash content. The results showed that glucomannan levels ranged from 35.53-86.47% and calcium oxalate levels from 0.06-0.35%. Treatment with 0.5% enzyme concentration and 30 minutes of heating time obtained the best glucomannan flour with 86.47% glucomannan content, 0.06% calcium oxalate content, 9.60% moisture content, 2.60% ash content, 0 protein content .68%, water holding capacity 575.66%, viscosity 48000 Cp, starch content 0.85%, crude fiber 1.24%, pH 6.9, and alcohol solubility of 0.15%.

Keywords: *α-amylase enzyme, Amorphopallus onchopillus, calcium oxalate, glucomannan , porang*

ABSTRAK

KAJIAN PENGGUNAAN ENZIM α -AMILASE TERHADAP KADAR GLUKOMANAN DAN KALSIUM OKSALAT TEPUNG GLUKOMANAN PORANG (*Amorphopallus onchopillus)*

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Porang merupakan salah satu umbi-umbian di Indonesia yang mengandung glukomanan dan dapat dijadikan bahan baku industry pangan, kosmetik, biofarmaka, dsb. Porang mengandung kalsium oksalat yang merupakan salah satu senyawa yang dapat menyebabkan reaksi gatal pada tubuh. Syarat minimal kandungan kalsium oksalat pada tepung glukomanan adalah 0,05-0,35%. Penghilangan pati dengan cara hidrolisis enzim α-amilase akan meningkatkan kadar glukomanan bersamaan dengan turunnya kadar kalsium oksalat produk tepung glukomanan yang dihasilkan. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan berbagai konsentrasi enzim α-amilase dan lama pemanasan terhadap kadar glukomannan dan kalsium oksalat tepung glukomanan porang. Penelitian ini menggunakan 2 faktor yaitu berbagai konsentrasi enzim α-amilase (0%, 0,5%, 1%, 1,5%, dan 2%/100g tepung porang), dan lama pemanasan (30 menit, 60 menit, dan 90 menit) dan dilakukan sebanyak 3 kali ulangan. Glukomanan yang diperoleh dilakukan uji kadar glukomanan dan uji kadar kalsium oksalat untuk memperoleh tepung glukomanan dengan kadar glukomanan dan kalsium oksalat terbaik. Tepung glukomanan dengan perlakuan terbaik kemudian analisis kimianya meliputi kelarutan dalam alkohol, kadar air, kadar pati, kadar serat kasar, daya ikat air, analisis viskositas, dan kadar abu. Hasil penelitian menunjukan kadar glukomanan berkisar antara 35,53-86,47% serta kadar kalsium oksalat 0,06-0,35%. Perlakuan dengan konsentrasi enzim 0,5% dan lama pemanasan 30 menit memperoleh tepung glukomanan terbaik dengan kadar glukomanan 86,47%, kadar kalsium oksalat 0,06%, kadar air 9,60%, kadar abu 2,60%, kadar protein 0,68%, daya ikat air 575,66%, viskositas 48000 Cp, Kadar pati 0,85%, serat kasar 1,24%, pH 6,9, serta kelarutan alkohol sebesar 0,15%.

Kata Kunci : *α-amilase, Amorphpallus onchopillus*, glukomanan, kalsium oksalat, porang