

ABSTRAK

PEMBUATAN GULA TETES DARI PATI UBI JALAR UNGU SECARA HIDROLISIS MENGGUNAKAN ENZIM DAN EVAPORATOR BERTEKANAN

(Alifia Maharani Zalsabila, 2025, 51 halaman, 9 Tabel, 21 Gambar, 4 Lampiran)

Kebutuhan gula nasional yang terus meningkat belum dapat dipenuhi oleh produksi dalam negeri, sehingga diperlukan sumber gula alternatif yang lebih sehat dan berbasis komoditas lokal. Ubi jalar ungu (*Ipomoea batatas* L.) berpotensi sebagai bahan baku pembuatan gula cair karena kandungan karbohidrat, serat, vitamin, dan antosianinnya yang tinggi. Penelitian ini bertujuan untuk menentukan kondisi optimum produksi gula tetes dari pati ubi jalar ungu melalui proses hidrolisis enzimatis menggunakan enzim α -amilase dan glukoamilase dengan variasi dosis (1,2; 1,4; 1,8; dan 2 ml), serta proses evaporasi menggunakan evaporator bertekanan dengan variasi waktu (30 - 80 menit). Hasil menunjukkan bahwa volume enzim optimum adalah 1,8 ml dengan nilai *yield* tertinggi sebesar 90,90%. Semakin lama waktu evaporasi, semakin tinggi kualitas gula cair yang dihasilkan, ditandai dengan peningkatan viskositas, densitas, dan nilai °Brix, serta penurunan kadar air dan pH. Gula tetes terbaik diperoleh pada waktu evaporasi 80 menit, dengan karakteristik °Brix sebesar 75, viskositas 2067,33 cP, densitas 1,2219 g/ml, dan kadar air 12,42%, yang memenuhi standar mutu gula cair berdasarkan SNI. Penelitian ini membuktikan bahwa kombinasi hidrolisis enzimatis dan evaporator bertekanan pada pati ubi jalar ungu mampu menghasilkan gula tetes berkualitas tinggi sebagai alternatif pemanis sehat dan lokal.

Kata kunci: ubi jalar ungu, gula cair, hidrolisis enzimatis, α -amilase, glukoamilase, evaporator bertekanan, pemanis alternatif

ABSTRACT

MAKING DROP SUGAR FROM PURPLE SWEET POTATO STARCH BY HYDROLYSIS USING ENZYMES AND A PRESSURIZED EVAPORATOR

(Alifia Maharani Zalsabila, 2025, 51 Pages, 9 Tables, 21 Pictures, 4 Attachment)

*The increasing national sugar demand cannot be met by domestic production, so alternative sugar sources that are healthier and based on local commodities are needed. Purple sweet potato (*Ipomoea batatas* L.) has the potential as a raw material for making liquid sugar because of its high carbohydrate, fiber, vitamin, and anthocyanin content. This study aims to determine the optimum conditions for molasses production from purple sweet potato starch through an enzymatic hydrolysis process using α -amylase and glucoamylase enzymes with varying doses (1.2; 1.4; 1.8; and 2 ml), and an evaporation process using a pressure evaporator with varying times (30 - 80 minutes). The results showed that the optimum enzyme volume was 1.8 ml with the highest yield value of 90.90%. The longer the evaporation time, the higher the quality of the resulting liquid sugar, characterized by an increase in viscosity, density, and °Brix value, as well as a decrease in water content and pH. The best molasses was obtained at 80 minutes of evaporation time, with characteristics of °Brix of 75, viscosity of 2067.33 cP, density of 1.2219 g/ml, and water content of 12.42%, which meets the quality standards of liquid sugar based on SNI. This study proves that the combination of enzymatic hydrolysis and pressure evaporator on purple sweet potato starch is able to produce high-quality molasses as an alternative healthy and local sweetener.*

Keywords: *purple sweet potato, liquid sugar, enzymatic hydrolysis, α -amilase, glucoamilase, pressure evaporator, alternative sweetener.*