INTISARI

PENGARUH DURASI FERMENTASI HIDROLISAT JEROAN LELE DENGAN CAMPURAN ENZIM BROMELIN DAN PAPAIN TERHADAP KANDUNGAN HARA PUPUK ORGANIK CAIR

Penelitian ini bertujuan untuk mengkaji pengaruh durasi fermentasi hidrolisat jeroan lele dengan campuran enzim bromelin dan papain terhadap kandungan hara pupuk organik cair. Parameter yang diamati pada tahap *pretreatment* meliputi derajat hidrolisis, rendemen, kadar protein, air, lemak, karbohidrat, abu, dan pH. Proses fermentasi dilakukan selama 0, 3, 6, 9, 12, dan 15 hari untuk mengetahui perubahan kadar C-organik, nitrogen, fosfor, kalium, rendemen, kadar air, dan pH. Hasil *pretreatment* menunjukkan bahwa kombinasi enzim bromelin dan papain mampu menghasilkan derajat hidrolisis 88,68 ± 0,10%, rendemen 97,71 ±0,01%, kadar protein 13,74 ±0,09%, kadar abu 4,46 ± 0,06%, kadar lemak 1,21 ±0,10%, kadar karbohidrat 2,05 ±0,17%, kadar air 75 ±0,11%, dan pH 7,43 ±0,06. Lama fermentasi optimal diperoleh pada hari ke-9, serta hasil kandungan unsur hara makro (N+P+ K) pada fermentasi hari ke-0 hingga hari ke-15 yaitu, 0,58 ±0,01%; 2,31 ±0,22%; 4,78 ±0,36%; 6,41 ±0,28%; 5,55 ±0,28%; 4,42 ±0,33%. Pembuatan pupuk organik cair menggunakan kombinasi enzim papain dan bromelin selama proses fermentasi dapat meningkatkan kualitas pupuk organik cair dari limbah jeroan ikan lele serta memenuhi standar mutunya dalam persyaratan teknis minimal pupuk organik, pupuk hayati, dan pembenah tanah yang terdapat pada Keputusan Menteri Pertanian Republik Indonesia Nomor 261/KPTS/SR.310/M/4/2019 untuk kandungan unsur hara makro (N + P_2O_5 + K_2O) sebesar 2–6%.

Kata kunci: jeroan, bromelin dan papain, hidrolisis, fermentasi, POC, mutu

ABSTRACT

THE EFFECT OF THE FERMENTATION DURATION OF CATFISH OFFAL HYDROLYSATE WITH A MIXTURE OF BROMELAIN AND PAPAIN ENZYMES ON THE NUTRIENT CONTENT OF LIQUID ORGANIC FERTILIZER

This study aims to evaluate the effect of fermentation duration of mixture of bromelain and papain enzyme hydrolized catfish visceras on the nutrient content of liquid organic fertilizer. The parameters observed at the pretreatment stage included the degree of hydrolysis, yield, protein content, moisture content, fat content, carbohydrate content, ash content, and pH. The fermentation process was carried out for 0, 3, 6, 9, 12, and 15 days to determine changes in organic carbon, nitrogen, phosphorus, potassium, yield, moisture content, and pH. The pretreatment results showed that the combination of bromelain and papain enzymes was able to produce a degree of hydrolysis of 88.68 ±0.10%, yield of 97.71 ±0.01%, protein content of 13.74 ±0.09%, ash content of 4.46 ±0.06%, fat content of 1.21 ±0.10%, carbohydrate content of 2.05 ±0.17%, moisture content of 75 ±0.11%, and pH of 7.43 ±0.06. The optimal fermentation time was obtained on the 9th day, with macronutrient contents (N + P + K) from day 0 to day 15 of 0.58 ±0.01%, 2.31 ±0.22%, 4.78 ±0.36%, 6.41 ±0.28%, 5.55 ±0.28%, and 4.42 ±0.33%. Production of liquid organic fertilizer using a combination of papain and bromelain enzymes during the fermentation can improve quality of liquid organic fertilizer from catfish offal waste and compatible the standards in accordance with the minimum technical requirements of organic fertilizers, biofertilizers, and soil amendments stated in the Decree of the Minister of Agriculture of the Republic of Indonesia No. 261/KPTS/SR.310/ M/4/2019, for macro nutrient content (N + P_2O_5 + K_2O) of 2–6%.

Keywords: viscera, bromelain and papain, hydrolysis, fermentation, LOF, quality