

ABSTRACT

Jack bean (*Canavalia ensiformis* (L.) DC), an underutilized high-protein legume, is one of plant-based proteins which has low protein digestibility due to its complex plant structure and the presence of antinutrients. The objectives of this work were to examine the changes in degree of hydrolysis, free phenolic content, antioxidant activity, and phytic acid during germination as well as fermentation of jack bean. Jack bean was germinated for 72 h and in parallel, the jack bean was also fermented by *Rhizopus oligosporus* after dehulling and boiling in lactic acid solution (1% v/v) until soft. Results showed that germination and fermentation increased degree of hydrolysis up to 24.32% and 23.22%, higher than the control, which was 13.78%. Free phenolic content was 2.95 mGAE/g and increased up to 5.30 mGAE/g in germination and 5.39 mGAE/g in fermentation. The DPPH radical-scavenging also increased significantly, which control showed 31.60%, 50.93% in germination and 67.95% in fermentation. Additionally, phytic acid level was decreased in germination and in fermentation. Our findings show that bioprocessing, in this case germination and fermentation, improves the nutrition properties of jack bean as well as its quality as a plant-based protein source.

INTISARI

Koro pedang (*Canavalia ensiformis* (L.) DC) merupakan salah satu legum berprotein tinggi yang umumnya memiliki pencernaan protein yang rendah yang disebabkan oleh struktur jaringan tanaman yang kompleks serta keberadaan senyawa antigizi. Penelitian ini bertujuan untuk menguji derajat hidrolisis, fenolik bebas, aktivitas antioksidan, dan asam fitat dari koro pedang germinasi dan fermentasi secara paralel. Hasil penelitian ini menunjukkan bahwa germinasi dan fermentasi meningkatkan tingkat hidrolisis protein pada kacang koro pedang hingga 24,32% dan 23,22%. Selain itu, kandungan fenolik bebas dan aktivitas antioksidan pada kacang koro pedang yang diberi perlakuan mengalami peningkatan, sementara kadar asam fitat mengalami penurunan. Temuan ini menunjukkan bahwa bioproses, khususnya perkecambahan dan fermentasi, mampu meningkatkan peningkatan kualitas pada faktor gizi koro pedang sebagai pangan sumber protein.