INTISARI

Peningkatan penderita hipertensi mendorong pengembangan pangan fungsional seperti tepung tempe. Adanya produk tempe *mix grains* kedelai dan koro pedang putih yang mengandung peptida bioaktif sebagai antihipertensi dan antioksidan mendorong dikembangkannya tepung tempe *mix grains* yang dapat digunakan sebagai pangan fungsional. Tujuan penelitian mengetahui pengaruh suhu dan waktu pengeringan terhadap kadar air, karakteristik fungsional (protein terlarut,derajat hidrolisis, aktivitas *Angiotensin Converting Enzyme* (ACE) *Inhibitor*, aktivitas antioksidan, dantotal fenolik), profil asam amino dan kadar senyawa isoflavon (daidzein dan genistein) tepung tempe *mix grains* kedelai dan koro pedang putih (1:1 b/b) dengan fermentasi 48 jam menggunakan kemasan daun pisang. Rancangan percobaan yaitu Rancangan Acak Kelompok Faktorial dengan 2 faktor yaitu suhu (50 dan 70 ^{o}C) dan waktu pengeringan (6; 8; dan 10 jam).

Hasil analisis menunjukkan tepung tempe *mix grains* kedelai dan koro pedang putih (1:1 b/b) dengan perlakuan pengeringan suhu 70 ^{o}C selama 10 jam memiliki kadar air terendah (4,18%) dan protein terlarut tertinggi (28,49 mg/g bk); pengeringan suhu 50 ^{o}C selama 6 jam memiliki derajat hidrolisis fermentasi tertinggi (15,06%); dan pengeringan suhu 70 ^{o}C selama 8 jam memiliki aktivitas ACE-*Inhibitor* tertinggi (86,04%), aktivitas antioksidan tertinggi (55,34% RSA (*Radical Scavenging Activity*)); dan total fenolik tertinggi (3,98 mg GAE (*Gallic Acid Equivalent*)/g bk). Sampel tepung tempe *mix grains* dengan kadar air dan karateristik fungsional terbaik (kadar air rendah dan karakteristik fungsional tinggi) yaitu tepung tempe *mix grains* dengan suhu pengeringan 70 ^{o}C selama 8 jam, mengandung asam amino prekursor peptida ACE-*Inhibitor* yaitu Asam glutamat (2,74% bk); Asam aspartat (2,57% bk); Leusin (2,25% bk); Isoleusin (1,29% bk); Arginin (1,47% bk), Valin (1,43% bk), Fenilalanin (1,37% bk), dan mengandung asam amino prekursor peptida antioksidan yaitu Histidin (1,12% bk), Tirosin (0,75% bk), dan Triptofan (0.04% bk) serta mengandung senyawa isoflavon yaitu daidzein (0,03 mg/g bk) dan genistein (0,37 mg/g bk). Berdasarkan penelitian ini, suhu (50 dan 70 ^{o}C) dan waktu pengeringan (6; 8; dan 10 jam) berpengaruh nyata (p<0,05) terhadap penurunan kadar air dan peningkatan karakteristik fungsional tepung tempe *mix grains*. Tepung tempe *mix grains* terbaik mengandung asam amino sebagai prekursor ACE-*Inhibitor*, antioksidan dan mengandung senyawa isoflavon (daidzein dan genistein).

Kata Kunci : *Angiotensin Converting Enzyme Inhibitor;* Antioksidan; Koro pedang putih; *Mix grains*; Tepung tempe.

ABSTRACT

Increasing hypertension sufferers encourage the development of functional foods such as tempeh flour. The presence of soybean and jackbean mix grains tempeh contain bioactive peptides as antihypertensive and antioxidant agents encourage the development of mix grains tempeh flour that can be used as a functional food. The research aims to determine the effect of temperature and drying time on moisture content, functional characteristics (soluble protein, degree of hydrolysis, activity of Angiotensin-Converting Enzyme (ACE) Inhibitor, antioxidant activity, and total phenolic), amino acid profile and content of isoflavone compounds (daidzein and genistein) of soybean and jackbean mix grains tempeh flour (1:1 b/b) with 48 hours fermentation using banana leaf packaging. The experimental design was a factorial randomized block design with 2 factors temperatures (50 and 70 ^{o}C) and drying times (6; 8; and 10 hours).

The results of analysis showed that soybean and jackbean mix grains tempeh flour (1: 1 b /b) with drying temperature treatment of 70 ^{o}C for 10 hours had the lowest moisture content (4.18%) and the highest soluble protein (28.49 mg/g db); drying temperature treatment of 50 ^{o}C for 6 hours had the highest degree of fermentation hydrolysis (15.06%); drying temperature treatment of 70 ^{o}C for 8 hours had the highest ACE-Inhibitor activity (86.04%), the highest antioxidant activity (55.34% RSA (Radical Scavenging Activity)), and the highest phenolic total (3.98 mg GAE (Gallic Acid Equivalent) /g db). Sample of mix grains tempeh flour with the best moisture content and functional characteristics (low moisture content and high functional characteristics) was mix grains tempeh flour with a drying temperature treatment of 70 ^{o}C for 8 hours that contained amino acids as ACE-Inhibitor peptides precursor were Glutamic Acid (2.74% db); Aspartic acid (2.57% db); Leucine (2.25% db); Isoleucine (1.29% db), Arginine (1.47% db), Valine (1.43% db), Phenylalanine (1.37% db), and amino acids as antioxidant peptides precursor were Histidine (1.12% db), tyrosine (0.75% db) and tryptophan (0.04% db) and also contained daidzein (0.03 mg/g db) and genistein (0.37 mg /g db) isoflavones. Based on this study, temperatures (50 and 70 ^{o}C) and drying times (6; 8; and 10 hours) had a significant effect ($p < 0.05$) on decreasing moisture content and increasing the functional characteristics of mix grains tempeh flour. The best mix grains tempeh flour contained amino acids as ACE-Inhibitor peptides precursor, antioxidant peptides precursor and contains isoflavone compounds (daidzein and genistein).

Keywords: Angiotensin-Converting Enzyme Inhibitor; Antioxidant; Jackbean; Mix grains; Tempeh flour.