

## DAFTAR PUSTAKA

- [AOAC]. 2005. AOAC Official Methods of Analysis. Assoc. Off. Agric. Chem. Washington D.C., 15th: 136-138.
- Ahn, Joomi, Cao, Min-Jie, dan Engen, J.R. (2013). Assessing the reproducibility and specificity of pepsin and other aspartic protease. *Biochim Biophys Acta*, 1834, 1222–1229.
- Akande, K.E. dan Fabiyi, E.F. (2010). Effect of processing methods on some antinutritional factors in legume seeds for poultry feeding. *International Journal of Poultry Science*, 9, 996–1001.
- Akimov, M. dan Bezuglov, V. (2012). Methods of protein digestive stability assay – state of the art. *New Advances in the Basic and Clinical Gastroenterology*, 211–234.
- Akıllıoğlu, H.G. dan Karakaya, S. (2009). Effects of heat treatment and in vitro digestion on the Angiotensin converting enzyme inhibitory activity of some legume species. *European Food Research and Technology*, 229, 915–921.
- Almatsier A. 2004. Prinsip Dasar Ilmu Gizi. Jakarta. Gramedia Pustaka Utama
- Aluko, R.E. (2015a). Structure and function of plant protein-derived antihypertensive peptides. *Current Opinion in Food Science*, 4, 44–50.
- Aluko, R.E. (2015b). Antihypertensive peptides from food proteins. *Annual Review of Food Science and Technology*, 6, 235–262.
- Amenta, F., Buccioni, M., Ben, D.D., Lambertucci, C., Navia, A.M., Ngouadjeu Ngnintedem, M.A., Ricciutelli, M., Spinaci, A., Volpini, R., dan Marucci, G. (2018). Ex-vivo absorption study of lysine R-lipoate salt, a new pharmaceutical form of R-ALA. *European Journal of Pharmaceutical Sciences*, 118, 200–207.
- Andriamihaja, M., Guillot, A., Svendsen, A., Hagedorn, J., Rakotondratohanina, S., Tomé, D. dan Blachier, F. (2013). Comparative efficiency of microbial enzyme preparations versus pancreatin for in vitro alimentary protein digestion. *Amino Acids*, 44, 563–572.
- Andriati, N., Anggrahini, S., Setyaningsih, W., Sofiana, I., Pusparasi, D.A., dan Mossberg, F. (2018). Physicochemical characterization of jack bean (*Canavalia ensiformis*) tempeh. *Food Research*, 2, 481–485.
- Antunes, F., Andrade, F., Ferreira, D., Nielsen, H.M. dan Sarmiento, B. (2013). Models to predict intestinal absorption of therapeutic peptides and proteins. *Current drug metabolism*, 14, 4–20.

- Apsari, S. (2019). Aktivitas penghambatan angiotensin converting enzyme (ACE) dari peptida inhibitor ACE yang dihasilkan selama fermentasi tempe gude (*Cajanus cajan*). Tesis. Program Studi Ilmu dan Teknologi Pangan. Fakultas Teknologi Pertanian. Universitas Gadjah Mada.
- Arianto. A., Nohong, dan Nurhaedah (2014). Analisis kandungan asam sianida pada koro pedang dengan menggunakan lama perendaman NaCl yang berbeda. *Jurnal Galung Tropika*, 3, 186-191
- Azizah. (2007). Formulasi Laru Tempe Terstandar Dari Isolat Usar Daun Waru. Skripsi. Fakultas Teknologi Pertanian. Institut Pertanian Bogor.
- Banga, A.K. (2015). Therapeutic peptides and proteins: Formulation, processing, and delivery systems, third edition. Therapeutic Peptides and Proteins: Formulation, Processing, and Delivery Systems, Third Edition. Boca Raton. CRC press.
- Bejjani, S. dan Wu, J. (2013). Transport of IRW, an ovotransferrin-derived antihypertensive peptide, in human intestinal epithelial caco-2 cells. *Journal of Agricultural and Food Chemistry*, 61, 1487–1492.
- Benkorp-Schnurch, A. (2000). Chitosan and its derivatives : potential excipients for peroral peptide delivery systems. *International journal of pharmaceutics*, 194, 1083–1088.
- Bhandari, D., Rafiq, S., Gat, Y., Gat, P., Waghmare, R., dan Kumar, V. (2019). A Review on Bioactive Peptides: Physiological Functions, Bioavailability and Safety. *International Journal of Peptide Research and Therapeutics*, 0, 0.
- Booker. H. M., Umaharan, P., dan McDavid, C. R. (2005). Effect of Cowpea severe mosaic virus on crop growth characteristics and yield of cowpea. *Plant Disease*, 89(5), 515–520. doi: 10.1094/PD-89-0515.
- Boschin, G., Scigliuolo, G.M., Resta, D., dan Arnoldi, A. (2014). ACE-inhibitory activity of enzymatic protein hydrolysates from lupin and other legumes. *Food Chemistry*, 145, 34–40.
- Bujang, A. dan Taib, N.A. (2014). Changes on amino acids content in soybean, garbanzo bean and groundnut during pre-treatments and tempe making. *Sains Malaysiana*, 43, 551–557.
- Çabuk, B., Nosworthy, M.G., Stone, A.K., Korber, D.R., Tanaka, T., House, J.D. dan Nickerson, M.T. (2018). Effect of fermentation on the protein digestibility and levels of non-nutritive compounds of pea protein concentrate. *Food Technology and Biotechnology*, 56, 257–264.
- Capriotti, A.L., Caruso, G., Cavaliere, C., Samperi, R., Ventura, S., Zenezini Chiozzi, R., dan Laganà, A. (2015). Identification of potential bioactive peptides generated by simulated gastrointestinal digestion of soybean seeds

- and soy milk proteins. *Journal of Food Composition and Analysis*, 44, 205–213.
- Canti, Meda. (2014). Karakteristik isolat protein koro pedang putih (*Canavalia ensiformis* L.) dan pemanfaatannya sebagai binder pada sosis ayam. Tesis. Program Studi Ilmu dan Teknologi Pangan. Fakultas Teknologi Pertanian. Universitas Gadjah Mada.
- Chakrabarti, S., Guha, S., dan Majumder, K. (2018). Food-derived bioactive peptides in human health: challenges and opportunities. *Nutrients*, 10, 1738.
- Chakrabarti, S. dan Wu, J. (2015). Milk-derived tripeptides IPP ( Ile-Pro-Pro ) and VPP (Val-Pro-Pro ) promote adipocyte differentiation and inhibit inflammation in 3T3-F442A Cells, 1–15.
- Chel-Guerrero, L., Domínguez-Magaña, M., Martínez-Ayala, A., Dávila-Ortiz, G., dan Betancur-Ancona, D. (2012). Lima bean protein hydrolysates with ACE-I inhibitory activity. *Food and Nutrition Sciences*, 03, 511–521.
- Chen HC, Spilimbergo SS, Evans KFK, Mardini S. (2009). Jejenum flap. flaps and reconstructive surgery. *Flaps and Reconstructive Surgery*, 225-247
- Chen Y-Y, Jiang C-M, Wang S-H, Shih M-K, Yun Hu H, dan Liao H-F.(2012). The anti-leukemic lectins from *Canavalia ensiformis* induce macrophage differentiation through cross-regulation between monocytes and lymphocytes. *Journal of Medicinal Plants Research*, 6, 534–543.
- Cheung, H., Wang, F., dan Ondetti, M. a. (1980). Binding of peptide substrates and inhibitors. *Journal of Biological Chemistry*, 255, 401–405.
- Church, F.C., Swaisgood, H.E., Porter, D.H. dan Cantignani, G.L. (1983). Spectrophotometric assay using o-phthaldialdehyde for determination of proteolysis in milk and isolated milk proteins. *Journal of Dairy Science*, 66, 1219–1227.
- Ciabotti, S., Silva, A.C.B.B., Juhaz, A.C.P., Mengonca, C.D., Tavano, O., Mandarino, J.M.G., dan Goncalves, C.A.A. (2016). Chemical composition , protein profile , and isoflavones content in soybean genotypes with different seed coat colors. *International Food Research Journal*, 23, 621–629.
- Cui, C., Zhao, M., Yuan, B., Zhang, Y., dan Ren, J. (2013). Effect of pH and pepsin limited hydrolysis on the structure and functional properties of soybean protein hydrolysates. *Journal of Food Science*, 78, 1871-1877
- Cupp-Enyard, C. (2008). Sigma's non-specific protease activity assay - casein as a substrate. *Journal of Visualized Experiments*, 4–5.
- Cushman. D.W, H.S.C. (1971). Spectrophotometric assay and properties of the Angiotensin Converting Enzymes from rabbit lung, 20, 1637–1648.

- Daliri, E.B., Lee, B.H. , dan Kim, B.P.S. (2018). Antihypertensive peptides from whey proteins fermented by lactic acid bacteria. *Food Science and Biotechnology*, 27, 1781–1789.
- Darmawati, S., Santosa, B. dan Indonesia, D. (2018). Aktivitas hemaglutinasi protein pilli salmonella typhi terhadap eritrosit manusia dan domba. *Prosiding Seminar Nasional Mahasiswa Unimus*, 1, 86–90.
- Daskaya-Dikmen, C., Yucetepe, A., Karbancioglu-Guler, F., Daskaya, H. dan Ozcelik, B. (2017). Angiotensin-I-converting enzyme (ACE)-inhibitory peptides from plants. *Nutrients*, 9, 1–19.
- Donowitz, M., Singh, S., Salahuddin, F.F., Hogema, B.M., Chen, Y., Gucek, M., Cole, R.N., Zachos, N.C., Kovbasnjuk, O., Lapierre, L.A., Broere, N., Goldenring, J., Dejonge, H., dan Li, X. (2007). Proteome of murine jejunal brush border membrane vesicles. *Journal of Proteome Research*, 6, 4068–4079.
- Doss, A., Pugalenth, M., dan Vadivel, V. (2011). Nutritional evaluation of wild jack bean (*Canavalia ensiformis*) seeds in different locations of south India. *World Applied Sciences Journal*.
- Drulyte, D dan Orlie, V. (2019). The effect of processing on digestion of legume proteins. *Foods*, 8, 224-233
- Eckert, E., Han, J., Swallow, K., Tian, Z., Jarpa-Parra, M., dan Chen, L. (2019). Effects of enzymatic hydrolysis and ultrafiltration on physicochemical and functional properties of faba bean protein. *Cereal Chemistry*, 96, 725–741.
- Egounlety, M. (2003). Effect of soaking, dehulling, cooking and fermentation with *Rhizopus oligosporus*, 56, 249–254.
- Elegado, F.B. dan Fujio, Y. (1993). Growth of *Rhizopus* strains on soybean and their protease formation, 37, 315–324.
- Escudero, E., Mora, L., dan Toldrá, F. (2014). Stability of ACE inhibitory ham peptides against heat treatment and in vitro digestion. *Food Chemistry*, 161, 305–311.
- Evnin, L.B., Vasquez, J.R., dan Craik, C.S. (1990). Substrate specificity of trypsin investigated by using a genetic selection. *Biochemistry*, 87, 6659–6663.
- Fadli, I. (2014). Aktivitas inhibisi enzim peubah angiotensin pada hidrolisat tempe koro pedang (*Canavalia ensiformis*) secara in vitro. Skripsi. Departemen Biokimia. Fakultas Matematika dan Ilmu Pengetahuan Alam. Institut Pertanian Bogor.
- Fan, H., Liao, W., dan Wu, J. (2019). Molecular interactions, bioavailability, and cellular mechanisms of angiotensin-converting enzyme inhibitory peptides.

*Journal of Food Biochemistry*, 43, 1–8.

- Fernández-Musoles, R., Salom, J.B., Castelló-Ruiz, M., Contreras, M. del M., Recio, I., dan Manzanares, P. (2013). Bioavailability of antihypertensive lactoferricin B-derived peptides: Transepithelial transport and resistance to intestinal and plasma peptidases. *International Dairy Journal*, 32, 169–174.
- Fitriah, N.M. (2013). Aktivitas hemagglutinin olahan koro pedang. Departemen Ilmu dan Teknologi Pangan. Fakultas Teknologi Pertanian. Institut Pertanian Bogor.
- FitzGerald, R.J., Murray, B.A., dan Walsh, D.J. (2004). The emerging role of dairy proteins and bioactive peptides in nutrition and health: Hypotensive peptides from milk proteins. *Journal of Nutrition*, 134, 974–979.
- Fortuna, D., Rahimsyah, A., dan Puspitasri, Y. (2015). degradation of acid cyanide poison in rubber seed (*Hevea brasiliensis*) after treatment with rice husk ash. *International Journal on Advanced Science, Engineering and Information Technology*, 5, 291–293.
- Franzke, C.J., Pühr, L.F., dan Hume, A.N. (1939). A Study of sorghum with reference to the content of HCN. *Tech. bull s. dak. agric. exp. stn.*
- Freeman, H.J., dan Thomson, A.B.R. (2005). First principles of gastroenterology. *The Basis of Disease and an Approach to Managemnt*, 177–1778.
- Fujita, H., Yokohama, K., dan Yoshikawa, M. (2000). Classification and antihypertensive activity of angiotensin i-converting enzyme inhibitory peptides derived from food proteins. *Journal of Food Science*, 65, 564–569.
- Fujita, H. dan Yoshikawa, M. (1999). LKPNM: A prodrug-type ACE-inhibitory peptide derived from fish protein. *Immunopharmacology*, 44, 123–127.
- Gallego, M., Grootaert, C., Mora, L., Aristoy, M.C., Camp, J. Van, dan Toldrá, F. (2016). Transepithelial transport of dry-cured ham peptides with ACE inhibitory activity through a Caco-cell monolayer. *Journal of Functional Foods*, 21, 388–395.
- Ganapathy, V. (2012). Chapter 59 - Protein Digestion and Absorption. In: *Physiology of the Gastrointestinal Tract, Two Volume Set (Fifth Edition)*.
- Garcia-Mora, P., Frias, J., Peñas, E., Zieliński, H., Giménez-Bastida, J.A., Wiczowski, W., Zielińska, D., dan Martínez-Villaluenga, C. (2015). Simultaneous release of peptides and phenolics with antioxidant, ACE-inhibitory and anti-inflammatory activities from pinto bean (*Phaseolus vulgaris* L. var. pinto) proteins by subtilisins. *Journal of Functional Foods*, 18, 319–332.
- García, M.C., Puchalska, P., Esteve, C., dan Marina, M.L. (2013). Vegetable foods: A cheap source of proteins and peptides with antihypertensive,

- antioxidant, and other less occurrence bioactivities. *Talanta*, 106, 328–349.
- Garcia, M.N., Flowers, C., dan Cook, J.D. (1996). The Caco-2 cell culture system can be used as a model to study food iron availability. *The Journal of Nutrition*, 126, 251–258.
- Gibbs, B.F., Zougman, A., Masse, R., dan Mulligan, C. (2004). Production and characterization of bioactive peptides from soy hydrolysate and soy-fermented food. *Food Research International*, 37, 123–131.
- Girgih, A.T., Mailer, R.J., He, R., Blanchard, C.L., Malomo, S.A., Agboola, S.O., Aluko, R.E., Alashi, A.M., dan Mawson, A.J. (2013). Blood pressure lowering effects of Australian canola protein hydrolysates in spontaneously hypertensive rats. *Food Research International*, 55, 281–287.
- Gleeson, J.P., Brayden, D.J., dan Ryan, S.M. (2017). Evaluation of PepT1 transport of food-derived antihypertensive peptides, Ile-Pro-Pro and Leu-Lys-Pro using in vitro, ex vivo and in vivo transport models. *European Journal of Pharmaceutics and Biopharmaceutics*, 115, 276–284.
- Gleeson, J.P., Heade, J., Ryan, S.M., dan Brayden, D.J. (2015). Stability, toxicity and intestinal permeation enhancement of two food-derived antihypertensive tripeptides, Ile-Pro-Pro and Leu-Lys-Pro. *Peptides*, 71, 1–7.
- Grootaert, C., Jacobs, G., Matthijs, B., Pitart, J., Baggerman, G., Possemiers, S., Saag, H. Van der, Smagghe, G., Camp, J. Van, dan Voorspoels, S. (2017). Quantification of egg ovalbumin hydrolysate-derived anti-hypertensive peptides in an in vitro model combining luminal digestion with intestinal Caco-2 cell transport. *Food Research International*, 99, 531–541.
- Gu, Y. dan Wu, J. (2013). LC-MS/MS coupled with QSAR modeling in characterising of angiotensin I-converting enzyme inhibitory peptides from soybean proteins. *Food Chemistry*, 141, 2682–2690.
- Gupta, S., Kapoor, P., Chaudhary, K., Gautam, A., Kumar, R., dan Raghava, G.P.S. (2013). In silico approach for predicting toxicity of peptides and proteins. *PLoS ONE*, 8.
- Haliza, W., Purwani, E.Y., dan Ridwan, T. (2007). Pemanfaatan kacang-kacangan lokal sebagai substitusi bahan baku tempe dan tahu. *Buletin Teknologi Pascapanen Pertanian*, 3, 1–8.
- Handayani, M.T. (2019). Pengaruh waktu fermentasi pada produksi peptida penghambat ACE dari tempe koro kratok. Tesis. Program Studi Ilmu dan Teknologi Pangan. Fakultas Teknologi Pertanian. Universitas Gadjah Mada
- Handoyo, T. dan Morita, N. (2006). Structural and functional properties of fermented soybean (Tempeh) by using *Rhizopus oligosporus*. *International Journal of Food Properties*, 9, 347–355.



- Hang, M. dan Zhao, X.H. (2012). Fermentation time and ethanol/water-based solvent system impacted in vitro ACE-inhibitory activity of the extract of Mao-tofu fermented by *Mucor* spp. *CYTA - Journal of Food*.
- Harvian, Z.A. (2019). In silico proteolysis and molecular docking for the evaluation jackbean (*Canavalia ensiformis*) protein as precursors of bioactive peptides with dual dipeptidyl peptidase-4 and angiotensin-I-converting enzyme inhibitors. Tesis. Program Studi Ilmu dan Teknologi Pangan. Fakultas Teknologi Pertanian. Universitas Gadjah Mada
- Hennig, Michael, Johan N. Jansonius, Anke C.Terwisscha Van Scheltinga, Bauke W. Dijkstra, dan Bernhard Schlesier. (1995). Crystal Structure of Concanavalin B at 1.65 Å Resolution. An 'Inactivated' Chitinase from Seeds of *Canavalia Ensiformis*. *Journal of Molecular Biology*, 254, 237–246.
- Hernández-Ledesma, B., Mar Contreras, M. Del, dan Recio, I. (2011). Antihypertensive peptides: Production, bioavailability and incorporation into foods. *Advances in Colloid and Interface Science*, 165, 23–35.
- Hiroyuki, F., Tomohide, Y., dan Kazunori, O. (2001). Efficacy and safety of Touchi extract, an  $\alpha$ -glucosidase inhibitor derived from fermented soybeans, in non-insulin-dependent diabetic mellitus. *Journal of Nutritional Biochemistry*, 12, 351–356.
- Hui, Y.H. (2004). Handbook of Food Science, Technology, and Engineering Vol.1. CRC Press, Taylor & Francis Group. Boca Raton
- Hur, S.J., Lim, B.O., Decker, E.A., dan McClements, D.J. (2011). In vitro human digestion models for food applications. *Food Chemistry*, 125, 1–12.
- Ibe, S., Yoshida, K., Kumada, K., Tsurushiin, S., Furusho, T., dan Otobe, K. (2009). Antihypertensive effects of natto, a traditional japanese fermented food, in spontaneously hypertensive rats. *Food Sci. Technol. Res.*
- Iwaniak, A. dan Dziuba, J. (2009). Animal and plant proteins as precursors of peptides with ace inhibitory activity -an in silico strategy of protein evaluation. *Food Technology and Biotechnology*, 47, 441–449.
- Iwaniak, A., Minkiewicz, P. dan Darewicz, M. (2014). Food-originating ACE inhibitors, including antihypertensive peptides, as preventive food components in blood pressure reduction. *Comprehensive Reviews in Food Science and Food Safety*, 13, 114–134.
- Jahanbani, R., Ghaffari, M., Vahdati, K., Salami, M., Khalesi, M., Sheibani, N. , dan Moosavi-Movahedi, A.A. (2017). Kinetics study of protein hydrolysis and inhibition of angiotensin converting enzyme by peptides hydrolysate extracted from walnut. *International Journal of Peptide Research and Therapeutics*, 0, 1–9.

- Jakubczyk, A., Karaś, M., Baraniak, B., dan Pietrzak, M. (2013). The impact of fermentation and in vitro digestion on formation angiotensin converting enzyme (ACE) inhibitory peptides from pea proteins. *Food Chemistry*, 141, 3774–3780.
- Jang, J.H., Jeong, S.C., Kim, J.H., Lee, Y.H., Ju, Y.C. , dan Lee, J.S. (2011). Characterisation of a new antihypertensive angiotensin I-converting enzyme inhibitory peptide from *Pleurotus cornucopiae*. *Food Chemistry*, 127, 412–418.
- Jao, C.-L., Huang, S.-L., dan Hsu, K.-C. (2012). Angiotensin I-converting enzyme inhibitory peptides: Inhibition mode, bioavailability, and antihypertensive effects. *BioMedicine*, 2, 130–136.
- Jia, J., Ma, H., Zhao, W., Wang, Z., Tian, W., Luo, L., dan He, R. (2010). The use of ultrasound for enzymatic preparation of ACE-inhibitory peptides from wheat germ protein. *Food Chemistry*, 119, 336–342.
- Kadam, S.S. dan Salunkhe, D.K. (1985). Nutritional composition, processing, and utilization of horse gram and moth bean. *C R C Critical Reviews in Food Science and Nutrition*.
- Karmani, M., Djoko, S. dan Hermana, H. (1996). Aktivitas enzim hidrolis kapang *Rhizopus* sp pada proses fermentasi tempe. *The Journal of Nutrition and Food Research*.
- Kasmidjo R. B. (1990). Tempe : Mikrobiologi dan kimia pengolahan serta pemanfaatannya. PAU Pangan dan Gizi UGM. Yogyakarta.
- Kasno, A. (2016). Prospek aneka kacang potensial: koro pedang sebagai pengganti kedelai. *Balitkabi, Kementerian Pertanian RI*.
- Kranthi, V.S., Rao, D.M., dan Jaganmohan, P. (2012). Protease production by *Rhizopus stolonifer* through solid state fermentation. *Central European Journal of Experimental Biology*, 1, 113–117.
- Kuba, M.K., Tanaka, K.T., Tawata, S.T., Takeda, Y.T., dan Yasuda, M.Y. (2003). Angiotensin I-Converting enzyme inhibitory peptides isolated from tofuyo fermented soybean food. *Biosci.Biotechnol.Biochem*, 67, 1278–1283.
- Laemmli. (1970). Laemmli buffer background purpose of the Laemmli buffer. *Nature*.
- Lee, D.H., Kim, J.H., Park, J.S., Choi, Y.J., dan Lee, J.S. (2004). Isolation and characterization of a novel angiotensin I-converting enzyme inhibitory peptide derived from the edible mushroom *Tricholoma giganteum*. *Peptides*, 25, 621–627.
- Lee, J.O., Park, M.H., Choi, Y.H., Ha, Y.L., dan Ryu, C.H. (2007). New



- fermentation technique for complete digestion of soybean protein. *Journal of Microbiology and Biotechnology*, 17, 1904–1907.
- Lee, S.Y. dan Hur, S.J. (2017). Antihypertensive peptides from animal products, marine organisms, and plants. *Food Chemistry*, 228, 506–517.
- Lehninger (2010). Dasar-dasar biokimia jilid I. Terjemahan oleh Maggy Thenawijaya. Jakarta.Erlangga.
- Li, F.J., Yin, L.J., Cheng, Y.Q., Saito, M., Yamaki, K., dan Li, L. Te. (2010). Angiotensin I-converting enzyme inhibitory activities of extracts from commercial Chinese style fermented soypaste. *Japan Agricultural Research Quarterly*, 44, 167–172.
- Li, G.H., Liu, H., Shi, Y.H., dan Le, G.W. (2005). Direct spectrophotometric measurement of angiotensin I-converting enzyme inhibitory activity for screening bioactive peptides. *Journal of Pharmaceutical and Biomedical Analysis*, 37, 219–224.
- Liener. (1976). Legume Toxins in Relation To Protein Digestibility-a Review. *Journal of Food Science*, 41, 1076–1081.
- Lima, J.A.A., Nascimento, A.K.Q. do, Silva, A.K.F. Da, dan Aragão, M. do L. (2012). Biological stability of a strain of Cowpea severe mosaic virus over 20 years. *Revista Ciencia Agronomica*, 43, 105–111.
- Lin, H. dan Alashi, A.M. (2017). Antihypertensive properties of tilapia (*Oreochromis spp.*) frame and skin enzymatic protein hydrolysates. *Food & Nutrition Research*, 61, 1–11.
- Liu, M., Du, Mi., Zhang, Y., Xu, W., Wang, C., Song, W., Jiang, L. , dan Du, M. (2013). Purification and identification of an ACE-inhibitory peptide from walnut protein hydrolysate. *Journal of Agricultural and Food Chemistry*, 61, 4097–4100.
- Luthfi, A., Wijaya, A., Murwono, I.R.P.D., Kimia, J.T., Teknik, F., Diponegoro, U., Sudharto, J.P, dan Fax, T. (2012). Penghilangan racun asam sianida (HCN) dalam umbi gadung dengan menggunakan bahan penyerap abu. *Jurnal Teknologi Kimia dan Industri*, 1, 14–20.
- Ma, F.-F., Wang, H., Wei, C.-K., Thakur, K., Wei, Z.-J, dan Jiang, L. (2019). Three novel ACE inhibitory peptides isolated from ginkgo biloba seeds: purification, inhibitory kinetic and mechanism. *Frontiers in Pharmacology*, 9, 1–11.
- Ma, W., Tang, C. dan Lai, L. (2005). Specificity of trypsin and chymotrypsin: Loop-motion-controlled dynamic correlation as a determinant. *Biophysical Journal*, 89, 1183–1193.
- Mahdi, A.K. Al. (2016). Karakteristik fisik, kimia dan organoleptik koro kratok

putih (*Phaseolus lunatus*) sebagai pensubstitusi tempe kedelai. Skripsi. Jurusan Teknologi Hasil Pertanian. Fakultas Teknologi Pertanian. Universitas Jember.

- Marndi, R. (2012). Isolation and characterization of concanavalin A from the seeds of *Canavalia ensiformis*. Departement of Life Science , National Institute of Technology, India.
- Matthews, D.M. dan Adibi, S.A. (1976). Peptide Absorption. *Gastroenterology*, 71, 151–161.
- McConnell, R.E., Benesh, A.E., Mao, S., Tabb, D.L., dan Tyska, M.J. (2011). Proteomic analysis of the enterocyte brush border. *American Journal of Physiology-Gastrointestinal and Liver Physiology*, 300, G914–G926.
- Miguel, M., Dávalos, A., Manso, M.A., La Peña, G. De, Lasunción, M.A., dan López-Fandiño, R. (2008). Transepithelial transport across Caco-2 cell monolayers of antihypertensive egg-derived peptides. PepT1-mediated flux of Tyr-Pro-Ile. *Molecular Nutrition and Food Research*, 52, 1507–1513.
- Minekus, M., Alming, M., Alvito, P., Ballance, S., Bohn, T., Bourlieu, C., Carrière, F., Boutrou, R., Corredig, M., Dupont, D., Dufour, C., Egger, L., Golding, M., Karakaya, S., Kirkhus, B., Feunteun, S. Le, Lesmes, U., Macierzanka, A., Mackie, A., Marze, S., McClements, D.J., Ménard, O., Recio, I., Santos, C.N., Singh, R.P., Vegarud, G.E., Wickham, M.S.J., Weitschies, W., dan Brodkorb, A. (2014). A standardised static *in vitro* digestion method suitable for food – an international consensus. *Food Funct.*, 5, 1113–1124.
- Miner-Williams, W.M., Stevens, B.R., dan Moughan, P.J. (2014). Are intact peptides absorbed from the healthy gut in the adult human? *Nutrition Research Reviews*, 27, 308–329.
- Mitra, N., Srinivas, V.R., Ramya, T.N.C., Ahmad, N., Reddy, G.B. , dan Surolia, A. (2002). Conformational stability of legume lectins reflect their different modes of quaternary association: Solvent denaturation studies on concanavalin A and winged bean acidic agglutinin. *Biochemistry*, 41, 9256–9263.
- M. J. L. Kik , J. M. Rojer , J. M. V. M. Mouwen , J. F. J. G. Koninkx , J. E. van Dijk, dan M. H. van der Hage (1989) The interaction between plant lectins and the small intestinal epithelium: A primary cause of intestinal disturbance, *Veterinary Quarterly*, 11, 108-115
- Moayedi, A., Mora, L., Aristoy, M.C., Hashemi, M., Safari, M., dan Toldrá, F. (2017). ACE-Inhibitory and antioxidant activities of peptide fragments obtained from tomato processing by-products fermented using *Bacillus subtilis*: effect of amino acid composition and peptides molecular mass distribution. *Applied Biochemistry and Biotechnology*, 181, 48–64.

- Mulsatrio, A.F.(2018). Pengaruh waktu perebusan terhadap sifat kima fisik dan sensoris minuman sari koro pedang putih. Skripsi. Fakultas Teknologi Pertanian. Universitas Gadjah Mada.
- Mursyid, Astawan M, Muchtadi D, Wresdiyati T, Widowati S, dan Bintari SH .(2014). Evaluasi nilai gizi protein tepung tempe yang terbuat dari varietas kedelai impor. *Jurnal Pangan*,23,.33–42.
- Murdiati, A., Anggrahini, S., dan Alim, A. (2015). Increased protein content of wet noodle from tapioca substituted by white jack bean. *Agritech*, 35, 251–260.
- Muzdalifah, D., Athaillah, Z.A., Nugrahani, W., dan Devi, A.F. (2017). Colour and pH changes of tempe during extended fermentation. *AIP Conf.Proc*, 020036.
- Natesh, R., Schwager, S.L.U., Sturrock, E.D., dan Acharya, K.R. (2003). Crystal structure of the human enzyme – lisinopril complex. *Nature*, 421, 1427–1429.
- Nawaz, K.A.A., David, S.M., Muruges, E., Thandeeswaran, M., Kiran, K.G., Mahendran, R., Palaniswamy, M., dan Angayarkanni, J. (2017). Identification and in silico characterization of a novel peptide inhibitor of angiotensin converting enzyme from pigeon pea (*Cajanus cajan*). *Phytomedicine*, 36, 1–7.
- Ni, H., Li, L., Liu, G. dan Hu, S.Q. (2012). Inhibition mechanism and model of an angiotensin i-converting enzyme (ACE)-inhibitory hexapeptide from yeast (*Saccharomyces cerevisiae*). *PLoS ONE*, 7.
- Nigam, P. dan Pandey, A. (2009). Solid-State Fermentation Technology for Bioconversion of Biomass and Agricultural Residues.
- Nirmal, N.P., Shankar, S. dan Laxman, R.S. (2011). Fungal Proteases : An Overview. *Review Literature And Arts Of The Americas*, 1, 1–40.
- Nout, M J R., Martoyuwono, Tri, D., Bonne, Peter, dan George, Odamtten. 1992. Hibiscus Leaves for the Manufacture of Usar , a Traditional Inoculum for Tempe. *Journal of the Science*, 339–346.
- Nout, M.J.R. dan Kiers, J.L. (2005). Tempe fermentation, innovation and functionality: Update into the third millenium. *Journal of Applied Microbiology*, 98, 789–805.
- Nurdini, A.L., Nuraida, L., Suwanto, A., dan Suliantari. (2015). Microbial growth dynamics during tempe fermentation in two different home industries. *International Food Research Journal*, 22, 1668–1674.
- Okamoto, A., Hanagata, H., Kawamura, Y., dan Yanagida, F. (1995). Anti-hypertensive substances in fermented soybean, natto. *Plant Foods for Human Nutrition*, 47, 39–47.
- Okolie, N.P. , dan Ugochukwu, E.N. (1989). Cyanide contents of some Nigerian legumes and the effect of simple processing. *Food Chemistry*, 32, 209–216.

- Owens, J.D. (2014). Indigenous fermented foods of southeast Asia. Indigenous Fermented Foods of Southeast Asia. Boca Raton. CRC Press
- Oseguera Toledo, M.E., Gonzalez de Mejia, E., Sivaguru, M., dan Amaya-Llano, S.L. (2016). Common bean (*Phaseolus vulgaris* L.) protein-derived peptides increased insulin secretion, inhibited lipid accumulation, increased glucose uptake and reduced the phosphatase and tensin homologue activation in vitro. *Journal of Functional Foods*, 27, 160–177.
- Pagarra, H. (2009). Laju Pertumbuhan Jamur *Rhizopus* sp . pada Tempe Kacang Hijau ( *Phaseolus radiatus* L .). *Bionature*, 10, 69–74.
- Palashoff, M.H. (2008). Determining the specificity of pepsin. Thesis. The Departement of Chemistry and Chemical Biology. Northeastern University. Boston.
- Parrot, S., Degraeve, P., Curia, C., dan Martial-Gros, A. (2003). In vitro study on digestion of peptides in Emmental cheese: Analytical evaluation and influence on angiotensin I converting enzyme inhibitory peptides. *Nahrung - Food*, 47, 87–94.
- Perestrelo, R., Lu, Y., Santos, S.A.O., Silvestre, A.J.D., Neto, C.P., Câmara, J.S. , dan Rocha, S.M. (2012). Phenolic profile of Sercial and Tinta Negra Vitis vinifera L . grape skins by HPLC – DAD – ESI-MS n Novel phenolic compounds in Vitis vinifera L . grape. *Food Chemistry*, 135, 94–104.
- Picariello, G., Ferranti, P., dan Addeo, F. (2016). Use of brush border membrane vesicles to simulate the human intestinal digestion. *Food Research International*, 88, 327–335.
- Pihlanto, A., Akkanen, S., dan Korhonen, H.J. (2008). ACE-inhibitory and antioxidant properties of potato (*Solanum tuberosum*). *Food Chemistry*, 109, 104–112.
- Pihlanto, A., dan Korhonen, H. (2015). Bioactive peptides from fermented foods and health promotion. In: *Advances in Fermented Foods and Beverages*. Pp. 39–74.
- Pihlanto, A. dan Mäkinen, S. (2013). Antihypertensive Properties of Plant Protein Derived Peptides. *Bioactive Food Peptides in Health and Disease*, 145–182.
- Pohl, T. (1990). Concentration of protein and removal of solute. In : Guide to protein purification. California.: Ed.M.P. Deutscher. Academic Press Inc.
- Pripp, A.H. (2005). Initial proteolysis of milk proteins and its effect on formation of ACE-inhibitory peptides during gastrointestinal proteolysis: A bioinformatic, in silico, approach. *European Food Research and Technology*, 221, 712–716.
- Pritchard, S.R. (2012). Isolation and characterisation of bioactive peptides derived

from milk and cheese . Thesis.Doctorate of Philosophy University of Western Sydney , Australia., 265.

- Priyanto, A.D., Doerksen, R.J., Chang, C.I., Sung, W.C., Widjanarko, S.B., Kusnadi, J., Lin, Y.C., Wang, T.C., dan Hsu, J.L. (2015). Screening, discovery, and characterization of angiotensin-I converting enzyme inhibitory peptides derived from proteolytic hydrolysate of bitter melon seed proteins. *Journal of Proteomics*, 128, 424–435.
- Qu, W., Ma, H., Jia, J., He, R., Luo, L., dan Pan, Z. (2012). Enzymolysis kinetics and activities of ACE inhibitory peptides from wheat germ protein prepared with SFP ultrasound-assisted processing. *Ultrasonics Sonochemistry*, 19, 1021–1026.
- Quirós, A., Contreras, M. del M., Ramos, M., Amigo, L., dan Recio, I. (2009). Stability to gastrointestinal enzymes and structure-activity relationship of  $\beta$ -casein-peptides with antihypertensive properties. *Peptides*, 30, 1848–1853.
- Rahayu, N.A. (2019). Pengaruh lama fermentasi terhadap produksi peptida ACE dari tempe koro benguk Tesis. Program Studi Ilmu dan Teknologi Pangan. Fakultas Teknologi Pertanian. Universitas Gadjah Mada.
- Rahmah, A.A. (2019). Perubahan kandungan zat gizi, HCN,, dan tanin selama proses pengolahan sari koro pedang putih. Tesis. Program Studi Ilmu dan Teknologi Pangan. Fakultas Teknologi Pertanian. Universitas Gadjah Mada.
- Rauf, A., Irfan, M., Nadeem, M., dan Ahmed, I. (2010). Optimization of growth conditions for acidic protease production from *Rhizopus oligosporus* through solid state fermentation of sunflower meal. *International Journal of Agricultural and Biological Sciences*, 1, 506–509.
- Rawendra, R.D.S., Aisha, Chang, C.I., Aulanni'am, Chen, H.H., Huang, T.C., dan Hsu, J.L. (2013). A novel angiotensin converting enzyme inhibitory peptide derived from proteolytic digest of Chinese soft-shelled turtle egg white proteins. *Journal of Proteomics*, 94, 359–369.
- Reu, J.C. de, Wolde, R.M. ten, Groot, J. de, Nout, M.J.R., Rombouts, F.M., dan Gruppen, H. (1995). Protein hydrolysis during soybean tempe fermentation with *Rhizopus oligosporus*. *Journal of Agricultural and Food Chemistry*, 43, 2235–2239.
- Roubos-van den Hil, P.J., Nout, M.J.R., Meulen, J. van der, dan Gruppen, H. (2010). Bioactivity of tempe by inhibiting adhesion of ETEC to intestinal cells, as influenced by fermentation substrates and starter pure cultures. *Food Microbiology*, 27, 638–644.
- Ruiz-Terán, F. dan Owens, J.D. (1996). Chemical and enzymic changes during the fermentation of bacteria-free soya bean tempe. *Journal of the Science of Food and Agriculture*, 71, 523–530.

- Ryan, J.T., Ross, R.P., Bolton, D., Fitzgerald, G.F., dan Stanton, C. (2011). Bioactive peptides from muscle sources: Meat and fish. *Nutrients*, 3, 765–791.
- S Vallabha, V. dan Tikku, P.K. (2014). Antihypertensive peptides derived from soy protein by fermentation. *International Journal of Peptide Research and Therapeutics*, 20, 161–168.
- Sachie, I., Keiko, Y., Kaoru, K., Shigeko, T., Tadasu, F., dan Kazunori, O. (2009). Antihypertensive effects of natto, a traditional Japanese fermented food, in spontaneously hypertensive rats, *Food Sci Technol Res*, 15, 199–202.
- Sahadevan, S. dan Sridhar, K.R. (2005). Nutritional and antinutritional evaluation of raw and processed seeds of a wild legume, *Canavalia cathartica* of coastal sand dunes of India. *Food Chemistry*, 3, 465–472.
- Sandhya, C., Sumantha, A., Szakacs, G., dan Pandey, A. (2005). Comparative evaluation of neutral protease production by *Aspergillus oryzae* in submerged and solid-state fermentation. *Process Biochemistry*, 40, 2689–2694.
- Sanjukta, S. dan Rai, A.K. (2016). Production of bioactive peptides during soybean fermentation and their potential health benefits. *Trends in Food Science and Technology*, 50, 1–10.
- Sato, M., Hosokawa, T., Yamaguchi, T., Nakano, T., Muramoto, K., Kahara, T., Funayama, K., Kobayashi, A., dan Nakano, T. (2002). Angiotensin I-converting enzyme inhibitory peptides derived from wakame (*Undaria pinnatifida*) and their antihypertensive effect in spontaneously hypertensive rats. *Journal of Agricultural and Food Chemistry*, 50, 6245–6252.
- Schwarz, F.P. (1993). Thermodynamics of monosaccharide binding to concanavalin A, *The Journal of Biological Chemistry*, 268, 7668–7677.
- Segura-Campos, M., Chel-Guerrero, L., Betancur-Ancona, D., dan Hernandez-Escalante, V.M. (2011). Bioavailability of bioactive peptides. *Food Reviews International*, 27, 213–226.
- Segura-Campos, M.R., Espadas-Alcocer, C.P., Chel-Guerrero, L., dan Betancur-Ancona, D. (2013). ACE-I Inhibitory peptide fractions from enzymatic hydrolysates of velvet bean (*Mucuna pruriens*). *Agricultural Sciences*, 4, 767–773.
- Sharma, D., Gupta, R., dan Joshi, I. (2014). Nutrient analysis of raw and processed soybean and development of value added soybean noodles, *Inventive Journal*, 2014, 1–5.
- Sharma, R. (2012). Enzyme inhibition. *Edited by Rakesh Sharma*. 1st edn. Rijeka, Croatia: inTech.
- Sharon, N. dan Lis, H. (2004). History of lectins: from hemagglutinins to biological



- recognition molecules. *Glycobiology*, 14, 53–62.
- Sher, M.G., Nadeem, M., Syed, Q., Abass, S., dan Hassan, A. (2011). Study on protease from barley tempeh and in vitro protein digestibility. *Jordan Journal of Biological Sciences*, 4, 257–264.
- Shimizu, M. dan Son, D.O. (2007). Food-derived peptides and intestinal functions. *Current Pharmaceutical Design*, 13, 885–895.
- Shiozaki, K., Shiozaki, M., Masuda, J., Yamauchi, A., Ohwada, S., Nakano, T., Yamaguchi, T., Saito, T., Muramoto, K. dan Sato, M. (2010). Identification of oyster-derived hypotensive peptide acting as angiotensin-I-converting enzyme inhibitor. *Fisheries Science*, 76, 865–872.
- Siddhuraju, P., Vijayakumari, K., dan Janardhanan, K. (1996). Chemical composition and protein quality of the little-known legume, velvet bean (*Mucuna pruriens* (L.) DC.). *Journal of Agricultural and Food Chemistry*, 44, 2636–2641.
- Singh, B.P., Vij, S., dan Hati, S. (2014). Functional significance of bioactive peptides derived from soybean. *Peptides*, 54, 171–179.
- Sinha, S., Mitra, N., Kumar, G., Bajaj, K., dan Surolia, A. (2005). Unfolding studies on soybean agglutinin and Concanavalin A tetramers: A comparative account. *Biophysical Journal*, 88, 1300–1310.
- Sipola, M., Finckenberg, P., Santisteban, J., Korpela, R., Vapaatalo, H., dan Nurminen, M.L. (2001). Long-term intake of milk peptides attenuates development of hypertension in spontaneously hypertensive rats. *Journal of Physiology and Pharmacology*, 52, 745–754.
- Sitompul, S. (1997). Komposisi asam-asam amino dari biji-bijian dan kacang-kacangan. *Lokakarya Fungsional Balitkabi*, 1–3.
- Sparringa, R.A. dan Owens, J.D. (1999a). Protein utilization during soybean tempe fermentation. *Journal of Agricultural and Food Chemistry*, 47, 4375–4378.
- Sparringa, R.A. dan Owens, J.D. (1999b). Causes of alkalization in tempe solid substrate fermentation. *Enzyme and Microbial Technology*, 25, 677–681.
- Sridhar, K.R. dan Seena, S. (2006). Nutritional and antinutritional significance of four unconventional legumes of the genus *Canavalia* - A comparative study. *Food Chemistry*, 99, 267–288.
- Starzyńska-Janiszewska, A., Stodolak, B. dan Wikiera, A. (2015). Proteolysis in tempeh-type products obtained with *Rhizopus* and *Aspergillus* strains from grass pea (*Lathyrus Sativus*) seeds. *Acta Scientiarum Polonorum, Technologia Alimentaria*, 14, 125–132.
- Steinkraus, K. (2002). Fermentations in World Food Processing, 1, 23–32.

- Sturrock, E.D., Natesh, R., Rooyen, J.M. Van, dan Acharya, K.R. (2004). Structure of angiotensin I-converting enzyme. *Cellular and Molecular Life Sciences*, 61, 2677–2686.
- Suciati, A. (2012). Pengaruh lama perendaman dan fermentasi terhadap kandungan HCN pada tempe kacang koro (*Canavalia ensiformis* L). Food Science and Technology Departement, Universitas Hasanudin, 83.
- Tuz, M.A.O., dan Campos, M.R.S. (2017). Purification of *Mucuna pruriens* (L) peptide fractions and evaluation of their ACE inhibitory effect. *Biocatalysis and Agricultural Biotechnology*, 10, 390–395.
- Udedibie, A.B., dan Carlini, C. (1998). Crack and cook: A simple and quick process for elimination of concaavalin A (Con A) from *Canavalia* seeds. *Animal Feed Science and Technology*, 74, 179–184.
- Udenigwe, C.C. dan Mohan, A. (2014). Mechanisms of food protein-derived antihypertensive peptides other than ACE inhibition. *Journal of Functional Foods*, 8, 45–52.
- Vadivel, V. dan Janardhanan, K. (2000). Nutritional and anti-nutritional composition of velvet bean : an under-utilized food legume in South India, 553, 279–287.
- Vermeirssen, V., Camp, J. Van, Decroos, K., Wijmelbeke, L. Van, dan Verstraete, W. (2003). The Impact of fermentation and in vitro digestion on the formation of Angiotensin-I-Converting Enzyme inhibitory activity from pea and whey protein. *Journal of Dairy Science*, 86, 429–438.
- Vermeirssen, V., Camp, J. Van, dan Verstraete, W. (2004). Bioavailability of angiotensin I converting enzyme inhibitory peptides. *The British journal of nutrition*, 92, 357–66.
- Vij, R., Reddi, S., Kapila, S., dan Kapila, R. (2016). Transepithelial transport of milk derived bioactive peptide VLPVPQK. *Food Chemistry*, 190, 681–688.
- Walker, W.A. (1985). Absorption of protein and protein fragments in the developing intestine: role in immunologic/allergic reactions. *Pediatrics*, 75, 167–71.
- Waluyo, L. (2019). *Mikrobiologi umum*. 5th edn. Malang: UMM Press.
- Wang, C., Tu, M., Wu, D., Chen, H., Chen, C., Wang, Z., dan Jiang, L. (2018). Identification of an ACE-inhibitory peptide from walnut protein and its evaluation of the inhibitory mechanism. *International Journal of Molecular Sciences*, 19.
- Wang C, Wang B, dan Li B. (2016). Bioavailability of peptides from casein hydrolysate in vitro: Amino acid compositions of peptides affect the

- antioxidant efficacy and resistance to intestinal peptidases. *Food Research International*, 81, 188–196.
- Wang, D., Wang, L. jun, Zhu, F. xue, Zhu, J. ye, Chen, X.D., Zou, L., Saito, M., dan Li, L. te. (2008). In vitro and in vivo studies on the antioxidant activities of the aqueous extracts of Douchi (a traditional Chinese salt-fermented soybean food). *Food Chemistry*, 107, 1421–1428.
- Wang, H.L., Vespa, J.B. , dan Hesseltine, C.W. (1974). Acid protease production by fungi used in soybean food fermentation. *Applied Microbiology*.
- Webb, K.E., Matthews, J.C., dan DiRienzo, D.B. (1992). Peptide absorption: a review of current concepts and future perspectives. *Journal of animal science*, 70, 3248–3257.
- Weng, T.M. dan Chen, M.T. (2011). Effect of two-step fermentation by *Rhizopus oligosporus* and *Bacillus subtilis* on protein of fermented soybean. *Food Science Technol. Res*, 17, 393–400.
- Wenno, M.R., Suprayitno, E., Aulanni'amm, dan Hardoko. (2016). The psychochemical characteristics and angiotensin converting enzyme (ACE) inhibitory activity of skipjack tuna (*Katsuwonus pelamis*) “bakasang.” *Jurnal Teknologi*, 78, 119–124.
- Widaningrum, Sukasih, E., dan Purwani, E.Y. (2015). Introductory study on processing of fermented jack bean. *Jurnal Penelitian Pasca Panen Pertanian*, 129–136.
- Wijaya, H. (2014). Solusi masalah mutu, lingkungan dan ekonomi dengan teknologi tempe cepat. *Rumusan Kajian Strategis Bidang Pertanian dan Lingkungan*, 1, 67–72.
- Wijatniko, B.D. (2017). Perendaman, pemanasan, dan hidrolisis dengan enzim alkalase guna meningkatkan kualitas gizi protein koro pedang putih (*Canavalia ensiformis* (L.) DC). Tesis. Program Studi Ilmu dan Teknologi Pangan. Fakultas Teknologi Pertanian. Universitas Gadjah Mada.
- Wikandari, P.R., Marsono, Y., dan Rahayu, E.S. (2011). The potency of milkfish (*Chanos chanos*) bekasam as source of Angiotensin i Converting Enzyme inhibitor. *Journal of Biota*, 16(1), 145-152
- Williams, H.J. dan Edwards, T.G. (1980). Estimation of cyanide with alkaline picrate. *J.Sci.Food Agric*, 31, 15–22.
- Winarno, F.G., S. Fardiaz dan D. Fardiaz, (1980). Pengantar Teknologi Pangan. Gramedia Pustaka Utama, Jakarta.
- Woodman, Z.L., Schwager, S.L.U., Redelinghuys, P., Chubb, A.J., Merwe, E.L. Van Der, Ehlers, M.R.W., dan Sturrock, E.D. (2006). Homologous

substitution of ACE C-domain regions with N-domain sequences: Effect on processing, shedding, and catalytic properties. *Biological Chemistry*, 387, 1043–1051.

- Wu, J. dan Aluko, R.E. (2007). Quantitative structure-activity relationship study to other di- and tri-peptides including relationship with angiotensin I-converting enzyme inhibitory activity. *Journal of Peptide Science*, 13, 63–69.
- Wu, J., Aluko, R.E., dan Nakai, S. (2006). Structural requirements of angiotensin I-converting enzyme inhibitory peptides: Quantitative structure-activity relationship modeling of peptides containing 4-10 amino acid residues. *QSAR and Combinatorial Science*, 25, 873–880.
- Wu, J. dan Ding, X. (2002). Characterization of inhibition and stability of soy-protein-derived angiotensin I-converting enzyme inhibitory peptides. *Food Research International*, 35, 367–375.
- Wulandari, R.D., Rahayu, E., Marsono, Y., dan Utami, T. (2017). Aktivitas antioksidan dan angiotensin-i converting enzyme inhibitor oleh yogurt dengan ekstrak daun *Ficus glomerata* roxb. *Agritech*, 37, 246–255.
- Yamamoto, N., Maeno, M., dan Takano, T. (2010). Purification and characterization of an antihypertensive peptide from a yogurt-like product fermented by *Lactobacillus helveticus* CPN4. *Journal of Dairy Science*, 82, 1388–1393.
- Zeng, M., Zhao, Y., Liu, Z., dan Dong, S. (2013). ACE-inhibitory activities of marine proteins and peptides. *Marine Proteins and Peptides: Biological Activities and Applications*, 431–440.
- Zhang, J.-H., Tatsumi, E., Ding, C.-H., dan Li, L.-T. (2006). Angiotensin I-converting enzyme inhibitory peptides in douchi, a Chinese traditional fermented soybean product. *Food Chemistry*, 98, 551–557.
- Zheng, Y., Li, Y., dan Li, G. (2019). ACE-inhibitory and antioxidant peptides from coconut cake albumin hydrolysates: Purification, identification and synthesis. *RSC Advances*, 9, 5925–5936.