

BAB V

KESIMPULAN DAN SARAN

5.1. Kesimpulan

1. Perbedaan proporsi ikan patin dan tepung nangka muda memberikan pengaruh nyata terhadap karakteristik fisikokimia, meliputi kadar air (62,96%-68,56%), WHC (sebelum digoreng 30,12-119,03%, setelah digoreng 89,49-199,94%), % cairan yang keluar (kestabilan emulsi) (0-3,92%), daya serap minyak (18,25-21,14%), tekstur (*hardness* 5440,134-15273,473 g; *cohesiveness* 0,371-0,591), dan warna *nugget* (L (50,83-64,08), *a** (4,25-8,6), *b** (10,48-18,40), C (13,55-18,89)), dan °hue (50,61-76,99) serta karakteristik organoleptik, meliputi kesukaan terhadap rasa (2,61-4,92), warna (2,54-5,38), tekstur (2,70-5,11), dan *juiciness* (2,70-4,87).
2. Semakin tinggi proporsi tepung nangka muda menyebabkan nilai WHC, *hardness*, dan *a** (*redness*) semakin tinggi sedangkan kadar air, daya serap minyak, % cairan yang keluar (kestabilan emulsi), L (*lightness*), *b** (*yellowness*), C (*chroma*), °hue, dan *cohesiveness* semakin rendah.
3. Perlakuan terbaik *nugget* ikan patin-tepung nangka muda secara organoleptik ialah dengan proporsi ikan patin dan tepung nangka muda sebesar 95:5. Rata-rata nilai kesukaan panelis terhadap rasa, warna, tekstur, dan *juiciness nugget* pada perlakuan terbaik berturut-turut sebesar 4,92 (netral hingga agak suka), 5,38 (agak suka hingga suka), 4,76 (netral hingga agak suka), dan 4,87 (netral hingga agak suka). Rata-rata nilai sifat fisikokimia meliputi, kadar air (68,56%), WHC sebelum digoreng (30,12%), WHC setelah digoreng (89,49%), % cairan yang keluar (3,92%), daya serap minyak (21,14%), *hardness*

(5440,134 g), *cohesiveness* (0,591), dan parameter warna (L 64,08; a* 4,25; b* 18,40; C 18,89; dan °hue 76,99).

5.2. **Saran**

Perlu dilakukan penelitian lebih lanjut untuk meningkatkan penerimaan organoleptik *nugget* ikan patin-tepung nangka muda dengan proporsi tepung nangka muda lebih dari 95:5 sehingga menghasilkan *nugget* dengan kadar serat yang lebih tinggi namun memiliki penerimaan organoleptik yang baik.

DAFTAR PUSTAKA

- Afianto, E. dan E. Liviawaty. 1989. *Pengawetan dan Pengolahan Ikan*. Yogyakarta: Penerbit Kanisius. 55.
- Agrihortico. 2019. *Jackfruit: Growing Practices and Nutritional Information*. India: Agrihortico. Section 1.
- Agustini, T.W., A.S. Fahmi, dan U. Amalia. 2009. *Diversification of Fisheries Products*. Semarang: Badan Penerbit Universitas Diponegoro. 8-9.
- Ahmad, N., H. Fazal, B.H. Abbasi, S. Farooq, M. Ali, and M.A. Khan. 2012. Biological Role of *Piper nigrum* L. (Black Pepper): A Review, *Asian Pacific Journal of Tropical Biomedicine*. 1: 1-10.
- Albert, A., A. Salvador, P.Varela, and S. Fiszman. 2009. Improvement of Crunchiness of Battered Fish Nuggets. *European Food Research and Technology*. 228(6): 923-930.
- Ammar, M.S. 2017. Producing of High Fiber Chicken Meat Nuggets by Using Different Fiber Sources. *Middle East Journal of Agriculture Research*. 6(2): 415-423.
- Atma, Y. 2018. *Prinsip Analisis Komponen Pangan Makro & Mikro Nutrien*. Yogyakarta: Deepublish Publisher. 13-15.
- August, J.R. 2010. *Consultations in Feline Internal Medicine Volume 6*. Riverport Lane: Saunders Elsevier. 84.
- Awwaly, K.U.A. 2017. *Protein Pangan Hasil Ternak dan Aplikasinya*. Malang: UB Press. 94.
- Badan Pengawas Obat dan Makanan Republik Indonesia (BPOM RI). 2013. Peraturan Kepala Badan Pengawas Obat dan Makanan Republik Indonesia Nomor 36 Tahun 2013 tentang Batas Maksimum Penggunaan Bahan Tambahan Pangan Pengawet.
- Badan Standardisasi Nasional. 2013. *SNI 7758:2013 tentang Naget Ikan*. Jakarta: Badan Standardisasi Nasional.

- Banda-Nyirenda, D., S.M.C. Husken, and W. Kaunda. 2009. The Impact of Nutrition and Fish Supplementation on the Response to Anti Retroviral Therapy, Zambia. *A Literature Review, Regional Programme Fisheries and HIV/AIDS in Africa: Investing in Sustainable Solutions*. The WorldFish Center. Project Report 1985.
- Barbut, S. 2015. *The Science of Poultry and Meat Processing*. Canada: University of Guelph. 3-24.
- Besbes, S., H. Attia, C. Deroanne, S. Makni, and C. Blecker. Partial Replacement of Meat by Pea Fiber and Wheat Fiber: Effect on the Chemical Composition, Cooking Characteristics and Sensory Properties of Beef Burgers. *Journal of Food Quality* 31(4): 480-489.
- Bhat, R., A. K. Alias, and G. Paliyath. 2012. *Progress in Food Preservation*. Oxford: John Wiley & Sons Ltd. 316.
- Boulos, N.N., H. Greenfield, and R.B.H. Wills. 2000. Water Holding Capacity of Selected Soluble and Soluble Dietary Fibre. *International Journal of Food Properties*. 3(2): 217-231.
- Cabrejas, M.A.M. 2019. *Legumes Nutritional Quality, Processing and Potential Health Benefits*. Croydon: The Royal Society of Chemistry. 96-97.
- Cahyono, B. 2000. *Budi Daya Ikan Air Tawar: Ikan Gurami, Ikan Nila, Ikan Mas*. Yogyakarta: Penerbit Kanisius. 105.
- Carbonell, L.A., J.F. Lopez, J.A.P. Alvarez, and V. Kuri. 2005. Characteristics of Beef Burger as Influenced by Various Types of Lemon Albedo. *Innovative Food Science and Emerging Technologies* 6: 247-255.
- Chaplin, M.F. 2003. Fiber and Water Binding. *Proceedings of the Nutrition Society*. 62: 223-227.
- Chen, X.D. and A.S. Mujumdar. 2008. *Drying Technologies in Food Processing*. United Kingdom: Blackwell Publishing Ltd. 58.
- Cho, S.S. and M.L. Dreher. 2001. *Handbook of Dietary Fiber*. New York: Marcel Dekker, Inc. 2-3.

- Choi, Y.S., K.S. Park, J.H. Choi, H.W. Kim, D.H. Song, J.M. Kim, H.J. Chung, and C.J. Kim. 2010. Physicochemical Properties of Chicken Meat Emulsion Systems with Dietary Fiber Extracted from Makgeolli Lees. *Journal of Korean Society for Food Science of Animal Resources*. 30: 910-917.
- Cofrades, S., M.A. Guerra, J. Carballo, F. Fernández-Martín and F. Jiménez-Colmenero. 2000. Plasma Protein and Soy Fiber Content Effect on Bologna Sausage Properties as Influenced by Fat Level. *J. Food Sci.* 65: 281-287.
- Damat, A. Ta'in, H. Handjani, U. Khasanah dan D.N. Putri. 2018. *Teknologi Pati Termodifikasi dan Manfaatnya Bagi Kesehatan*. Malang: Penerbit Universitas Muhammadiyah Malang. 15.
- deMan, J.M. 1999. *Principles of Food Chemistry (Third Edition)*. Gaithersburg: Aspen Publisher, Inc. 313.
- Díaz, A.V. and R.M.G. Gimeno. 2018. *Descriptive Food Science*. London: Intechopen Limited. 159-160.
- Dinas Pertanian DIY. 2019. Nangka (*Artocarpus heterophyllus* Lamk). <https://distan.jogjapro.go.id/wpcontent/download/buah/nangka.pdf> (1 Agustus 2019).
- Elevitch, C.R. and H.I. Manner. 2006. *Artocarpus heterophyllus* (Jackfruit), *Species Profiles for Pacific Island Agroforestry*. Hawaii: Permanent Agriculture Resources (PAR). <http://www.traditionaltree.org> (8 Agustus 2019).
- Elkins, R. 1999. *Fiber Facts*. Utah: Woodland Publishing. 9-10.
- Erickson, M.D. 2007. *Deep Frying Chemistry, Nutrition, and Practical Applications Second Edition*. Urbana: AOCS Press. 51-56.
- Eskin, N.A.M., H.M. Henderson, and R.J. Townsend. 1971. *Biochemistry of Foods*. New York: Academic Press, Inc. 412-414.
- Estiasih, T., W.D.R. Putri, dan E. Waziroh. 2017. *Umbi-umbian & Pengolahannya*. Malang: UB Press. 133.
- Evennet, K. 2003. *Khasiat Bawang Putih* (Alih Bahasa: Liliana Wijaya). Jakarta: Penerbit Arcan. 3-6.

- Fatmawaty, A., M. Nisa, dan R. Riski. 2015. *Teknologi Sediaan Farmasi*. Yogyakarta: Deepublish Publisher. 388.
- Fellows, P.J. 2000. *Food Processing Technology Principles and Practice Second Edition*. Boca Raton: CRC Press. 456.
- Fitry, M.R.I and N.F.A. Abas. 2018. Potention Use of Jackfruit (*Artocarpus Heterophyllus*) and Breadfruit (*Artocarpus Altilis*) as Fat Replacer to Produce Low-Fat Chicken Patties. *International Journal of Engineering & Technology*. 7(4.14): 292-296.
- Fox, P.F. and J.J. Condon. 1982. *Food Proteins*. London: Applied Science Publishers, Ltd. 252-255.
- Fox, P.F., T.P. Guinee, T.M. Cogan, and P.L.H. McSweeney. 2000. *Fundamental of Cheese Science*. Maryland: Aspen Publishers, Inc. 339.
- Galanakis, C. M. 2019. *Dietary Fiber Properties, Recovery and Applications*. London: Elsevier Inc. 316-324.
- Gao, Q. 2012. *Numbers, Intelligence, Manufacturing Technology and Machinery Automation*. Zurich: Trans Tech Publications. 3.
- Goswami, C. and R. Chacrabati. 2016. *Jackfruit (Artocarpus heterophyllus)* (dalam *Composition of Fruit Cultivars*, Monique and Victor Ed.). United Kingdom: Elsevier. 321.
- Gufran, M. dan Kordi. 2010. *Budidaya Ikan Patin di Kolam Terpal: Lebih Mudah, Lebih Murah, Lebih Untung*. Yogyakarta: Lily Publisher. 8-9.
- Hamilton, I.C., A. Livermore, and J. Watson. 1987. *Food and Nutrition in Practice*. Oxford: Heineman Educational. 89.
- Hughes, E., S. Cofrades, and D.J. Troy. 1997. Effects of Fat Level, Oat Fibre and Carrageenan on Frankfurters Formulated with 5, 12, and 30% Fat. *Meat Sci*. 45: 273-281.
- Hui, Y.H. 2006. *Handbook of Food Science, Technology, and Engineering Volume 3*. Boca Raton: CRC Press. 205.

- Hui, Y.H. 2012. *Handbook of Meat and Meat Processing Second Edition*. Boca Raton: CRC Press. 476.
- Islam, R., D.K. Paul, A. Rahman, T. Parvin, D. Islam, and A. Sattar. 2012. Comparative Characterization of Lipids and Nutrients Contents of *Pangasius pangasius* and *Pangasius sutchi* Available in Bangladesh. *J. Nutr Food Sci.* 2(2): 1-6.
- Isnaharani, Y. 2009. Pemanfaatan Tepung Jerami Nangka (*Artocarpus heterophyllus* Lmk.) dalam Pembuatan Cookies Tinggi Serat, *Skripsi-S1*, Departemen Gizi Masyarakat, Fakultas Ekologi Manusia, Institut Pertanian Bogor, Bogor.
- Jelita, K. 2011. Verifikasi Metode Analisis Serat Pangan dengan Metode AOAC dan Asp terhadap Parameter Repeatability, Selektivitas, dan Ruggedness, *Skripsi S-1*, Fakultas Teknologi Pertanian, Institut Pertanian Bogor, Bogor.
- Joshi, M. 2018. *Textbook of Field Crops (Revised Edition)*. Delhi: PHI Learning Private Limited.
- Kaplan, D.L. *Biopolymers from Renewable Resource*. Berlin: Springer. 35.
- Kartika, B., P. Hastuti, dan W. Supartono. 1988. *Pedoman Uji Inderawi Bahan Pangan*. Yogyakarta: PAU Pangan dan Gizi UGM.
- Kasture, A.V. and S.G. Wadodkar. 2008. *Pharmaceutical Chemistry I*. Shivaji Nagar: Nirali Prakashan. 75.
- Kementerian Kesehatan Republik Indonesia. 2018. *Data Komposisi Pangan Indonesia*. <http://panganku.org/id-ID/view> (diakses 10 Juli 2019).
- Kementerian Pertanian. 2015. *Statistik Produksi Hortikultura Tahun 2014*. Jakarta: Direktorat Jenderal Hortikultura, Kementerian Pertanian.
- Kerry, J.P. and J.F. Kerry. 2011. *Processed Meats: Improving Safety, Nutrition, and Quality*. Cambridge: Woodhead Publishing. 270-271.
- Kerth, C.R. 2013. *The Science of Meat Quality*. New Jersey: John Wiley & Sons, Inc. Chapter 6.
- Khairuman. 2007. *Budidaya Patin Super*. Jakarta: Agromedia Pustaka. 1-4.

- Khairuman dan D. Sudenda. 2009. *Budi Daya Patin Secara Intensif*. Jakarta: Agromedia Pustaka. 7-11.
- Kilcast, D. 2004. *Texture in Food*. Boca Raton: CRC Press. 84-85.
- Konica Minolta. 2015. *CR-20 Basic Operating Instruction*. https://www.konicaminolta.com/instruments/download/instruction_manual/color/pdf/cr-20_basic_eng.pdf (diakses 20 Oktober 2019).
- Koswara, S. 2009. *Teknologi Praktis Pengolahan Daging*. Fakultas Teknologi Pertanian, Institut Pertanian Bogor, Bogor. 16-17.
- Kortei, N.K., G.T. Odamtten, M. Obodai, V. Appiah, P.T. Akonor, and B. Ae. 2015. Determination of Color Parameters of Gamma Irradiated Fresh and Dried Mushrooms During Storage. *Croatian Journal of Food Technology, Biotechnology and Nutrition*. 10(1–2): 66–71.
- Kulp, K., R. Loewe, K. Lorenz, and J. Gelroth. 2011. *Batters and Breeding in Food Processing Second Edition*. Minnesota: AACCC International, Inc. 9-24.
- Mérillon, J.M. and K.G. Ramawat. 2018. *Bioactive Molecules in Food*. New York: Springer International Publishing. 1-34.
- Leach, E.J. 1985. Evaluation of Astringency and Bitterness by Scalar and Time Intensity Procedures, *Thesis*, University of California-Davis, California. 95.
- Legarreta, I.G. and Y.H. Hui. 2010. *Handbook of Poultry Science and Technology Volume 2*. New Jersey: John Wiley & Sons, Inc. 187-199.
- Lukman, I., N. Huda, and N. Ismail. 2009. Physicochemical and Sensory Properties of Commercial Chicken Nugget. *Asian Journal of Food and Agro-Industry*. 2(2):171-180.
- Mahyuddin, K. 2010. *Panduan Lengkap Agribisnis Patin*. Jakarta: Penebar Swadaya. 14-15.
- Mallikarjunan, P.K., M.O. Ngadi, and M.S. Chinnan. 2010. *Breaded Fried Foods*. Boca Raton: CRC Press. 141.

- Manian, A.P., A. Jaturapiree, and T. Bechtold. 2018. Salt Sorption on Regenerated Cellulosic Fibers: Electrokinetic Measurements. *Cellulose*. 25(6): 3307-3314.
- Martin, R.E., E.P. Carter, G.J. Flick Jr, dan L.M. Davis. 2010. *Marine and Freshwater Products Handbook*. Lancaster: Technomic Publishing Company, Inc. 429-430.
- Mazi, I.B. and B.G. Mazi. 2017. The Effects of Microwave Frying on Myofibrillar and Sarcoplasmic Proteins of Chicken Breast Meat. *Yyu. J. Agr. Sci.* 27(4): 496-506.
- Mead, G.C. 2004. *Poultry Meat Processing and Quality*. Boca Raton: CRC Press. 196.
- Molins, R.A. 1991. *Phosphates in Food*. Boca Raton: CRC Press. Chapter 5.
- Muchtadi, T.R. dan Sugiyono. 1988. *Petunjuk Laboratorium Ilmu Pengetahuan Bahan Pangan*. Bogor: PAU Pangan dan Gizi IPB.
- Mujumdar, A.S. 2015. *Handbook of Industrial Drying Fourth Edition*. Boca Raton: CRC Press. 3.
- Murniyati, T.D. Suryaningrum, dan I. Muljanah. 2013. *Membuat Filet Lele & Produk Olahannya*. Jakarta: Penebar Swadaya. 31-34.
- Ningsih, S.G. 2011. Analisis Asam Lemak dan Pengamatan Jaringan Daging Fillet Ikan Patin (*Pangasius hypophthalmus*) Akibat Penggorengan, *Skripsi S-1*, Departemen Teknologi Hasil Perairan, Fakultas Perikanan dan Ilmu Kelautan, Institut Pertanian Bogor, Bogor.
- Novandrini, S.D. 2003. Pengaruh Penambahan Ikan terhadap Mutu Gizi dan Penerimaan Abon Nangka, *Skripsi S-1*, Fakultas Pertanian, Institut Pertanian Bogor, Bogor.
- Nugroho, E dan Sutrisno. 2008. *Budi Daya Ikan & Sayuran dengan Sistem Akuaponik*. Jakarta: Penebar Swadaya. 36.
- Nurul, H., I. Boni, and I. Noryati. 2009. The Effect of Different Ratios of Dory Fish to Tapioca Flour on The Linear Expansion, Oil Absorption, Colour and Hardness of Fish Crackers. *Int. Food Res. J.* 16: 159–165.

- Ojagh, S.Y., B. Shabanpour, and A. Jamshidi. 2013. The Effect of Different Pre-Fried Temperatures on Physical and Chemical Characteristics of Silver Carp Fish (*Hypophthalmichthys molitrix*) Nuggets. *World Journal of Fish and Marine Sciences*. 5(4): 414-420.
- Organicvalley. 2019. *Raw Jackfruit*. <http://organicvalley.co.in/product/raw-jackfruit/> (diakses 10 Juli 2019).
- Owens, C.M., C.Z. Alvarado, and A.R. Sams. 2010. *Poultry Meat Processing Second Edition*. Boca Raton: CRC Press. 281.
- Ozer, O. and C. Saricoban. 2010. The Effect of Butylated Hydroxyanisole, Ascorbic Acid and α -Tocopherol on Some Quality Characteristics of Mechanically Deboned Chicken Patty during Freeze Storage. *Czech Journal of Food Science*. 28(2): 150-160.
- Paull, R.E. and O. Duarte. 2012. *Tropical Fruits Second Edition, Volume II*. Cambridge: CAB International. 25-26.
- Pathera, A.K., C.S. Riar, and D.P. Sharma. 2017. Effect of Dietary Fiber Enrichment and Different Cooking Methods on Quality of Chicken Nuggets. *Korean J. Food Sci. An*. 37(3): 410-417.
- Pearson, A.W. and T.R. Dutson. 1987. *Advances in Meat Research Vol 3 Restructured Meat and Poultry Products*. New York: An Avi Book. 329-331.
- Pearson, A.W. and T.R. Dutson. 1994. *Quality Attributes and Their Measurement in Meat, Poultry, and Fish Products*. UK: Springer Science + Bussiness Media Dordrecht. 2-5.
- Permana, R.A. dan W.D.R. Putri. 2015. Pengaruh Proporsi Jagung dan Kacang Merah serta Substitusi Bekatul terhadap Karakteristik Fisik Kimia *Flakes*. *Jurnal Pangan dan Agroindustri* 3(2): 734-742.
- Potter, N.N. and J.H. Hotchkiss. 1995. *Food Science*. New York: Springer US. 203.
- Praja, D.I. 2015. *Zat Aditif Makanan Manfaat dan Bahayanya*. Yogyakarta: Garudhawaca. 115-116.

- Prayitno, E. 2003. Kajian Proses *Nugget* dari *Surimi* Ikan Manyung (*Arius thalassinus*) dengan Bahan Tambahan Gelatin dari Kulit Ikan Tuna, *Thesis S-2*, Program Pascasarjana, Institut Pertanian Bogor, Bogor.
- Preston, T.R. and M.B. Willis. 1974. *Intensive Beef Production*. Oxford: Pergamon Press, Ltd. 74-75.
- Prihanto, A.A. 2017. *Reaksi Fisikokimia Produk Perikanan Tradisional*. Malang: UB Press. 92.
- Pusat Data, Statistik, dan Informasi Kementerian Kelautan dan Perikanan (PUSDATIN-KKP). 2018. *Satu Data Produksi Kelautan dan Perikanan Tahun 2017*. Jakarta: Pusat Data, Statistik, dan Informasi.
- Rahayu, W.P. 1998. *Diktat Penuntun Praktikum Penilaian Organoleptik*. Bogor: Fakultas Teknologi Pertanian, IPB.
- Rahman, S. 2018. *Teknologi Pengolahan Tepung dan Pati Biji-bijian Berbasis Tanaman Kayu*. Yogyakarta: Deepublish Publisher. 25.
- Rajah, K.K. 2002. *Fats in Food Technology*. Sheffield: Sheffield Academic Press. 308-310.
- Ranganna, S. 1986. *Handbooks of Analysis and Quality Control for Fruit and Vegetable Products Second Edition*. New Delhi: Mc-Graw Hill.
- Rindhe, S.N., M.K. Chatli, R.V. Wagh, P. Kumar, O.P. Malav, and N. Mehta. 2018. Development and Quality of Fiber Enriched Functional Spent Hen Nuggets Incorporated with Hydrated Wheat Bran. *Int. J. Curr. Microbiol. App. Sci.* 7(12): 3331-3345.
- Rukmana, R. 1997. *Budi Daya Nangka*. Yogyakarta: Kanisius. 15-18.
- Sahin, S. and S.G. Sumnu. 2009. *Advances in Deep Fat Frying of Foods*. Boca Raton: CRC Press. 2-3.
- Santhi, D. and A. Kalaikannan. 2014. The Effect of The Addition of Oat Flour in Low Fat Chicken Nuggets. *Journal of Nutrition and Food Sciences*. 4(1): 1-4.
- Santoso, A. 2011. Serat Pangan (Dietary Fiber) dan Manfaatnya Bagi Kesehatan. *Jurnal Magistra*, 2: 35-40.

- Sikorski, Z.E. 2001. *Functional Properties of Food Proteins*. Boca Raton: CRC Press. 20-21.
- Singh, A., S. Maurya, M. Singh, and U.P. Singh. 2015. Studies on the Phenolic Acid Contents in Different Parts of Raw and Ripe Jackfruit and Their Importance in Human Health. *International Journal of Applied Science Research and Review*. 2(3): 69-73.
- Soetanto, N.E. 1998. *Manisan Buah-Buahan 4*. Yogyakarta: Kanisius. 30.
- Southampton Centre for Underutilised Crops (SCUC). 2006. *Jackfruit Artocarpus heterophyllus: Field Manual for Extension Workers and Farmers*. Southampton: Crops for The Future.
- Spiller, G.A. 2001. *Dietary Fiber in Human Nutrition 3rd Edition*. Boca Raton: CRC Press. 11-12.
- Subhashree, S.N., S. Sunoj, J. Xue, and G.C. Bora. 2017. Quantification of Browning in Apples Using Colour and Textural Features by Image Analysis. *Food Quality and Safety*. 00: 1-6.
- Sudarmadji, S., B. Haryono, dan Suhardi. 1996. *Prosedur Analisa untuk Bahan Makanan dan Pertanian*. Yogyakarta: Liberty. 99.
- Sudarmadji, S., B. Haryono, dan Suhardi. 2010. *Analisa Bahan Makanan dan Pertanian*. Yogyakarta: Liberty. 57-64.
- Sudiarto, F. 2002. *Dasar Pengawetan Makanan*. Jakarta: Erlangga.
- Sudirman, S., Herpandi, S.D. Lestari, and W. Andayani. 2018. Effects of Weight and Body Parts of Siamese Catfish (*Pangasius hypophthalmus*) on The Nutritional Content. *Food Research* 2(4): 307-313.
- Sumbono, A. 2016. *Biokimia Pangan Dasar*. Jakarta: Deepublish. 34.
- Sunarjono, H. 2008. *Berkebun 21 Jenis Tanaman Buah*. Jakarta: Penebar Swadaya. 53.
- Sunarti. 2018. *Serat Pangan dalam Penanganan Sindrom Metabolik*. Yogyakarta: Gadjah Mada University Press. 3-12.
- Suprapti, L. 2002. *Tepung Sukun*. Yogyakarta: Penerbit Kanisius. 14-15.

- Suprapti, L. 2004. *Keripik, Manisan Kering, dan Sirup Nangka*. Yogyakarta: Penerbit Kanisius. 11-15.
- Suryana, D. 2013. *Ternak Ikan Patin: Budidaya Ikan*. Jakarta: Create Space Independent Publishing Platform. 13-14.
- Suryaningrum, T.D., I. Muljanah, dan E. Tahapari. 2010. Profil Sensori dan Nilai Gizi Beberapa Jenis Ikan Patin dan Hibrid Nasutus. *Jurnal Pascapanen dan Bioteknologi Kelautan dan Perikanan*, 5(2): 153-164.
- Suryaningrum, T.D., Suryanti, dan I. Muljanah. 2012. *Membuat Filet Ikan Patin*. Jakarta: Penebar Swadaya Grup. 13-16.
- Susanto, H. 2009. *Pembenihan dan Pembesaran Patin*. Jakarta: Penebar Swadaya. 3-4.
- Suzuki, T. 1981. *Fish and Krill Protein Processing Technology*. London: Applied Science Publisher.
- Swami, S.B and S.B. Kalse. 2018. *Jackfruit (Artocarpus heterophyllus) Biodiversity, Nutritional Contents, and Health*. Switzerland: Springer Nature. 8.
- Syukur, A. G. 2014. Karakteristik Fillet Ikan Patin (*Pangasius sp.*) dalam Negeri dan Impor, *Skripsi S-1*, Departemen Teknologi Hasil Perairan, Fakultas Perikanan dan Ilmu Kelautan, Institut Pertanian Bogor, Bogor.
- Taluder, S. 2015. Effect of Dietary Fiber on Properties and Acceptance of Meat Products: A Review. *Crit Rev Food Sci Nutr*. 55(7): 1005-1011.
- Tanoto, E. 1994. Pengolahan *Fish Nugget* dari Ikan Tenggiri, *Skripsi S-1*, Jurusan Teknologi Pangan dan Gizi, Fakultas Teknologi Pertanian, Institut Pertanian Bogor, Bogor.
- Thammapat, P., P. Raviyan, and S. Siriamornpun. 2010. Proximate and Fatty Acids Composition of The Muscles and Viscera of Asian Catfish (*Pangasius bocourti*). *Food Chemistry* 122(1): 223-227.
- Thohari, I., Mustakim, M.Ch. Padaga, dan P.P. Rahayu. 2017. *Teknologi Hasil Ternak*. Malang: UB Press. 9-10.

- Thohari, I. 2018. *Teknologi Pengawetan dan Pengolahan Telur*. Malang: UB Press. 84.
- Thompson, J.M. 2004. The Effects of Marbling on Flavour and Juiciness Scores of Cooked Beef, After Adjusting to A Constant Tenderness. *Australian Journal of Experimental Agriculture*. 44(7): 645-652.
- Triwitono, P., Suparmo, dan Z. Noor. 1999. Sifat dan Potensi Serat Pangan pada Gudeg Kering. *Agrotech* 19(2): 83-85.
- Tomasik, P. 2003. *Chemical and Function Properties of Food Saccharides*. Boca Raton: CRC Press. 89-90.
- Vaclavik, V.A. and E.W. Christian. 2008. *Essentials of Food Science*. USA: Springer. 21-28.
- Verma, A.K., R. Banerjee, and B.D. Sharma. 2012. Quality of Low Fat Chicken Nuggets: Effect of Sodium Chloride Replacement and Added Chickpea (*Cicer arietinum* L.) Hull Flour. *Asian-Aust J. Anim. Sci.* 25(2): 291-298.
- Wade, C. dan C. Tavis. 2008. *Psikologi Edisi Ke-9 Jilid 1*. Jakarta: Penerbit Erlangga. 218.
- Wallingford, L. and T.P. Labuza. 1983. Evaluation of Water Binding Properties of Food Hydrocolloids by Physical/Chemical Methods and in a Low Fat Meat Emulsion. *Journal of Food Science*. 48(1): 1-5.
- Widyaningsih, T.D., N. Wijayanti, dan N.I.P. Nugrahini. 2017. *Pangan Fungsional Aspek Kesehatan, Evaluasi dan Regulasi*. Malang: UB Press. 79-81.
- World Health Organization (WHO). 2003. *Diet, Nutrition and Prevention of Chronic Diseases: WHO Technical Report Series No 916*. Geneva: World Health Organization.
- Wroslad, R.E. and D.E. Smith. 2010. *Color Analysis (Chapter 32) in Food Analysis (Fourth Edition)*. New York: Springer.
- Yadav, S., A.K. Malik, A.K. Pathera, R.U. Islam, and D.P. Sharma. 2016. Development of Fibre Enriched Chicken Nuggets by Incorporating

Wheat Bran and Dried Apple Pomace. *Indian Journal of Poultry Science*. 51(3): 312-316.

Zailanie, K. 2015. *Fish Handling*. Malang: UB Press. 60.

Zayas, J.F. 1997. *Functionality of Proteins in Food*. Berlin: Springer. 76-85.

Zhang, X. 2014. *Fundamentals of Fiber Science*. Lancaster: Destech Publications, Inc. 29.

Zhong, J. and X. Wang. 2019. *Evaluation of Technologies for Food Quality*. Duxford: Woodhead Publishing. 447.