

## DAFTAR PUSTAKA

- Abubakar, Edy Mulyono, Yulianingsih, 2008. Prospek Oleoresin dan Penggunaannya di Indonesia Bogor. Balai Besar Litbang Pascapanen Pertanian.
- Ahmad, M., Benjakul, S. (2011). Characteristics of gelatin from the skin of unicorn leatherjacket (*Aluterus monoceros*) asinfluenced by acid pretreatment and extraction time. *Food Hydrocolloids*, **25**, 381-388.
- Ahn, J.H., Kim Y.P., Lee, Y.M., Seo, E.M., Lee, K.W., Kim, H.S. 2007. Optimization of microencapsulation of seed oil by response surface methodology. *Food Chem* **107**: 98-105. DOI: 10.1016/j.foodchem.2007.07.067
- Alma, M.H., Ertas, M.S. Nitz, Kollmannsberger, H. 2007, Chemical Composition and Content of Essential Oil from The Bud of Cultivated Turkish Clove (*Syzygium aromaticum* L.), *J. Bio Resources*, **2(2)**, pp.265-269.
- Anonim, 2006. Standar Mutu Minyak Daun Cengkeh menurut SNI 1991.
- Apriyantono, A., Fardiaz, D., Puspitasari, N.L., Yasni, S., Budiyo, S. 1989. *Analisis Pangan*. IPB Press. Bogor.
- Arenas, Merchan D.R., Acevedo, A.M., Mendez, L.Y., Kouznetsov, V.V., 2011, Scavenger Activity Evaluation of the Clove Bud Essential Oil (*Eugenia caryophyllus*) and Eugenol Derivatives Employing ABTS+• Decolorization, *Science Pharmacy Research Article*, **79**, pp.779-791.
- Association of Official Analytical Chemists (AOAC), 1995. *Official Analytical Chemist Official Methods on Analysis.*, Gaithersburg, Maryland
- Astawan, M., Hariyadi, P., Mulyani, A. 2003. Analisis Sifat Reologi Gelatin dari Kulit Ikan Cucut. *Jurnal Teknologi dan Industri Pangan*. Vol XIV. No. 1.
- Bailey, A. J., Light, N. D.(1989). Connective tissue in meat and meat products. (1st ed.). *Elsevier Science Publishers*, Essex.

- Buckle, K.A., Edward, R.A., Fleet, G.H., Wotton, M., 1987. Ilmu Pangan (terjemahan oleh Hari Purnomo dan Adiono). *Universitas Indonesia*. Jakarta
- Caliskan, G dan S.N. Dirim. 2013. *The Effects of The Different Drying Conditions and Theamounts of Maltodextrin Addition During Spray Drying of Sumac Extract*. Food and Bioproducts Processing Journal. 91(4): 539-548
- Calvo, P., Castano, A.L., Lozano, M., Gonzales-Gomez, D. 2012. Influence of the microencapsulation on the quality paramaters and shelf-life of extra-virgin olive oil encapsulated in the presence of BHT and different capsule wall component. *Food Res Int* **45**: 256-261.
- Chamidah, A., Elita Ch. 2002. Pengaruh pengolahan terhadap kualitas gelatin kulit ikan hiu. *Seminar Nasional PATPI*. ISBN:979-95249-6-2, Malang.
- Chen, J., Jane, J. 1994. Preparation of Cold-Water-Soluble Starches by Alcoholic-Alkaline Treatment. *Journal of Cereal Chemistry*, **71**(6):618-622.
- Chang, C.P., Leung, T.K., Lin, S.M., Hsu, C.C. 2006. Release properties on gelatin-gum arabic microcapsules containing camphor oil with added polystyrene. *Colloids and Surfaces B: Biointerfaces*, **50**(2), 136–140
- Charley, H. 1982. *Encyclopedia of Food Science and Technology*. Vol. 2. John Wiley and Sons, New York.
- Choi, S.S., Regenstein, J.M. 2000. Physicochemical and Sensory Characteristic of Fish Gelatin. *J. Food Sci.* **65** (2): 194 – 199.
- Christianto, A. M. 2001. Kajian Proses Produksi Gelatin Tipe B Berbahan Baku Kulit Sapi (Hide) Hasil Samping Industri Penyamakan Kulit. *Skripsi Fakultas Teknologi Pertanian*. IPB. Bogor.
- Considine, D.M., Considine, G.D. 1982. Food and Food Production Encyclopedia. Van Nortand Reinhold Co., New York. David, J., McClements., 1999. *Food Emulsion, Principle, Practice and Techniques*. Boca Raton London New York Washington D.C: CRC Press.

- David, J., McClements., 1999. Food Emulsion, Principle, Practice and Techniques. *Boca Raton London New York Washington D.C*: CRC Press
- De Man, J.M. 1997. Kimia Makanan. Penerjemahkan Padmawinata, K. *ITB Press*, Bandung.
- Desai, K.G.H., Park, H.J. 2005. Recent Development in Microencapsulation of Food Ingredients, *Drying Technology* **23**: 1361-1394.
- De Vos, P., Faas, M. M., Spasojevic, M., Sikkema, J. (2010). Encapsulation for preservation of functionality and targeted delivery of bioactive food components. *International Dairy Journal*, **20(4)**, 292e302. <http://dx.doi.org/10.1016/j.idairyj.2009.11.008>.
- Diego Francisco Cortés-Rojas, Claudia Regina Fernandes de Souza, Wanderley Pereira Oliveira. 2014. Clove (*Syzygium aromaticum*):a precious spice. *Asian Pac J Trop Biomed* **4(2)**: 90-96.
- Direktoral Jendral Peternakan dan Kesehatan Hewan Kementerian Pertanian Republik Indonesia. 2014.
- Djojowidagdo, S. 1988. Kulit Kerbau Lumpur Jantan, Sifat-sifat dan Karakteristiknya Sebagai Bahan Wayang Kulit Purwa. *Disertasi. Progam Pasca Sarjana*. Universitas Gadjah Mada, Yogyakarta.
- Dong, Z.J., Xia, S.Q., Hua, S., Hayat, K., Zhang, X.M., Xu, S.Y. (2008). Optimization of cross-linking parameters during production of transglutaminase-hardened spherical multinuclear microcapsules by complex coacervation. *Colloids and Surfaces B: Biointerfaces*, **63(1)**, 41–47
- Duan, R., Zhang, J., Konno, K., Xu, B. 2011. Study On The Properties Of Gelatin From Skin Carp (*Cyprinos carpio*) Caught In Winter and Summer Season. *Food Hydrocolloid*. Vol. **25**, 368-373
- Durant, Y.G. 2002. Microcapsule morphology in microencapsulation processes, fundamental chemical differences.

- Eastoe, J.E., Leach, A.A. 1977. Chemical Constitution of Gelatin. In: Ward AG, Courts A, editors. The Science and Technology of Gelatin. *Academic Press*, New York.
- Efendi, E. 2000. Mikroenkapsulasi Minyak Atsiri Jahe dengan Campuran Gum Arab-Maltodekstrin dan Variasi Suhu Inlet Spray Drier. *Tesis Program Pasca Sarjana UGM* Yogyakarta.
- Frascareli, E.C., Silva, V.M., Tonon, R.V., Hubinger, M.D. 2012. Effect of process conditions on the microencapsulation of coffee oil by spray drying. *Food Bioprod Process* **90**: 413-424. DOI: 10.1016/j.fbp.2011.12.002.
- Francis, F.J. 1999. Didalam: Cai, Y., Carke, H., Amaranthus betacyamin pigments applied in model food system. *Journal of food Sciene*. Vol **64**. 869-873.
- Gelatin Manufactures Association of Asia Pacific (GMAP). 2007. How is Gelatin Made. <http://www.gmap-gelatin.com/howmade.html>
- Geltech. 2007. What is Gelatin. <http://www.Geltech.com/whatisgelatin.html>.
- Gelatin Manufactures Institute of America (GMIA). 2001. *Raw Materials and Production*. Gelatin Manufactures Institute of America. <http://www.gelatin-gmia.com/html/rawmaterials.html>.
- Gennadios, A., McHugh, T.H., Weller, C.L., Krochta, J.M. 1994. Edible coating and films Based on Proteins (Dalam Edible Coatings and Films to Improve Food Quality. rotcha, J.M., Baldwin, E.A., and Carriedo, M.O.N. Eds.) *Food Reseach International* **40**: 1107-1121.
- Gharsallaoui, A., Roudaut, G., Chambin, O., Voilley, A., Saurel, R. 2007. Aplications of Spray-Drying in Microencapsulation ff Food Ingredients: on Overview. *Food Research International* **40**: 1107-1121.
- Gime'nez, B., Go'mez-Guille'n, M.C., Montero, P. (2005). The role of salt washing of fish skins in chemical and rheological properties of gelatin extracted. *Food Hydrocolloids*, **19**, 951-957.
- Gimenez, B., M.C. Gommès-Gullienz, P. Montero. 2005. Storage of dried fish skini on quality characteristic of extracted gelatin. *Food hydrocolloid*. Vol, **19**, 958-963

- Glicksman, M. 1969. Gum Technology in Food Industry. *Academic Press*, New York.
- Gomez, G.M.C., Montero, P. 2001. Extraction of gelatin from megrim (*Lepidorhombus boscii*) skins with several organic acids. *J. Food Sci.* **66** (2): 213-216.
- Gomes-Gullien, M.C., Gimenez, B., Lopez-Coballero, M.E., Montero, M.P. 2011. Functional and Bioactive Properties Of Collagen and Gelatin From Alternative Source: *A review Food hydrocolloid.* **Vol 1-15.**
- Grobben, A.H., Steele, P.J., Somerville, R.A., Taylor, D.M. 2004. Inactivation of Bovine Spongiform Encephalopathy (BSE) Agent by Acid and Alkali Process Used by the Manufacture of Bone Gelatin. *Biotechnology and Applied Biochemistry.* **39:** 329-338.e, Vol **62**, 37-47.
- Gudmunsson, M., Hafsteinsson H. 1997. Gelatin from Cod Skin as Affected by Chemical Treatments. *J. Food Sci.* **62** (1): 37-39, 47.
- Guenther, E. 1987, Minyak Atsiri, Jilid IV-B, *Terjemahan S. Ketaren*, Universitas Indonesia, Jakarta.
- Harris, R., Lecumberri, E., Aparicio, I.M., Mengibar, M., Heras, A. 2010. Chitosan Nanoparticles and Microspheres for the Encapsulation of Natural Antioxidants Extracted from *Ilex paraguariensis*. *Carbohydrate Polymers* Vol.**84**(2):803-806
- Hardjono, S., 2004. Kimia Minyak Atsiri. Cetakan 1. *UGM Press*. Yogyakarta.
- Harper. 1976. Elements of food Engineering. *The AVI Publishing Co. Inc.*, West Port, Connecticut.
- Hinterwalder, R. 1977. Raw Material. *Di dalam Ward, A. G. Dan A. Courts. The Science and Technology of Gelatin.* Academic Press, New York.
- Hsieh, W.C., Chang, C.P., Gao, Y.L. (2006). Controlled release properties of Chitosan encapsulated volatile Citronella Oil microcapsules by thermal treatments. *Colloids and Surfaces B: Biointerfaces*, **53**(2), 209–214.

- Huda, N., Putra, A.A., Ahmad, R. 2011. Phsycochemical dan nutritional characteristics of Indonesian buffalo skin crakers. *International journal meat science* **1(1)**: 36-51.
- Ilhami Gu'lcin, Mahfuz Elmastas, Hassan,Y., Aboul-Enein,. 2012. Antioxidant activity of clove oil – *A powerful antioxidant source, Arabian Journal of Chemistry* (2012)**5**, 489–499.
- Imeson, A. 1992. Thickening and Gelling Agents for Food. *Academic Press*, New York.
- Jamilah, B., Harvinder, K. G. 2002. Properties of gelatins from skins of fish-black tilapia (*Oreochromis mossambicus*) and red tilapia (*Oreochromis nilotica*). *Food Chemistry*, **77**, 81–84.
- Jasna Ivanovic, Suzana Dimitrijevic-Brankovic, Dusan Misic, Mihailo Ristic, Irena Zizovic, 2013. Evaluation and improvement of antioxidant and antibacterial activities of supercritical extracts from clove buds. *Journal of functional foods* **5** 416–423.
- Johns, P. 1977. The Stucture of Composition Of Collagen Containing Tissue. Di dalam: Ward AG dan Courts A, editor. *The Science of Technology of Gelatin*. New York: Academic Press
- Jongjareonrak, A., Rawdkuen, S., Chaijan, M., Benjakul, S., Osako, K., Tanaka, M. 2010. Chemical Compositions and Characterization of Skin Gelatin From Farmed Giant Catfish (*Pangasianodon gigas*). *Food Science and Technology*. **43**: 161-165
- Judoamidjojo. 1974. Dasar Teknologi dan Kimia Kulit. *Departemen Teknologi Hasil Pertanian*, FATEMETA-IPB, Bogor.
- Judoamidjojo. 1981. Defek Defek Pada Kulit Mentah dan Kulit Samak. *Terjemahan*. Penerbit Bathara Karya Aksara, Jakarta.
- Karim, A.A., Bhat, R. 2009. Fish Gelatin: Properties, Challenge, and Aspect As An Alternative To Mammalian Gelatins. *Food Hydrocolloid*. Vol. **23**, 563-576
- Ketaren, S. 1985, Pengantar Teknologi Minyak Atsiri, PK Balai Pustaka, Jakarta.

- Leach, A. A., Eastoe, J. E. 1977. The Chemical Examination of Gelatin (In Science and Technology of Gelatin, Edited by Ward, A.G.; Courts, A.). *Academic Press*. New York.
- Lehninger, A.L. 1990. Dasar-dasar Biokimia (diterjemahkan oleh Maggy Thenawidjaya), Edisi 1, Penerbit Erlangga, Jakarta.
- Leiner, P.B. 2006. *The Physical and Chemical Properties of Gelatin*. <http://www.pbgelatin.com>.
- Lihong Niu, Xin Zhou, Chuqiao Yuan, Yun Bai, Keqiang Lai, Fuxin Yang, Yiqun Huang. 2013. Characterization of tilapia (*Oreochromis niloticus*) skin gelatin extracted with alkaline and different acid pretreatments. *Food Hydrocolloids* **33** (2013) 336-341.
- Liu H., Li, D., Guo, S. 2008. Rheological properties of channel catfish (*Ictalurus punctatus*) gelatin from fish skin preserved by different methods. *LWT- Food Science and Technology*, Vol **41**, 414-419.
- Liu, C.H., Wu, C.T. 2010. Optimization of nanostructured lipid carriers for lutein delivery. *Colloids Surf., A* **353**, 149–156
- Lobo, L. 2002. Coalescence During Emulsification. *Journal of Colloid and Interface Science*. **254**: 165-174.
- Magdassi, S., Vinetsky, Y. 1996. Microencapsulation of Oil-in Water Emulsions by Protein. In S. Benita (ed) *Microencapsulation : Methods and Industrial Application*, Marcel Dekker Inc., New York.
- Marcuzzo, E., Sensidoni, A., Debeaufort, F., Voilley, A. 2010. Encapsulation of aroma compounds in biopolymeric emulsion based edible film to control flavor release. *Carbohydr Polym* **80**: 984-988.
- Masters, K. 1979. Spray-air contact (mixing and flow). *Spray drying handbook* (pp. 286–290)., *third ed New York*: Halsted Press.
- Mohtar, N.F., Parera, C., Quek, S.Y. 2010. Optimization Of Extraction Gelatin From Hoki (*Macruronus novaezandlae*) Skin and Measurement Gel Strength and SDS-PAGE. *Food chemistry*. Vol. **122**, 307-313.

- Munyonga. 2003. Extraction and Physico-Chemical Characterisation of Nile Perch (*Lates niloticus*) Skin and Bone Gelatin. *Food Hydrocolloids* **18** (2004) 581–592.
- Niu, L., Zhou, X., Yuan, C., Bai, Y., Lai, K., Yang, F. 2013. Characterization of Tilapia (*Oreochromis niloticus*) Skin Gelatin Extracted With Alkaline and Different Acid Pretreatment. *Food Hydrocolloids*. **33**:336-341
- Nurdjannah, N., Hidayat, T. 1994. Pengaruh Cara dan Waktu Distilasi terhadap Mutu Minyak Bunga Cengkeh, *Balai Penelitian Tanaman Rempah dan Obat*, **9**(2).
- Nurdjannah, N. 2004. Diversifikasi Tanaman Cengkeh, *J. Perspektif*, 3(2), Hal. 61–70. **275**
- Nurjannah, D.A., Retnowati, R., Juswono, U.P. 2013. Aktivitas Antioksidan dari Minyak Bunga Cengkeh (*Syzygium aromaticum*) Kering Berdasarkan Aktivitas Antiradikal yang Ditentukan Menggunakan ESR, *Kimia Student Journal*, Universitas Brawijaya, Malang.
- Onwulata, C.I., Smith, P.W., Craig, J.C., Holsinger, W.V. 1994. Physical Properties of Encapsulated Spray Dried Milk Fat. *J of Food Science*. **59**(2): 316-320.
- Pauletti, M. S., Amestoy, P. 1999. Butter Microenkapsulation as Affected by composition of wall Material and Fat. *J. of Food Sci.* **64**(2):279-282
- Permadi, Arief. 2003. Analisis Penegmbangan Industri Pengolahan Mikroenkapsulasi Minyak Ikan Bogor. Institut Pertanian Bogor.
- Peranginangin, R. 2006. *Menghasilkan Rupiah Melalui Gelatin*. Didalam [www.Bisnis.com.html](http://www.Bisnis.com.html).
- Petrovic, G.M., Stojanovic, G.S., Radulovic, N.S. 2010. Encapsulation of inn mon oil in  $\beta$ -cyclodextrin. *J Med Plants Res* **14**: 1382-1390.
- Poppe, J. 1992. Gelatin. Didalam A. Imeson (ed). Thickening and Gelling Agent for Food. *Academic Press*, New York.

- Polin Sutaphanit, Pakamon Chitprasert. 2014. Optimisation of microencapsulation of holy basil essential oil in gelatin by response surface methodology. *Food Chemistry* **150** 313–320.
- Pranoto, Y. 2006. Potensi Gelatin Ikan Untuk Menggantikan Gelatin Mamalia di Bidang Pangan. *Prosiding*. Universitas Gadjah Mada. Yogyakarta.
- Pranoto, Y. Marseno, D.W., Rahmawati, H. 2011. Characteristics of Gelatins Extracted From Fresh and Sun-Dried Seawater Fish Skin in Indonesia. *International Food Research Journal*. **18**: 1335-1341
- Raharja, K. 2004. Manfaat Gelatin Tulang Pari (1). *Kedaulatan Rakyat*, Yogyakarta.
- Reineccius, 2004. The Spray Drying of Food Flavors. *Drying Technology* **22** (6) : 1289-1324.
- Rosenberg, M., Kopelman, I.J., Talmon, Y. 1985. Factor Affecting Retention in Spray Drying Microencapsulation of Volatile Material. *Journal of Agriculture Food Chemistry* **38**:1288-1294.
- Said, M.,I.,J.,C. Likadja., Hatta., M.2011. Pengaruh Waktu Dan Konsentrasi Bahan Curing Terhadap Kuantitas dan Kualitas Gelatin Kulit Kambing yang diproduksi Melalui Proses Asam. *JITP Vol.1 No.2*: 119-128.
- Shoulders, M., Raines, R.T. 2009. Collagen Structure and Stability. *Madison*. Wisconsin.
- Sompie, M, S. E Surtijono, J. H. W Pontoh, N. N. Lontaan, 2015. *The Effects of Acetic Acid Concentration and Extraction Temperature on Physical and Chemical Properties of Pigskin Gelatin*. *Procedia Food Science* 3 ( 2015 ) 383 – 388.
- Soottitantawat A, Yoshii H, Futura T, Ohkawara M, Linko P. 2003. Microencapsulation by spray drying: influence of emulsion size on the retention of volatile compounds. *J Food Sci* **68**: 2256-2262.
- Standar Nasional Indonesia (SNI) 06.3735. 1995. *Mutu dan Cara Uji Gelatin*. Dewan Standarnisasi Nasional. Jakarta.

- Sudiby, A., Djubaedah, E., Suprpto., Nasyirudin (1995). Studi Mikroenkapsulasi Oleoresin Lada Menggunakan Pengereng Semprot. *Warta IHP* **12**: 85-90.
- Sugindro, Mardiyati, E., Djajadisastra, J. 2008. Pembuatan dan Mikroenkapsulasi Ekstrak Etanol Biji Jintan Hitam (*Nigella sativa linn.*). *Majalah Ilmu Kefarmasian* **5** (2): 57-66
- Sukandar, D., N. Radiastuti, dan Khoeriyah, 2010, Karakterisasi Senyawa Aktif Anti Bakteri Minyak Atsiri Bunga Cengkeh (*Syzygium aromaticum L.*), *JKTI*, **12**(1).
- Suryaningrum, T.D. dan B. S. D. Utomo. 2002. *Petunjuk Analisis Rumput Laut dan Hasil Olahannya*. Pusat Riset Pengolahan Produk dan Sosial Ekonomi Perikanan dan Kelautan. Jakarta.
- Tabarestani, H.S., Maghsoudlou, Y., Motamedzadegan, A. and Mahoonak, A.R.S. 2010. Optimization of Physic-Chemical Properties of Gelatin Extracted From Fish Skin of Rainbow Trout (*Onchorhynchus mykiss*). *Bioresource Technology*. **101**: 6207-6214.
- Tidbury, G.E., 1949. The Clove Tree. *Crosby Lock Wood and Son Ltd.*, London.
- Ujwala Shinde And Mangal Nagarsenker. 2011. *Microencapsulation of Eugenol by Gelatin-Sodium Alginate Complex Coacervation*. *Indian Journal of Pharmaceutical Sciences*
- Utama, H. 1997. Gelatin Bikin Heboh. *Jurnal Halal LPPOM-MUI* No. **18**: 10–12.
- Ward, A.G., Courts, A. 1977. The Science and Technology of Gelatin. *Academic Press*, NewYork.
- Wien Gunawan. 2009. Kualitas dan Nilai Minyak Atsiri, Implikasi Pada Pengembangan Turunannya. *Dewan Atsiri Indonesia*.
- Winarno, F.G. 2002. *Kimia Pangan dan Gizi*. Gramedia Pustaka Utama. Jakarta.
- Wiyono, V.S. 2001. Gelatin Halal Gelatin Haram. *Jurnal Halal LPPOM-MUI* No. **36**: 26-37

- Wong, D.W.S. 1989. Mechanism and Theory in Food Chemistry. *An AVI Book, Van Nostrand Reinhold*, New York.
- Velasco, J., Dobarganes, C., Marques-Ruiz, G. 2003. Variables affecting lipid oxidation in dried microencapsulated oils. *Grasas Aceities* **54**: 304-314
- Yuliani, S., Desmawarni, Harimurti, N., Yuliani, S.S. 2007. Pengaruh Laju Alir Umpan dan Suhu Inlet Spray Drying Pada Karakteristik Mikrokapsul Oleoresin Jahe. *Jurnal Pascapanen*, **4**(1):18-26.
- Zhang, S.D., Zhang, Y.R., Zhu, J., Wang, X.L., Yang, K.K., Wang, Y.Z. 2007. Modified Corn Starches with Improved Comprehensive Properties for Preparing Thermoplastic Starch. *Starke* **59**:258-268.
- Zho, P., Regeinsten, J.M, 2005. Effect Of Alkaline and acid pretreatment on Alaska Pollock Skin Gelatin Extraction. *Journal of food science*. Vol. **70** (6) C392-C396.