

DAFTAR PUSTAKA

- Abuharfeel, N.M, dan Abuereish, G.M. (1984). Isolation and Characterization of Camel Pepsins. *Comp Biochem Physiol*, 77A:175–82.
- Abustam, E., H.M Ali, M.I Said dan J.C. Likadja. (2008). Sifat fisik gelatin kulit kaki ayam melalui proses denaturasi asam, alkali dan enzim. Seminar Nasional Teknologi Peternakan dan Veteriner, 724-729.
- Anonim¹. (2011). Autolisis. <https://id.wikipedia.org/wiki/Autolisis>. [23 Maret 2017].
- Anson, M. L. (1938). The estimation of pepsin, trypsin, papain, and the cathepsin with hemoglobin. *Journal of General Physiology*, 22:79-89.
- AOAC. (2000). *Official Methods of Analysis. Association of Official. Analytical Chemists (AOAC)*. Benjamin Franklin Station, Washington.
- Arunchalam, K., & Haard, N. F. (1984). Isolation and Characterization of Pepsin from Polar Cod (*Boreogadus saida*). *Comparative Biochemistry and Physiology*, 80B: 467–473.
- Astawan, M., Hariyadi, P., Mulyani, A. (2002). Analisis Sifat Reologi Gelatin dari Kulit Ikan cucut. *Jurnal Teknologi dan Industri Pangan*.
- Bailey, A. dan Light, N. (1989). *Molecular and Fibre Structure of Collagen*. 25-35. New York, USA: Elsevier Applied Science.
- Balti, R., Jridi, M., Sila, A., Souissi, N., Arroume, N.N. Guillochon, D., Nasri, M. (2011). Extraction and Functional Properties of Gelatin from the Skin of Cuttlefish (*Sepia officinalis*) Using Smooth Hound Crude Acid Protease-Aided Process. *Journal of Food Hydrocolloids* 25: 943-950.
- Benito, M.J., Rodriguez, M., Nunes, F., Asensio, M.A., Bermudez, M.E. dan Cordoba, J.J. (2002). Purification and Characterization of an Extracellular Protease from *Penicillium chrysogenum* Pg222 Active Against Mea Protein. *Journal Applied and Environmental Microbiology* 68 (7): 3532-3536.
- Ben Khaled, H., Ghorbel-bellaaj, O., Hmidet, N., Jellouli, K., El-Hadj Ali, N., Ghorbel, S. (2011). A Novel Aspartic Protease from The Viscera of Sardinelle (*Sardinella aurit*): Purification and Characterization. *Journal of Food Chemistry* 128: 847-853.
- Boran, G., & Regenstein, J. M. (2009). Optimization of Gelatin Extraction from Silver Carp Skin. *Journal of Food Science* 74: E443-E441.

- Bougatef, A., Balti, R., Zaied, S.B., Souissi, N., Nasri, M. (2008). Pepsinogen and Pepsin from the Stomach of Smooth hound (*Mustelus mustelus*): Purification, Characterization, and Amino Acid Terminal Sequences. *Journal of Food Chemistry*, 107: 777-784.
- Bradford, MM (1976). A Rapid and Sensitive Method for the Quantitation of Microgram Quantities of Protein Utilizing the Principle of Protein-dye binding. *Analytical Biochemistry*, 72: 48-254.
- BSI (British Standards Institution) (1975). *Methods for Sampling and Testing Gelatin (Physical and Chemical Methods)*. London: BSI.
- Castillo-Yanez, F. J., Pacheco-Aguilar, R., Garcia-Carreno, F. L., dan Navarrete-Del Toro, M.d.L.A. (2004). Characterization of Acidic Proteolytic Enzyme from Monterey Sardine (*Sardinops sagax caerulea*) Viscera. *Journal of Food Chemistry* 85: 343-350.
- Chow RB, Kassell B. (1986). Bovine Pepsinogen and Pepsin: Isolation, Purification, and Some Properties of the Pepsinogen. *Journal of Biological Chemistry* 243:1718-24.
- Cockrill, W. (1974). *The Husbandry and Health of the Domestic Buffalo: The Buffalo of Indonesia*. Food and Agriculture Organization of the United Nations. Rome.
- Damrongsakkul, S., Ratanathamman, K., Komolpis, K., dan Tanthapanichakoon, W. (2008). Enzymatic Hydrolysis of Rawhide Using Papain and Neutrase. *Journal of Industrial and Engineering Chemistry* 14 (2): 202-206.
- De Man, J.M. (1997). *Kimia Makanan*. ITB Press, Bandung.
- Desrosier, N.W. (1988). *Teknologi Pengawetan Pangan*. Penerjemah Muchji M. UI Press, Jakarta.
- Djojowidagdo, S. (1988). Kulit Kerbau Lumpur Jantan, Sifat-sifat dan Karakteristiknya Sebagai Bahan Wayang Kulit Purwa. Disertasi, Universitas Gadjah Mada Yogyakarta.
- El-Beltagy, A. E., El-Adawy, T. A., Rahma, E. H., dan El-Bedawey, A. A. (2004). Purification and Characterisation of an Acidic Protease from the Viscera of Bolti Fish (*Tilapia nilotica*). *Journal of Food Chemistry* 86: 33-39.
- Fox, P.F., Whitaker, J.R., O'Leary, P.A. (1977). Isolation and Characterization of Sheep Pepsin. *Journal of Biochemical* 161: 389-398.
- Fox, P.F. (1991). *Food Enzymology. Elsevier Applied Science*. New York.
- Gildberg, A. (1988). Aspartic Protease in Fishes and Aquatic Invertebrates.

Comprehensive Biochemistry And Physiology Part B. 91: 425-435.

Gildberg, A., dan Raa, J. (1983). Purification and Characterization of Pepsins from The Arctic Fish Capelin (*Mallotus villosus*). *Comprehensive Biochemistry and Physiology Part A*. 75: 337-342.

Girindra, A. (1990). *Biokimia I*. Penerbit Gramedia Pustaka Utama, Jakarta.

GME. (2008). Gelatin Manufacturers of Europe. <http://www.gelatine.org/en/gelatine/overview/127.htm>. [10 Maret 2017].

Gelatin Manufactures Institute of America (GMIA). 2012. Gelatin Handbook. Gelatin Manufactures Institute of America. http://www.gelatin-gmia.com/images/GMIA_Gelatin_Manual_2012.pdf. [10 Maret 2017].

Green, A.A., dan Hughes, W.L. (1955). Protein Fractionation on the Basis of Solubility in Aqueous Solutions of Salts and Organic Solvents. *Methods Enzymol.*, 1, 67-90.

Hames, B.D dan Hooper, N.M. (2000). *Biochemistry: The Instant Notes*. Ed. Ke-2. Hongkong: Springer Verlag, 83-84.

Harper, H.A. (1971). *Review of Physiological Chemistry*. Marujen Company, Jepang.

Hart, Harold. (2003). *Kimia Organik : Suatu Kuliah Singkat*. Jakarta: Erlangga.

Haug, I.J., Draget, K.I., (2011). *Gelatin*. In: Philips, G.O. William, P.A. (Eds.), Handbook of Food Proteins. Woodhead Publishing, Cambridge,UK, pp. 92-115.

Hinterwaldner, R. (1997). *Raw Material in Ward, AG dan Courts, A. (Ed.). The Science and Technology of Gelatin*. New York: Academic Press.

Ismeri., R. Swandaru dan S. Rihi. (2009). Optimalisasi mutu dan kualitas gelatin ikan dengan menggunakan enzim transglutaminase sebagai pendorong produksi gelatin dalam negeri. Program Kreativitas Mahasiswa Institut Pertanian Bogor, Bogor.

Isselnane, S., Haroun, S.B., Nouani, A., Zennia, S.S.A., Bouazza, B., Yabrir, B., dan Mati, A. (2016). Molecular Characterization of Crude Enzymatic Extract from Algerian Camel Abomasum (*Camelus dromedarius*). *Emirates Journal of Food and Agriculture* 28 (3): 217-223.

Jamilah, B. dan Harvinder, K.G. (2002). Properties of Gelatins from Skins of Fish-Black Tilapia (*Oreochromis mossambicus*) and red tilapia (*Oreochromis nilotica*). *Journal of Food Chemistry* 77: 81-84.

- Jongjareonrak, A., Benjakul, S., Visessanguan, W., Bagai, T., dan Tanaka, M. (2005). Isolation and Characterisation of Acid and Pepsin-Solubilised Collagens from The Skin of Brownstripe Red Snapper (*Lutjanus vitta*). *Food Chemistry* 93: 475-484.
- Jridi, M., Nasri, R., Lassoued, I., Souissi, N., Mbarek, A., Barkia. (2013). Chemical and Biophysical Properties of Gelatins Extracted from Alkali-Pretreated Skin of Cuttlefish (*Spia officinalis*) Using Pepsin. *Food Research International* 55: 1680-1687.
- Judoamidjojo. (1974). *Dasar Teknologi dan Kimia Kulit*. Departemen Teknologi Hasil Pertanian, FATEMETA-IPB, Bogor.
- Judoamidjojo. (2009). *Topografis Kulit*. Terjemahan Edidi Kedua. Erlangga. Jakarta.
- Junianto, K., Haetami dan I. Maulina. (2006). Produksi Kulit Ikan dan Pemanfaatannya Sebagai Bahan Dasar Pembuatan Kerupuk. Laporan Penelitian Hibah Bersaing IV Tahun I. Fakultas Perikanan dan Ilmu Kelautan Universitas Hasanuddin, Makasar.
- Kageyama T, Takahashi K. (1986). The Complete Amino Acid Sequence of Monkey Progastricsin. *Journal of Biology Chemical* 261:4406-19.
- Karim, A. A., & Bhat, R. (2009). Fish gelatin: properties, challenges, and prospects as an alternative to mammalian gelatins. *Journal Food Hydrocolloids* 23(3): 563-576.
- Ktari, N., Bkhairia, I., Jridi, M., Hamza, I., dan Riadh, B.S. (2014). Digestive Acid Protease From Zebra Blenny (*Salaria basilisca*): Characteristics and Application in Gelatin Extraction. *Journal of Food Research International* 57: 214-224.
- Kurniadi, H. (2009). Kualitas Gelatin Tipe A dengan Bahan Baku Tulang Paha Ayam Broiler pada Lama Ekstraksi yang Berbeda. Skripsi. Departemen Ilmu Produksi dan Teknologi Peternakan, Fakultas Peternakan, IPB, Bogor.
- Laemmli, U. K. (1970). Cleavage of structural proteins during the assembly of the head of bacteriophage T4. *Nature* 227(5259): 680-685.
- Lassoued, I., Jridi, M., Nasri, R., Dammak, A., Hajji, M., Nasri, M., Barkia, A. (2014). Characteristic and Functional Properties of Gelatin from Thornback Ray Skin Obtained by Pepsin-Aided Process in Comparison with Commercial Halal Bovine Gelatin. *Journal of Food Hydrocolloids* 41: 309-318.
- Megiandari, A. (2009). Isolasi dan Pencirian Enzim Protease Keratinolitik dari Usus Biawak Air [Tesis] Jurusan Kimia FMIPA. IPB. Bogor.

- Mohtar, N. F., Perera, C., dan Quek, S.Y. (2011). Optimisation of Gelatine Extraction from Hoki (*Macrurus novaezelandiae*) Skin and Measurement of Gel Strength and SDS-PAGE. *Food Chemistry* 122: 307-313.
- Mulyani, S., Setyabudi, F.M.C.S., Pranoto, Y., Santoso, U. (2016). The Effect of Pretreatment Using Hydrochloric Acid on the Characteristic of Buffalo Hide Gelatin. *Journal of the Indonesian Tropical Animal Agriculture* 42(1): 14-22.
- Muyonga, J.H., Cole, C.G.B., Duodu, K.G. (2004). Extraction and Physico-chemical Characterisation of Nile Perch (*Lates niloticus*) Skin and Bone Gelatin. *Food Hydrocolloids* 18: 581-592.
- Nafaji, M.F., dan Deobagkar, D. (2005). Potential Application of Protease Isolated from *Pseudomonas aeruginosa* PD100. *Journal of Biotechnology* 8 (2): 193-203.
- Nalinanon, S., Benjakul, S., Visessanguan, W., Kishimura, H. (2008). Improvement of Gelatin Extraction from Bigeye snapper Skin using Pepsin-aided Process in Combination with Protease Inhibitor. *Journal of Food Hydrocolloids* 22: 615-622.
- Niu, Lihong, Xin Zhou, Chuqiao Yuan, Yun Bai, Keqiang Lai, Fuxin Yang, dan Yiqun Huang. (2013). Characterization of Tilapia (*Oreochromis niloticus*) Skin Gelatin Extracted with Alkaline and Different Acid Pretreatments. *Food Hydrocolloids* 33 : 336 – 341.
- Ockerman, H.W., dan Hansen, C.L. (2000). *Animal by Product Processing and Utilization*, CRC Press, USA.
- Palmer, T. (1991). *Understanding Enzymes. Third Edition*. Ellis Haward. New York.
- Pearl, G.G. (2004). *Animal by-product: Biological and Industrial Products*. In: Encyclopedia of Animal Science, Pond, W.G. and A.W. Alan (Eds). Marcel Dekker, New York, pp:19-21.
- Poppe, J. (1992). *Gelatin*. In: Imeson, A (ed.). Thickening and Gelling Agents for Food. Blackie Academic and Profesional. London.
- Pitpreecha, S., & Damrongsakkul, S. (2006). Hydrolysis of Raw Hide Using Proteolytic Enzyme Extracted from Papaya Latex. *Korean Journal of Chemical Engineering* 23(6): 972-976.
- Puspawati, N.M., Simpen, I.N., Suciptawati, N.L.U. (2014). Karakteristik Sifat Fisiko Kimia Gelatin Halal yang Diekstrak dari Kulit Ayam Broiler melalui variasi Suhu. *Jurnal Kimia* 8: 127-136.
- Reed, G. (1975). *Enzymes in Food Processing. Second Edition*. Academic Press, London.

- Rosemary, A.O. (1999). Preparation of Gelatine from Fish Skin by an Enzyme Aided Process. Tesis. Departement of Food Science and Agricultural Chemistry. Macdonald Campus McGill University, Montreal, Canada.
- Said, M.,I.,J.,C. Likadja., Hatta., M. (2001) Pengaruh Waktu dan Konsentrasi Bahan Curing Terhadapap Kuantitas dan Kualitas Gelatin Kulit Kambing yang Diproduksi Melalui Proses Asam. *JITP Vol.1 No.2:119-128*.
- Schreiber, R., Gareis, H. (2007). *Gelatine Handbook Theory and Industry Practice*. Wiley-VHC Verlag GmbH & Co, Weinheim.
- See, S.F., Hong, P.K., Ng, K.L., Aida, W.M., Babji, A.S. (2010). *International Food Research Journal*, 17: 809-816.
- Sila, A., O.M. Alvarez, A. Haddar, M.C. Gomez-Guillen, M. Nasri, M.P. Montero, dan A. Bougatef. (2015). Recovery, Viscoelastic, and Functional Properties of Barbel Skin Gelatin : Investiatiion of Anti-DPP-IV and Anti-Prolyl Endopeptidase Activities of Generated Gelatin Polypeptides. *Food Chemistry* 108 : 478-486.
- SNI 06-3735. (1995). Mutu dan Cara Uji Gelatin. Badan Standardisasi Nasional, Jakarta. p. 1–2.
- Songchotikunpan, P., Tattiyakul, J. dan Supaphol, P. (2007). Extraction and Electrospinning of Gelatin From Fish Skin. *Journal of Biological Macromolecules* 42(2): 247-255.
- Stainsby, G. (1977). *The Physical Chemistry of Gelatin in Solution*. The Science and Technology of Gelatin. New York: Academic Press.
- Tala, Selfin. (2015). Kualitas Fisikokimia Gelatin Hasil Hidrolisis Tulang Sapi dan Tulang Ayam Menggunakan Enzim, Asam, dan Basa dan Pengaruh Pasca Pemberian pada Mencit (*Mus musculus*). [Tesis]. Program Studi Ilmu dan Teknologi Peternakan. Universitas Hasanuddin. Makasar.
- Tanji, M., Kageyama, T., & Takahashi, K. (1988). Tuna pepsinogens and Pepsins. Purification, Characterization, and Amino-terminal Sequences. *European Journal of Biochemistry* 177: 251–259.
- Veis, A. (1964). *The Macromolecular Chemistry of Gelatin*. New York: Academic Press.
- Wangtueai, S., & Noomhorm, A. (2009). Processing Optimization and Characterization of Gelatin from Lizardfish (*Saurida spp.*) Scales. *LWT Food Science and Technology* 42: 825-834.
- Ward, AG. Dan Courts, A. (1977). *The Science and Technology of Gelatin*. Academic Press, New York.
- Whitaker, J.R. (1994). Principles of Enzymology for the Food Science. Ed ke-2. New York: Marcel Dekker Inc.

- Winarno FG. (1997). *Kimia Pangan dan Gizi*. Gramedia Pustaka Utama, Jakarta.
- Wuryanti. (2004). Isolasi dan Penentuan Aktivitas Spesifik Enzim Bromelin dari Buah Nanas (*Ananas comosus L.*) Artikel: JKSA, vol. VII No.3: 83-87.
- Yang, H., dan Z. Shu. (2014). The Extraction of Collagen Protein from Pig Skin. *J. Chem. Pharm. Res.* 6: 683-687.
- Zhou, P., & Regenstein, J. M. (2005). Effects of Alkaline and Acid Pretreatments on Alaska Pollock Skin Gelatin Extraction. *Journal of Food Science*, 70, C392-C396.