

## DAFTAR PUSTAKA

- Abdolghafour, B., & Saghir, A. (2014). Effect of incoMSMratation of whey protein powder on the quality characteristic of buffalo meat emulsion sausage. *Journal of Buffalo Science*, 4(4), 23–45. 10.6000/1927-520X.2014.03.02.3.
- Aberle ED, JC Forrest, HB Hedrick, MD Judge, and RA Merkel. 2001. *Principles of Meat Science*. Freeman and Company. San Fransisco.
- Aguilera, J. M., Kinsella, J. E., & Liboff, M. (1993). Structureeecompressive stress relationships in mixed dairy gels. *Food Structure*, 12, 469e474.
- Alejandre, M., Poyato, C., Ansorena, D., & Astiasarán, I. (2016). Linseed oil gelled emulsion: A successful fat replacer in dry fermented sausages. *Meat Science*, 121, 107–113. <https://doi.org/10.1016/j.meatsci.2016.05.010>.
- Andarwulan, N., Adawiyah, D. R., Wulandari, N., Hariyadi, P., Triana, R. N., Affandi, A. R., Nur, R. C., Tjahjadi, S., & Ellen, M. F. (2014). Aplikasi Margarin *Red Palm Oil* pada Produk Pound Cake dan Roti Manis (The Application of Red Palm Oil Margarine in Pound Cake and Sweet Bread Products) Efficacy of Non-Branded Cooking Oil Fortified with Carotene from MSM on Blood Retinol and IgG of. *Prosiding Seminar Hasil-Hasil PPM IPB*, 1(5), 192–206.
- Azlan, A., Prasad, K., Khoo, H., Abdul-Aziz, N., A, M., Ismail, A., & Amom, Z. (2010). Comparison of fatty acids, vitamin E, and physicochem ical properties of Canarium odonto phyllum Miq. (dabai), olive, and palm oilS. *Journal of Food Composition and Analysis*, 23, 772–776. <https://doi.org/10.1016/j.jfca.2010.03.026>.
- Baibhav, J., Singh, G., Rana, A. C., Saini, S., dan Singla, V., 2011, Emulgel: A Comprehensive Review on The Recent Advance in Topical Drug Delivery, *International Research Jurnal of Pharmacy*, 2, 60-70.
- Berghout, J. A. M., Boom, R. M., & Goot, A. J. (2015). Understanding the differences in gelling properties between lupin protein isolate and soy protein isolate. *Food Hydrocolloids*, 43, 465e472
- Brookfield (2014) *More Solutions to Sticky Problems, A Guide to Getting More From Your Brookfield Viscometer*. Brookfield Engineering Labs, Inc
- BSN. 2015. SNI Sosis Daging 3820:2015. *Standar Nasional Indonesia*, 39.
- Camou, J. P., & Sebranek, J. G. (1991). Gelation characteristics of muscle proteins from pale, soft, exudative (PSE) pork. *Meat Science*, 30(3), 207–220.
- Chen, H., Mao, L., Hou, Z., Yuan, F., & Gao, Y. (2020). Roles of additional emulsifiers in the

structures of emulsion gels and stability of vitamin E. *Food Hydrocolloids*, 99, Article 105372.

- Coorey, R., Tjoe, A., & Jayasena, V. (2014). Gelling properties of chia seed and flour. *Journal of Food Science*, 79(5), 859–866.
- Danaei, M., Dehghankhold, M., Ataei, S., Hasanzadeh Davarani, F., Javanmard, R., Dokhani, A., Khorasani, S. and Mozafari, M. R. (2018). Impact of particle size and polydispersity index on the clinical applications of lipidic nanocarrier systems. *Pharmaceutics*, 10.
- Dashti, H., Yew, L. Z., & Lou, X. (2015). Recent advances in gas hydrate-based CO<sub>2</sub> capture. *Journal of Natural Gas Science and Engineering*, 23, 195–207. <https://doi.org/10.1016/j.jngse.2015.01.033>.
- De Kruif CG, Weinbreck F, De Vries R: Complex coacervation of proteins and anionic polysaccharides. *Curr Opin Colloid Interface Sci* 2004, 9:340–349, <https://doi.org/10.1016/j.cocis.2004.09.006>
- Dickinson, E. (2008). Interfacial structure and stability of food emulsions as affected by protein-polysaccharide interactions. *Soft Matter*, 4(5), 932–942. <https://doi.org/10.1039/b718319d>
- Dickinson, E. Emulsion gels: The structuring of soft solids with protein-stabilized oil droplets. *Food Hydrocoll.* 2012, 28, 224–241
- Dickinson, E. (2018). Hydrocolloids acting as emulsifying agents—How do they do it? *Food Hydrocolloids*, 78, 2–14.
- Djajadisastra, J., Dzuhro, Z. S., & Sutriyo, S. (2014). Pengaruh Natrium Hialuronat terhadap Penetrasi Kofein Sebagai Antiselulit dalam Sediaan Hidrogel, Hidroalkoholik Gel, dan Gel Emulsi. *Pharmaceutical Sciences and Research*, 1(1), 46–63. <https://doi.org/10.7454/psr.v1i1.3298>.
- D.J. McClements Comments on viscosity enhancement and depletion flocculation by polysaccharides. *Food Hydrocolloids*, 14 (2000), pp. 173-177
- dos Santos, M., Munekata, P. E. S., Pateiro, M., Magalhaes, ~ G. C., Barretto, A. C. S., Lorenzo, J. M., & Pollonio, M. A. R. (2020). Pork skin-based emulsion gels as animal fat replacers in hot-dog style sausages. *LWT – Food Science and Technology*, 132, Article 109845.
- Dwiyanti, H., Riyadi, H., Rimbawan, Damayanthi, E., & Sulaeman, A. 2014. Penambahan CPO dan MSM sebagai Sumber Provitamin A terhadap Retensi Karoten, Sifat Fisik, dan Penerimaan Gula Kelapa. *Jurnal Teknologi Industri Pertanian*, 24 (1), pp. 28-33

- E. Dickinson, S.T. Hong Influence of water-soluble non-ionic emulsifier on the rheology of heat-set protein stabilized emulsion gels *Journal of Agricultural and Food Chemistry*, 43 (1995), pp. 2560-2566
- G.O. Phillips, P.A. Williams, *Handbook of Hydrocolloids*, 2nd edition Boca Raton, New York, 2009 807–825
- Garg A, Aggarwal D, Garg S, Singla AK. 2002. *Spreading of Semisolid Formulation: An Update*. *Pharmaceutical Technology*. 9(2):84-105.
- Gavilighi, H. A., Meyer, A. S., & Mikkelsen, J. D. (2013). Tragacanth gum: Functionality and prebiotic potential. *Agro Food Industry Hi Tech*, 24(2), 46–48.
- Guido, S., Van, A. G. A., Cohen, S. M. A., *et al.* (2010). Effect of droplet-matrix interactions on large deformation properties of emulsion-filled gels. *Journal of Texture Studies*, 38(4), 511–535.
- Guzey, D., & McClements, D. J. (2006). Formation, stability and properties of multilayer emulsions for application in the food industry. *Advances in Colloid and Interface Science*, 128, 227–248.
- Haak, L., Raes, K., & Smet, S. D. (2010). Effect of plant phenolics, tocopherol and ascorbic acid on oxidative stability of pork patties. *Journal of the Science of Food & Agriculture*, 89(8), 1360–1365.
- Hansted, J. G., Wejse, P. L., Bertelsen, H., & Otzen, D. E. (2011). Effect of protein–surfactant interactions on aggregation of  $\beta$ -lactoglobulin. *Biochimica et Biophysica Acta (BBA)-Proteins and Proteomics*, 1814(5), 713–723. <https://doi.org/10.1016/j.bbapap.2011.03.011>.
- Hasibuan, H., & R. Meilano. (2018). Penggunaan Red Palm Oil dalam Pembuatan Sambal Cabai Merah Tumis. *Jurnal Teknologi Pertanian*, 19(2), 95–106.
- Hong, I. K., Kim, S. I., & Lee, S. B. (2018). Effects of HLB value on oil-in-water emulsions: Droplet size, rheological behavior, zeta-potential, and creaming index. *Journal of Industrial and Engineering Chemistry*, 67, 123–131. <https://doi.org/10.1016/j.jiec.2018.06.022>
- Hou., C., Wu, S., Xia, Y., Phillips, G. O., & Cui, S. W. (2017). A novel emulsifier prepared from Acacia seyal polysaccharide through Maillard reaction with casein peptides. *Food Hydrocolloids*, 69, 236–241. <https://doi.org/10.1016/j.foodhyd.2017.01.038>.
- Hui, Y. H., W. K. Nip, R. Rogers, & O. A. Young. 2001. *Meat Science and Applications*. New York (US): Marcel Dekker Inc.

Iskandar, Y., 2004. Penentuan Kadar Asam Linoleat pada Tempe secara Kromatografi Gas.

*Abstrak*. Universitas Padjajaran. Bandung.

Jimenez-Colmenero, F.; Salcedo-Sandoval, L.; Bou, R.; Cofrades, S.; Herrero, A.M.; Ruiz-Capillas, C. Novel applications of oil-structuring methods as a strategy to improve the fat content of meat products. *Trends Food Sci. Technol.* 2015, 44, 177–188.

Kang, Zhuan Li., Chen, Fu-sheng., Ma, Han-ju., 2016. Effect of Pre-emulsified Soy Oil with Soy Protein Isolate in Frankfurters: A Physical chemical and Raman Spectroscopy Study. *LWT - Food Science and Technology* 74: 465- 471.

Kim, J.T., Netravali, A.N., 2010a. Effect of protein content in soy protein resins on their interfacial shear strength with ramie fibers. *J. Adhes. Sci. Technol.* 24, 203–215. <https://doi.org/10.1163/016942409x12538812532159>.

Kramlich, R. V. 1971. Sausage Product. San Fransisco: W. H. Freeman and Company.

Kramlich, R. V. 1973. Sausage Product. *2nd Edition*. San Fransisco (US): W.H. Freeman and Company.

Lin, D., Kelly, A. L., & Miao, S. (2020). Preparation, structure-property relationships and applications of different emulsion gels: Bulk emulsion gels, emulsion gel particles, and fluid emulsion gels. *Trends in Food Science & Technology*, 102, 123–137. <https://doi.org/10.1016/j.tifs.2020.05.024>

Lin, D., Kelly, A. L., & Miao, S. (2021). The role of mixing sequence in structuring O/W emulsions and emulsion gels produced by electrostatic protein-polysaccharide interactions between soy protein isolate-coated droplets and alginate molecules. *Food Hydrocolloids*, 113(December 2020), 106537. <https://doi.org/10.1016/j.foodhyd.2020.106537>.

Liu, W., Wang, J., McClements, D. J., and Zou, L. (2018). Encapsulation of  $\beta$ carotene-loaded oil droplets in caseinate/alginate microparticles: Enhancement of carotenoid stability and bioaccessibility. *Journal of Functional Foods*, 40, 527–535.

Liu, F., Wang, D., Xu, H., Sun, C., & Gao, Y. (2016). Physicochemical properties of  $\beta$ -carotene emulsions stabilized by chlorogenic acid lactoferrin-glucose/Polydextrose conjugates. *Food Chemistry*, 196, 338–346.

Li, X. M., Meng, R., Xu, B. C., & Zhang, B. (2021). Investigation of the fabrication, characterization, protective effect and digestive mechanism of a novel Pickering emulsion gels. *Food Hydrocolloids*, 117(February), 106708. <https://doi.org/10.1016/j.foodhyd.2021.106708>

Loppies, J. E., Ristanti, E. Y., Ramlah, S., & S, A. L. 2016. Characteristics of Oleogel

Prepared from Vegetable Oil using Beeswax and Cocoa Butter as Oleogelator. *Jurnal*

*Industri Hasil Perkebunan*, pp. 33–43.

- Marliyati, S.A., Rimbawan, & Harianti, R. 2021. Physicochemical and Functional Characteristics of Red Palm Oil. *The Journal of Indonesian Community Nutrition*, Vol. 10 No. 1.
- Melwita, E., Fatmawati, & Oktaviani, S. (2014). *Ekstraksi Minyak Biji Kapuk dengan Metode Ekstraksi Soxhlet*. *Jurnal Teknik Kimia*, 20(192), 20–27.
- Mezzomo, N., & Ferreira, S. R. S. (2016). Carotenoids functionality, sources, and processing by supercritical technology: A review. *Journal of Chemistry*, 2016. <https://doi.org/10.1155/2016/3164312>.
- Mirian, P., Roberto, B., Jos´e, L., & Daniel, F. (2015). Effect of addition of natural antioxidants on the shelf-life of “Chorizo”, a Spanish Dry-cured sausage. *Antioxidants*, 4(1), 42–47.
- Ozturk B, McClements DJ: Progress in natural emulsifiers for utilization in food emulsions. *Curr Opin Food Sci* 2016, 7:1-6.
- Paradiso, V. M., Giarnetti, M., Summo, C., Pasqualone, A., Minervini, F., & Caponio, F. (2015). Production and characterization of emulsion filled gels based on inulin and extra virgin olive oil. *Food Hydrocolloids*, 45, 30–40
- Pasaribu, Dian Tantri. 2009. Pengaruh Taraf Penambahan Tepung Terigu sebagai Bahan Pengikat Terhadap Kualitas Sosis Daging Ayam. *Skripsi*. Fakultas Pertanian. Universitas Sumatra Utara.
- Picone, C. S. F., Bueno, A. C., & Michelon, M. (2017). Development of a probiotic delivery system based on gelation of water-in-oil emulsions. *Food Science and Technology*, 86, 62–68.
- Piorkowski DT dan McClements DJ. 2014. Beverage emulsions: recent developments in formulation, production and applications. *Food Hyd* 42:5-41.
- Praptiningsih, Y., Tamrini, dan A. Rahma. 2013. Karakteristik es krim susu kacang tunggak (*Vigna unguiculata* L.) dengan variasi jumlah karagenan dan whipping cream. *J. Agroteknologi*. 7(2): 150-156.
- Prijambodo, O. M., Trsinawati, C. Y., & Sutedja, A. M. (2017). Karakteristik Fisikokimia Dan Organoleptik Sosis Ayam Dengan Proporsi Kacang Merah Kukus Dan Minyak Kelapa Sawit. *Jurnal Teknologi Pangan Dan Gizi*, 13(1), 6–11. <http://journal.wima.ac.id/index.php/JTPG/article/view/1494>.
- Potter, N.N., Hotchkiss, J.H. (1995). Fats, Oils, and Related Products. In: Food Science. *Food Science Text Series*. Springer, Boston, MA.

- Purnama, K. O., Setyaningsih, D., Hambali, E., & Taniwiryono, D. (2020). Processing, Characteristics, and Potential Application of Red Palm Oil – A review. *International Journal of Oil Palm*, 3(2), 40–55. <https://doi.org/10.35876/ijop.v3i2.47>.
- Purnomo, H. 1992. Dasar – Dasar Teknologi Hasil Ternak. Fakultas Peternakan Universitas Brawijaya, Malang.
- Putra, D.A.P., T.W. Agustini, dan I. Wijayanti. 2015. Pengaruh penambahan karagenan sebagai stabilizer terhadap karakteristik otak-otak ikan kurisi (*Nemipterus nematophorus*). *J. Pengolahan dan Bioteknologi Hasil Perikanan*. 4(2): 1-10.
- Renkema, J. M. S., Gruppen, H., & van Vliet, T. (2002). Influence of pH and ionic strength on heat-induced formation and rheological properties of soy protein gels in relation to denaturation and their protein compositions. *Journal of Agricultural and Food Chemistry*, 50(21), 6064–6071. <https://doi.org/10.1021/jf020061b>.
- Ren, Z. Y., Li, Z. M., Chen, Z. Z., Zhang, Y. Y., Lin, X. R., Weng, W. Y., *et al.* (2021). Characteristics and application of fish oil-in-water pickering emulsions structured with tea water-insoluble proteins/ $\kappa$ -carrageenan complexes. *Food Hydrocolloids*, 114, Article 106562. <https://doi.org/10.1016/j.foodhyd.2020.106562>.
- Riyadi, AH., TR, Muchtadi., N, Andarwulan., T, H. (2016). Pilot plant study of Red Palm Oil deodorization using moderate temperature. *Agriculture and Agricultural Science Procedia*, 9, 209–216. <https://doi.org/Doi: 10.1016/j.aaspro.2016.02.129>.
- Silva HD, Cerqueira MA, Vicente AA. 2012. Nanoemulsion for food applications: development and characterization. *Food Bioprocess Technol* 5:854-867.
- Soeparno. (2009). Ilmu dan Teknologi Daging. Gadjah Mada University Press. Yogyakarta.
- Sotomayor-Gerding D, Oomah BD, Acevedo F, Morales E, Bustamante M, Shene C, Rubilar M. 2016. High carotenoid bioaccessibility through linseed oil nanoemulsions with enhanced physical and oxidative stability. *Food Chem* 199:463-470.
- Sumarna, D, LS, W., & H. Suprpto. (2017). Studi karakteristik *Red Palm Oil* dari pengolahan konvensional CPO (Crude palm oil). *Jurnal Teknologi Pertanian Universitas Mulawarman*, 12(2), 35–38.
- Sumarna, Deny & Mulawarman, U. (2019). *STUDI METODE PENGOLAHAN MINYAK SAWIT MERAH (Red Palm Oil) DARI*. (August).
- Supeni, G. 2012. Pengaruh formulasi edible film dari karagenan terhadap sifat mekanik dan barrier. *J. Kimia dan Kemasan*. 34(2): 282-286.

- Tang, J., Zhou, J., Zhou, X., Li, D., Wu, Z., Tian, J., ... Liu, D. (2022). Rearranged supramolecular structure of resistant starch with polymorphic microcrystals prepared in high-solid enzymatic system. *Food Hydrocolloids*, 124, Article 107215.
- Tojo E. and Prodo J. 2003. *A simple 1H NMR method for the quantification of carragenans in blends*. *Carbohydrate Polymers* 53: 235-329.
- Wahyuni, S., & Dhora, A. (2019). *SAPONIFIKASI-NETRALISASI ASAM OLEAT MINYAK SAWIT MENJADI FOAMING AGENT RAMAH LINGKUNGAN*. 29(3), 317–326. <https://doi.org/10.24961/j.tek.ind.pert.2019.29.3.3173>.
- Wambui, J. M., Karuri, E. G., & Wanyoike, M. M. M (2017). Application of response surface methodology to study the effects of brisket fat, soy protein isolate and cornstarch on nutritional and textural properties of rabbit sausages. *International Journal of Food Science*, 7(6), 11–19. 10.1155/2017/7670282.
- Warner, R. D. (2017). The eating quality of meat; water-holding capacity and juiciness. *Journal of meat science*, 14(2), 37–45. 10.1016/B978-0-08-100694-8.00014-5.
- Wang YY, Hong CT, Chiu WT, Fang JY. In vitro and in vivo evaluations of topically applied capsaicin and nonivamide from hydrogels. *International journal of pharmaceutics*. 2001 Aug 14;224(1):89-104.
- Wang, Z. F., Xu, T., Wang, C. Y., & Deng, N (2018). Effect of combination of three texture-improving ingredients on textural properties of emulsified sausage-containing salted egg white. *Food Science and Nutrition*. 10.1002/fsn3.684.
- Xu, D., Wang, X., Jiang, J., Yuan, F., & Gao, Y. (2012). Impact of whey protein - Beet pectin conjugation on the physicochemical stability of  $\beta$ -carotene emulsions. *Food Hydrocolloids*, 28(2), 258–266. <https://doi.org/10.1016/j.foodhyd.2012.01.002>
- Y. Lu, L. Mao, H. Zheng, H. Chen, Y. Gao, Characterization of  $\beta$ -carotene loaded emul-sion gels containing denatured and native whey protein, *Food Hydrocoll*. 102 (2020), 105600. <https://doi.org/10.1016/j.foodhyd.2019.105600>.
- Youssef, M., & Barbut, S. (2011). Effects of two types of soy protein isolates, native and preheated whey protein isolates on emulsified meat batters prepared at different protein levels. *Meat science*, 87(1), 54–60. <https://doi.org/10.1016/j.meatsci.2010.09.002>.
- Yum, H. W., J. K. Seo, J. Y. Jeong, G. D. Kim, M. S. Rahman, & H. S. Yang. 2018. The quality improvement of emulsion-type pork sausages formulated by substituting pork back fat with rice bran oil. *Korean Journal of Food Science*. 38(1):123-134.
- Zhao, C. B., Zhou, L. Y., Liu, J. Y., Zhang, Y., Chen, Y., & Wu, F. (2016). Effect of ultrasonic pretreatment on physicochemical characteristics and rheological properties of soy



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**Pengaruh Konsentrasi dan Ratio Protein Kedelai-Karagenan Terhadap Sifat Fisikokimia Emulsi Gel Minyak Sawit Merah pada Sosis Sapi**

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protein/sugar Maillard reaction products. *Journal of Food Science & Technology*, 53, 2342–235.

Zhu, Y., Guo, L., Tang, W., & Yang, Q. (2020). Beneficial effects of Jerusalem artichoke powder and olive oil as animal fat replacers and natural healthy compound sources in Harbin dry sausages. *Poultry Science*, 99, 7147–7158.