



## DAFTAR PUSTAKA

- Alejandro, 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.
- Al-Hatim, R. R., Al-Younis, Z. K., Issa, N. K., & Al-Shawi, S. G. (2021). Application Of Glucono-Delta-Lactone Acid (GDL) Infoods System: A Review. *NVEO-NATURAL VOLATILES & ESSENTIAL OILS Journal| NVEO*, 11459–11474.
- Altschul, A. M., & Wilcke, H. L. (2013). *New protein foods: seed storage proteins* (Vol. 5). Academic press.
- AOAC. (2005). *Official Methods of Analysis* (18th ed.). Association of Official Analytical Chemists International.
- Atashkar, M., Hojjatoleslamy, M., & Sedaghat Boroujeni, L. (2018). The influence of fat substitution with  $\kappa$ -carrageenan, konjac, and tragacanth on the textural properties of low-fat sausage. *Food Science & Nutrition*, 6(4), 1015–1022. <https://doi.org/10.1002/fsn3.620>
- Awadalkareem, A. M., Mustafa, A. I., & El Tinay, A. H. (2008). Protein, mineral content and amino acid profile of sorghum flour as influenced by soybean protein concentrate supplementation. *Pakistan Journal of Nutrition*, 7(3), 475–479.
- Bach, A. C., Ingenbleek, Y., & Frey, A. (1996). The usefulness of dietary medium-chain triglycerides in body weight control: fact or fancy? *Journal of Lipid Research*, 37(4), 708–726. [https://doi.org/10.1016/S0022-2275\(20\)37570-2](https://doi.org/10.1016/S0022-2275(20)37570-2)
- Bakhtra, D. D. A., Rusdi, R., & Mardiah, A. (2017). Penetapan kadar protein dalam telur unggas melalui analisis nitrogen menggunakan metode kjeldahl. *Jurnal Farmasi Higea*, 8(2), 143–150.
- Bascuas, S., Morell, P., Hernando, I., & Quiles, A. (2021). Recent trends in oil structuring using hydrocolloids. *Food Hydrocolloids*, 118, 106612. <https://doi.org/10.1016/j.foodhyd.2021.106612>
- Boylan, J. C., & Swarbrick, J. (2001). *Encyclopedia of pharmaceutical technology*. Marcel Dekker.
- BSN. (2015). *SNI Sosis Daging 3820:2015*. Standar Nasional Indonesia.
- Cengiz, E., & Gokoglu, N. (2007). Effects of fat reduction and fat replacer addition on some quality characteristics of frankfurter-type sausages. *International Journal of Food Science & Technology*, 42(3), 366–372. <https://doi.org/10.1111/j.1365-2621.2006.01357.x>
- Chanamai, R., & McClements, D. J. (2001). Prediction of emulsion color from droplet characteristics: dilute monodisperse oil-in-water emulsions. *Food Hydrocolloids*, 15(1), 83–91.



- Chang, Y.-H., Su, H.-J., & Shiau, S.-Y. (2009). Rheological and textural characteristics of black soybean touhua (soft soybean curd) prepared with glucono- $\delta$ -lactone. *Food Chemistry*, 115(2), 585–591.
- 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, 105372.
- Cofrades, S., Bou, R., Flaiz, L., Garcimartín, A., Benedí, J., Mateos, R., Sánchez-Muniz, F. J., Olivero-David, R., & Jiménez-Colmenero, F. (2017). Bioaccessibility of hydroxytyrosol and n-3 fatty acids as affected by the delivery system: Simple, double and gelled double emulsions. *Journal of Food Science and Technology*, 54, 1785–1793.
- Dagastine, R. R., Prieve, D. C., & White, L. R. (2004). Forces between a rigid probe particle and a liquid interface: III. Extraction of the planar half-space interaction energy E (D). *Journal of Colloid and Interface Science*, 269(1), 84–96.
- David, S., Shani Levi, C., Fahoum, L., Ungar, Y., Meyron-Holtz, E. G., Shpigelman, A., & Lesmes, U. (2018). Revisiting the carrageenan controversy: do we really understand the digestive fate and safety of carrageenan in our foods? *Food & Function*, 9(3), 1344–1352. <https://doi.org/10.1039/C7FO01721A>
- de Souza Paglarini, C., de Figueiredo Furtado, G., Honório, A. R., Mokarzel, L., da Silva Vidal, V. A., Ribeiro, A. P. B., Cunha, R. L., & Pollonio, M. A. R. (2019). Functional emulsion gels as pork back fat replacers in Bologna sausage. *Food Structure*, 20, 100105. <https://doi.org/10.1016/j.foostr.2019.100105>
- de Vries, A., Gomez, Y. L., van der Linden, E., & Scholten, E. (2017). The effect of oil type on network formation by protein aggregates into oleogels. *RSC Advances*, 7(19), 11803–11812.
- Delgado-Pando, G., Cofrades, S., Ruiz-Capillas, C., Solas, M. T., Triki, M., & Jiménez-Colmenero, F. (2011). Low-fat frankfurters formulated with a healthier lipid combination as functional ingredient: Microstructure, lipid oxidation, nitrite content, microbiological changes and biogenic amine formation. *Meat Science*, 89(1), 65–71.
- deMan, J. M. (1992). Chemical and physical properties of fatty acids. *Fatty Acids in Foods and Their Health Implications*, 17–45.
- Devine, C., & Dikeman, M. (2014). *Encyclopedia of meat sciences*. Elsevier.
- Dewi, S. H. C. (2012). Korelasi antara kadar glikogen, asam laktat, pH daging dan susut masak daging domba setelah pengangkutan. *Jurnal AgriSains*, 3(5).
- Dickinson, E. (2012). Emulsion gels: The structuring of soft solids with protein-stabilized oil droplets. *Food Hydrocolloids*, 28(1), 224–241. <https://doi.org/10.1016/j.foodhyd.2011.12.017>
- Endang, W., Patadjai, A. B., & Isamu, K. T. (2018). Studi Perbedaan Persiapan Bahan Baku Surimi Terhadap Kualitas Sensorik dan Kimia Sosis Ikan Bandeng (*Chanos chanos* Forsskal). *J Fish Protech*, 1(2), 124.



- Ernawati, H. P., & Estasih, T. (2012). Efek antioksidan asap cair terhadap stabilitas oksidasi sosis ikan lele dumbo (*Clarias gariepinus*) selama penyimpanan. *Jurnal Teknologi Pertanian*, 13(2), 119–124.
- Farjami, T., & Madadlou, A. (2019). An overview on preparation of emulsion-filled gels and emulsion particulate gels. *Trends in Food Science & Technology*, 86, 85–94. <https://doi.org/10.1016/j.tifs.2019.02.043>
- Fatimah, F., Rorong, J., & Gugule, S. (2012). Stabilitas dan viskositas produk emulsi virgin coconut oil-madu [The Stability and Viscosity of Virgin Coconut Oil-Honey Emulsion]. *Jurnal Teknologi Dan Industri Pangan*, 23(1), 75.
- Flores, M., Giner, E., Fiszman, S. M., Salvador, A., & Flores, J. (2007). Effect of a new emulsifier containing sodium stearoyl-2-lactylate and carrageenan on the functionality of meat emulsion systems. *Meat Science*, 76(1), 9–18. <https://doi.org/10.1016/j.meatsci.2006.06.032>
- Friberg, S., Larsson, K., & Sjöblom, J. (2003). *Food emulsions*. CRC Press.
- Gao, X., Kang, Z., Zhang, W., Li, Y., & Zhou, G. (2015). Combination of κ-carrageenan and soy protein isolate effects on functional properties of chopped low-fat pork batters during heat-induced gelation. *Food and Bioprocess Technology*, 8, 1524–1531.
- Grompone, M. A. (2011). Sunflower oil. *Vegetable Oils in Food Technology*. Oxford: Wiley-Blackwell, 137–167.
- Gu, X., Campbell, L. J., & Euston, S. R. (2009). Effects of different oils on the properties of soy protein isolate emulsions and gels. *Food Research International*, 42(8), 925–932.
- Gunstone, F. D. (2012). *Fatty acid and lipid chemistry*. Springer.
- Gupta, M. K. (2002). 5 Sunflower oil. *Vegetable Oils in Food Technology: Composition, Properties and Uses*, 128.
- Haq, A. N., Septinova, D., & Santosa, P. E. (2015). Kualitas fisik daging dari pasar tradisional di Bandar Lampung. *Jurnal Ilmiah Peternakan Terpadu*, 3(3).
- Hernani, M. E., & Ramadhan, K. (2016). Pemanfaatan monodiasilgliserol (MDAG) hasil sintesa dari butter biji pala dan gliserol sebagai emulsifier pada kualitas produk sosis ayam. *Jurnal Penelitian Pascapanen Pertanian*, 13(1), 74–81.
- Horwitz, W., & Latimer, G. W. (2000). *Official methods of analysis of AOAC International* (Vol. 1). AOAC international Gaithersburg.
- Hosseini, S. M. H., Emam-Djomeh, Z., Sabatino, P., & Van der Meer, P. (2015). Nanocomplexes arising from protein-polysaccharide electrostatic interaction as a promising carrier for nutraceutical compounds. *Food Hydrocolloids*, 50, 16–26. <https://doi.org/10.1016/j.foodhyd.2015.04.006>
- Jongberg, S., Terkelsen, L. de S., Miklos, R., & Lund, M. N. (2015). Green tea extract impairs meat emulsion properties by disturbing protein disulfide cross-linking. *Meat Science*, 100, 2–9.
- Jridi, M., Abdelhedi, O., Souissi, N., Kammoun, M., Nasri, M., & Ayadi, M. A. (2015). Improvement of the physicochemical, textural and sensory properties



- of meat sausage by edible cuttlefish gelatin addition. *Food Bioscience*, 12, 67–72.
- K. Chowdhury, L. A. B. S. K. and A. L. (2007). Studies on the fatty acid composition of edible oil . *Bangladesh Journal of Scientific and Industrial Research*, 42(3), 311–316.
- Kang, Z.-L., Chen, F., & Ma, H.-J. (2016). Effect of pre-emulsified soy oil with soy protein isolate in frankfurters: A physical-chemical and Raman spectroscopy study. *Lwt*, 74, 465–471.
- Karang. (2016). *Pengaruh Penambahan Tepung Glukomanan Porang dan STPP (Sodium Tripolyphosphate) Terhadap Sifat Fisik dan Sensoris Sosis Ayam*. Universitas Gadjah Mada.
- Kavuşan, H. S., Serdaroglu, M., Nacak, B., & İpek, G. (2020). An Approach to Manufacture of Fresh Chicken Sausages Incorporated with Black Cumin and Flaxseed Oil in Water Gelled Emulsion. *Food Science of Animal Resources*, 40(3), 426–443. <https://doi.org/10.5851/kosfa.2020.e23>
- Kohyama, K., & Nishinari, K. (1993). Rheological studies on the gelation process of soybean 7 S and 11 S proteins in the presence of glucono-. delta.-lactone. *Journal of Agricultural and Food Chemistry*, 41(1), 8–14.
- Kolalowska A. (2003). *Lipid Oxidation In Food Systems*. CRC Press.
- Kukuruzović, J., Matin, A., Kontek, M., Krička, T., Matin, B., Brandić, I., & Antonović, A. (2023). The Effects of Demineralization on Reducing Ash Content in Corn and Soy Biomass with the Goal of Increasing Biofuel Quality. *Energies*, 16(2), 967.
- Kurniawan, N. P., Septinova, D., & Adhianto, K. (2014). Kualitas fisik daging sapi dari tempat pemotongan hewan di Bandar Lampung. *Jurnal Ilmiah Peternakan Terpadu*, 2(3).
- Legowo, A. M., & Nurwantoro, N. (2004). *Analisis Pangan*.
- Li, R., Xue, H., Gao, B., Liu, H., Han, T., Hu, X., Tu, Y., & Zhao, Y. (2022a). Physicochemical properties and digestibility of thermally induced ovalbumin–oil emulsion gels: Effect of interfacial film type and oil droplets size. *Food Hydrocolloids*, 131, 107747. <https://doi.org/10.1016/j.foodhyd.2022.107747>
- Li, R., Xue, H., Gao, B., Liu, H., Han, T., Hu, X., Tu, Y., & Zhao, Y. (2022b). Study on the enhancement effect and mechanism of heat-induced gel strength of duck egg white by emulsified lipids. *LWT*, 160, 113146. <https://doi.org/10.1016/j.lwt.2022.113146>
- Li, X.-L., Meng, R., Xu, B.-C., Zhang, B., Cui, B., & Wu, Z.-Z. (2022). Function emulsion gels prepared with carrageenan and zein/carboxymethyl dextrin stabilized emulsion as a new fat replacer in sausages. *Food Chemistry*, 389, 133005. <https://doi.org/10.1016/j.foodchem.2022.133005>
- 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.



- Lu, Y., Mao, L., Hou, Z., Miao, S., & Gao, Y. (2019). Development of emulsion gels for the delivery of functional food ingredients: From structure to functionality. *Food Engineering Reviews*, 11, 245–258. <https://link.springer.com/article/10.1007/s12393-019-09194-z>
- Mao, L., Roos, Y. H., & Miao, S. (2014). Study on the rheological properties and volatile release of cold-set emulsion-filled protein gels. *Journal of Agricultural and Food Chemistry*, 62(47), 11420–11428.
- Marina, A. M., Che Man, Y. B., Nazimah, S. A. H., & Amin, I. (2009). Chemical Properties of Virgin Coconut Oil. *Journal of the American Oil Chemists' Society*, 86(4), 301–307. <https://doi.org/10.1007/s11746-009-1351-1>
- Marina, A. M., Man, Y. B. C., & Amin, I. (2009). Virgin coconut oil: emerging functional food oil. *Trends in Food Science & Technology*, 20(10), 481–487.
- McClements, D. J. (2007). Critical review of techniques and methodologies for characterization of emulsion stability. *Critical Reviews in Food Science and Nutrition*, 47(7), 611–649.
- Mensink, R. P., & Organization, W. H. (2016). *Effects of saturated fatty acids on serum lipids and lipoproteins: a systematic review and regression analysis*. World Health Organization.
- Minaker, S. A., Mason, R. H., & Chow, D. R. (2021). Optimizing color performance of the genuity 3-dimensional visualization system. *Ophthalmology Science*, 1(3), 100054.
- Mitrean, L., Teleky, B.-E., Leopold, L.-F., Nemes, S.-A., Plamada, D., Dulf, F. V., Pop, I.-D., & Vodnar, D. C. (2022). The physicochemical properties of five vegetable oils exposed at high temperature for a short-time-interval. *Journal of Food Composition and Analysis*, 106, 104305.
- Mohammed, N. K., Samir, Z. T., Jassim, M. A., & Saeed, S. K. (2021). Effect of different extraction methods on physicochemical properties, antioxidant activity, of virgin coconut oil. *Materials Today: Proceedings*, 42, 2000–2005. <https://doi.org/10.1016/j.matpr.2020.12.248>
- Molina Ortiz, S. E., Puppo, M. C., & Wagner, J. R. (2004). Relationship between structural changes and functional properties of soy protein isolates–carrageenan systems. *Food Hydrocolloids*, 18(6), 1045–1053. <https://doi.org/10.1016/j.foodhyd.2004.04.011>
- Muguerza, E., Fista, G., Ansorena, D., Astiasarán, I., & Bloukas, J. G. (2002). Effect of fat level and partial replacement of pork backfat with olive oil on processing and quality characteristics of fermented sausages. *Meat Science*, 61(4), 397–404.
- Muguerza, E., Fista, G., Ansorena, D., Astiasaran, I., & Bloukas, J. G. (2002). Effect of fat level and partial replacement of pork backfat with olive oil on processing and quality characteristics of fermented sausages. *Meat Science*, 61(4), 397–404. [https://doi.org/10.1016/S0309-1740\(01\)00210-8](https://doi.org/10.1016/S0309-1740(01)00210-8)



- Muhammad Anjum, F., Nadeem, M., Issa Khan, M., & Hussain, S. (2012). Nutritional and therapeutic potential of sunflower seeds: a review. *British Food Journal*, 114(4), 544–552. <https://doi.org/10.1108/00070701211219559>
- Necas, J., & Bartosikova, L. (2013). Carrageenan: a review. *Veterinarni Medicina*, 58(4), 187–205.
- Nico, M., Riyadi, P. H., & Wijayanti, I. (2014). Pengaruh penambahan karagenan terhadap kualitas sosis ikan kurisi (*Nemipterus* sp.) dan sosis ikan nila (*Oreochromis* sp.). *Jurnal Pengolahan Dan Bioteknologi Hasil Perikanan*, 3(2), 99–105.
- Nielsen, S. S. (2010). Food analysis fourth edition. *Food Analysis*, 227.
- Nyam, K. L., Teh, Y. N., Tan, C. P., & Kamariah, L. (2012). In vitro antioxidant activities of extract and oil from roselle (*Hibiscus sabdariffa* L.) seed against sunflower oil autoxidation. *Malaysian Journal of Nutrition*, 18(2).
- Paglarini, C. de S., Vidal, V. A. S., Martini, S., Cunha, R. L., & Pollonio, M. A. R. (2022). Protein-based hydrogelled emulsions and their application as fat replacers in meat products: A review. *Critical Reviews in Food Science and Nutrition*, 62(3), 640–655. <https://doi.org/10.1080/10408398.2020.1825322>
- Perrechil, F. A., & Cunha, R. L. (2013a). Stabilization of multilayered emulsions by sodium caseinate and κ-carrageenan. *Food Hydrocolloids*, 30(2), 606–613.
- Perrechil, F. A., & Cunha, R. L. (2013b). Stabilization of multilayered emulsions by sodium caseinate and κ-carrageenan. *Food Hydrocolloids*, 30(2), 606–613.
- Phillips, G. O., & Williams, P. A. (2009). *Handbook of hydrocolloids*. Elsevier.
- Pintado, T., & Cofrades, S. (2020). Quality Characteristics of Healthy Dry Fermented Sausages Formulated with a Mixture of Olive and Chia Oil Structured in Oleogel or Emulsion Gel as Animal Fat Replacer. *Foods*, 9(6), 830. <https://doi.org/10.3390/foods9060830>
- Prapun, R. (2016). *Study on extraction, Quality and application of virgin coconut oil*. Prince of Songkla University.
- PRATISTHA, I. N. A., Hidayat, I. C., & Setiowati, A. D. (n.d.). *Pengaruh Konsentrasi Minyak Sawit Merah dan Metode Pembentukan Gel pada Sifat Fisikokimia Emulsion Gel Berbasis Protein Kedelai-Karagenan pada Sosis Sapi*.
- Purnomo, H. (1992). *Dasar-Dasar Teknologi Hasil Ternak*. Malang: Fakultas Peternakan Universitas Brawijaya.
- Quast, K. (2016). The use of zeta potential to investigate the pKa of saturated fatty acids. *Advanced Powder Technology*, 27(1), 207–214. <https://doi.org/10.1016/j.apt.2015.12.003>
- Raharjo, S. (2006). *Kerusakan Oksidatif Pada Makanan*. Yogyakarta. UGM Press. <http://ugmpress.ugm.ac.id/id/product/pertanian/kerusakan....>
- Rahayu, S. (2009). Sifat Fisik Daging Sapi, Kerbau dan Domba pada Lama Postmortem yang Berbeda (Physical Characteristics of Beef, Buffalo and Lamb Meat on Different Postmortem Periods). *Buletin Peternakan*, 33(3), 183–189.



- Rahma, A. S. (2021). Production Technology for Adding GDL (Glucono Delta Lactone) to Soy-Based Foods. *International Journal of Quantitative Research and Modeling*, 2(2), 75–82.
- Ren, Y., Huang, L., Zhang, Y., Li, H., Zhao, D., Cao, J., & Liu, X. (2022). Application of Emulsion Gels as Fat Substitutes in Meat Products. *Foods*, 11(13), 1950. <https://doi.org/10.3390/foods11131950>
- Roesch, R. R., & Corredig, M. (2003a). Texture and microstructure of emulsions prepared with soy protein concentrate by high-pressure homogenization. *LWT-Food Science and Technology*, 36(1), 113–124.
- Roesch, R. R., & Corredig, M. (2003b). Texture and microstructure of emulsions prepared with soy protein concentrate by high-pressure homogenization. *LWT-Food Science and Technology*, 36(1), 113–124.
- Rohaya, M. S., Maskat, M. Y., & Ma'Aruf, A. G. (2013). Rheological properties of different degree of pregelatinized rice flour batter. *Sains Malaysiana*, 42(12), 1707–1714.
- Roopashree, P. G., Shetty, S. S., & Suchetha Kumari, N. (2021). Effect of medium chain fatty acid in human health and disease. *Journal of Functional Foods*, 87, 104724. <https://doi.org/10.1016/j.jff.2021.104724>
- Ruiz-Capillas, C., Triki, M., Herrero, A. M., Rodriguez-Salas, L., & Jiménez-Colmenero, F. (2012). Konjac gel as pork backfat replacer in dry fermented sausages: Processing and quality characteristics. *Meat Science*, 92(2), 144–150.
- Rusdiansyah, R., Dwiloka, B., & Pramono, Y. B. (2021). KARAKTERISTIK SUSUT MASAK DAN HEDONIK SOSIS DAGING DADA DAN PAHA KALKUN (Meleagris gallopavo). *Jurnal Ilmu Dan Teknologi Peternakan*, 9(1), 38–43. <https://doi.org/10.20956/jitp.v9i1.12347>
- Sam, Q. H., Ling, H., Yew, W. S., Tan, Z., Ravikumar, S., Chang, M. W., & Chai, L. Y. A. (2021). The Divergent Immunomodulatory Effects of Short Chain Fatty Acids and Medium Chain Fatty Acids. *International Journal of Molecular Sciences*, 22(12), 6453. <https://doi.org/10.3390/ijms22126453>
- Santhi, D., Kalaikannan, A., & Sureshkumar, S. (2017). Factors influencing meat emulsion properties and product texture: A review. *Critical Reviews in Food Science and Nutrition*, 57(10), 2021–2027. <https://doi.org/10.1080/10408398.2013.858027>
- Sari, T. I., Herdiana, E., & Amelia, T. (2010). Pembuatan VCO dengan metode enzimatis dan konversinya menjadi sabun padat transparan. *Jurnal Teknik Kimia*, 17(3).
- Sartika, R. A. D. (2008). Pengaruh asam lemak jenuh, tidak jenuh dan asam lemak trans terhadap kesehatan. *Kesmas: Jurnal Kesehatan Masyarakat Nasional (National Public Health Journal)*, 2(4), 154–160.
- Shafiqur Rahman, M., & Al-Mahrouqi, A. I. (2009). Instrumental texture profile analysis of gelatin gel extracted from grouper skin and commercial (bovine and porcine) gelatin gels. *International Journal of Food Sciences and Nutrition*, 60(sup7), 229–242.



- Shurtleff, W., & Aoyagi, A. (2000). *Tofu & soymilk production: A craft and technical manual* (Vol. 2). Soyinfo Center.
- Sofiana, A. (2012a). Penambahan tepung protein kedelai sebagai pengikat pada sosis sapi. *Jurnal Ilmiah Ilmu-Ilmu Peternakan*, 15(1), 1–7.
- Sofiana, A. (2012b). Penambahan tepung protein kedelai sebagai pengikat pada sosis sapi. *Jurnal Ilmiah Ilmu-Ilmu Peternakan*, 15(1), 1–7.
- Sofiana, A. (2012c). Penambahan tepung protein kedelai sebagai pengikat pada sosis sapi. *Jurnal Ilmiah Ilmu-Ilmu Peternakan*, 15(1), 1–7.
- Sumarmono, J., & Setyawardani, T. (2023). Physical Characteristics of Emulsion-Type Sausage from Lamb Meat with Varying Fat Levels. *IOP Conference Series: Earth and Environmental Science*, 1177(1), 012034.
- Susanto, T. (2013). Perbandingan mutu minyak kelapa yang di proses melalui pengasaman dan pemanasan sesuai sni 29022011. *Jurnal Hasil Penelitian Industri*, 26(1), 1–10.
- Szczesniak, A. S. (2002). Texture is a sensory property. *Food Quality and Preference*, 13(4), 215–225.
- Trott, E. S., Hunt, M. C., Johnson, D. E., Claus, J. R., Kastner, C. L., & Kropf, D. H. (1992). Characteristics of low-fat ground beef containing texture-modifying ingredients. *Journal of Food Science*, 57(1), 19–24.
- Urgu-Öztürk, M., Öztürk-Kerimoğlu, B., & Serdaroglu, M. (2020). Design of healthier beef sausage formulations by hazelnut-based pre-emulsion systems as fat substitutes. *Meat Science*, 167, 108162. <https://doi.org/10.1016/j.meatsci.2020.108162>
- Visessanguan, W., Benjakul, S., Riebroy, S., Yarchai, M., & Tapingkae, W. (2006). Changes in lipid composition and fatty acid profile of Nham, a Thai fermented pork sausage, during fermentation. *Food Chemistry*, 94(4), 580–588.
- Wahrmund-Wyle, J. L., Harris, K. B., & Savell, J. W. (2000). Beef Retail Cut Composition: 2. Proximate Analysis. *Journal of Food Composition and Analysis*, 13(3), 243–251. <https://doi.org/10.1006/jfca.2000.0896>
- WALLINGFORD, L., & LABUZA, T. P. (1983). Evaluation of the 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. <https://doi.org/10.1111/j.1365-2621.1983.tb14775.x>
- Wan, Z., Sun, Y., Ma, L., Yang, X., Guo, J., & Yin, S. (2017). Responsive Emulsion Gels with Tunable Properties Formed by Self-Assembled Nanofibrils of Natural Saponin Glycyrrhetic Acid for Oil Structuring. *Journal of Agricultural and Food Chemistry*, 65(11), 2394–2405. <https://doi.org/10.1021/acs.jafc.6b05242>
- WHO, J., & Consultation, F. A. O. E. (1990). Diet, nutrition and the prevention of chronic diseases. *World Health Organization Geneva*.
- Wu, M., Xiong, Y. L., & Chen, J. (2011). Role of disulphide linkages between protein-coated lipid droplets and the protein matrix in the rheological properties of porcine myofibrillar protein–peanut oil emulsion composite gels. *Meat Science*, 88(3), 384–390.



- Yu, J., Wang, Y., Li, D., & Wang, L. (2022). Freeze-thaw stability and rheological properties of soy protein isolate emulsion gels induced by NaCl. *Food Hydrocolloids*, 123, 107113.
- YUDHANANDA, M. B. P., Hidayat, I. C., & Setiowati, A. D. (n.d.). *PENGARUH KONSENTRASI DAN RATIO PROTEIN KEDELAI-KARAGENAN TERHADAP SIFAT FISIKOKIMIA EMULSI GEL MINYAK SAWIT MERAH PADA SOSIS SAPI*.
- Zorba, Ö., & Kurt, Ş. (2008). The effects of different plant oils on some emulsion properties of beef, chicken and turkey meats. *International Journal of Food Science & Technology*, 43(2), 229–236. <https://doi.org/10.1111/j.1365-2621.2006.01423.x>
- Zou, Y., Thijssen, P.-P., Yang, X., & Scholten, E. (2019). The effect of oil type and solvent quality on the rheological behavior of zein stabilized oil-in-glycerol emulsion gels. *Food Hydrocolloids*, 91, 57–65. <https://doi.org/10.1016/j.foodhyd.2019.01.016>