

## DAFTAR PUSTAKA

- Alexandru, L. *et al.* (2013) 'Ultrasound-assisted extraction of clove buds using batch- and flow-reactors: A comparative study on a pilot scale', *Innovative Food Science & Emerging Technologies*, 20, pp. 167–172. Available at: <https://doi.org/10.1016/j.ifset.2013.07.011>.
- Aminzare, M. *et al.* (2022) 'Evaluation of antioxidant and antibacterial interactions between resveratrol and eugenol in carboxymethyl cellulose biodegradable film', *Food Science & Nutrition*, 10(1), pp. 155–168. Available at: <https://doi.org/10.1002/fsn3.2656>.
- Ancos, B., Sánchez-Moreno, C. and González-Aguilar, G.A. (2017) 'Pineapple composition and nutrition', in *Handbook of Pineapple Technology*. Wiley, pp. 221–239. Available at: <https://doi.org/10.1002/9781118967355.ch12>.
- Anthon, G.E., LeStrange, M. and Barrett, D.M. (2011) 'Changes in pH, acids, sugars and other quality parameters during extended vine holding of ripe processing tomatoes', *Journal of the Science of Food and Agriculture*, 91(7), pp. 1175–1181. Available at: <https://doi.org/10.1002/jsfa.4312>.
- AOAC (1998) *Official Methods of Analysis of AOAC International*, in: *Official Methods of Analysis of AOAC International, fourteenth ed.* Washington, DC, USA: Association of Official Analytical Chemistry.
- Artetxe-Arrate, I. *et al.* (2019) 'Otolith microchemistry: a useful tool for investigating stock structure of yellowfin tuna (*Thunnus albacares*) in the Indian Ocean', *Marine and Freshwater Research*, 70(12), p. 1708. Available at: <https://doi.org/10.1071/MF19067>.
- Azarakhsh, N. *et al.* (2014) 'Effects of Gellan-Based *Edible coating* on the Quality of Fresh-Cut Pineapple During Cold Storage', *Food and Bioprocess Technology*, 7(7), pp. 2144–2151. Available at: <https://doi.org/10.1007/s11947-014-1261-6>.
- Aziza, I.N., Darmanto, Y.S. and Kurniasih, R.A. (2019) 'The Effect of Gelatin from Different Fish Skin on Physical and Sensory Characteristics of Marsmallow', *Jurnal Perikanan Universitas Gadjah Mada*, 21(1), p. 17. Available at: <https://doi.org/10.22146/jfs.42739>.
- Baldwin Elizabeth A, Hagenmaier Robert and Bai Jinhe (2011) *Edible coatings and Films to Improve Food Quality*. Edited by E.A. Baldwin, R. Hagenmaier, and J. Bai. CRC Press. Available at: <https://doi.org/10.1201/b11082>.
- Banker, G.S. (1966) 'Film Coating Theory and Practice', *Journal of Pharmaceutical Sciences*, 55(1), pp. 81–89. Available at: <https://doi.org/10.1002/jps.2600550118>.

- Basaglia, R.R. *et al.* (2021) 'Effect of edible chitosan and cinnamon essential oil coatings on the shelf life of minimally processed pineapple (Smooth cayenne)', *Food Bioscience*, 41, p. 100966. Available at: <https://doi.org/10.1016/j.fbio.2021.100966>.
- Benítez, S. *et al.* (2014) 'Combined Effect of a Low Permeable Film and *Edible coatings* or Calcium Dips on the Quality of Fresh-Cut Pineapple', *Journal of Food Process Engineering*, 37(2), pp. 91–99. Available at: <https://doi.org/10.1111/jfpe.12063>.
- Bierhals, V.S., Chiumarelli, M. and Hubinger, M.D. (2011) 'Effect of Cassava Starch Coating on Quality and Shelf Life of Fresh-Cut Pineapple (*Ananas Comosus* L. Merril cv "Pérola")', *Journal of Food Science*, 76(1). Available at: <https://doi.org/10.1111/j.1750-3841.2010.01951.x>.
- Bizura Hasida, M.R. *et al.* (2013) 'QUALITY EVALUATION OF FRESH-CUT "JOSAPINE" PINEAPPLE COATED WITH HYDROCOLLOID BASED *EDIBLE COATING* USING GELATIN', *Acta Horticulturae*, (1012), pp. 1037–1041. Available at: <https://doi.org/10.17660/ActaHortic.2013.1012.140>.
- Brody, A.L., Strupinsky, E.P. and Kline, L.R. (2001) *Active Packaging for Food Applications*. CRC Press. Available at: <https://doi.org/10.1201/9780367801311>.
- Cervera, M.F. *et al.* (2004) 'Solid-state and mechanical properties of aqueous chitosan-amylose starch films plasticized with polyols', *AAPS PharmSciTech*, 5(1), pp. 109–114. Available at: <https://doi.org/10.1208/pt050115>.
- Chiabrando, V. and Giacalone, G. (2017) 'Quality evaluation of blueberries coated with chitosan and sodium alginate during postharvest storage', *International Food Research Journal*, 24(4), pp. 1553–1561.
- Cipta Ismaya, F., Fithriyah, N.H. and Hendrawati, T.Y. (2021) 'PEMBUATAN DAN KARAKTERISASI EDIBLE FILM DARI NATA DE COCO DAN GLISEROL', 13(1). Available at: <https://doi.org/10.24853/jurtek.13.1.81-88>.
- Dalimartha, S. (2001) *Atlas Tumbuhan Obat Indonesia Jilid 2 Nanas*. Jakarta: TrubusAgriwidya.
- Das, S. *et al.* (2020) 'Sodium alginate-based *edible coating* containing nanoemulsion of *Citrus sinensis* essential oil eradicates planktonic and sessile cells of food-borne pathogens and increased quality attributes of tomatoes', *International Journal of Biological Macromolecules*, 162, pp. 1770–1779. Available at: <https://doi.org/10.1016/j.ijbiomac.2020.08.086>.
- Dou, L. *et al.* (2018) 'Physical properties and antioxidant activity of gelatin-sodium alginate edible films with tea polyphenols', *International Journal of Biological*

*Macromolecules*, 118, pp. 1377–1383. Available at: <https://doi.org/10.1016/j.ijbiomac.2018.06.121>.

Ebrahimzadeh, S. *et al.* (2023) ‘Incorporation of essential oils in edible seaweed-based films: A comprehensive review’, *Trends in Food Science & Technology*, 135, pp. 43–56. Available at: <https://doi.org/10.1016/j.tifs.2023.03.015>.

Egidio, V. *et al.* (2009) ‘Evaluation of shelf-life of fresh-cut pineapple using FT-NIR and FT-IR spectroscopy’, *Postharvest Biology and Technology*, 54(2), pp. 87–92. Available at: <https://doi.org/10.1016/j.postharvbio.2009.06.006>.

Emragi, E., Kalita, D. and Jayanty, S.S. (2022) ‘Effect of *edible coating* on physical and chemical properties of potato tubers under different storage conditions’, *LWT*, 153, p. 112580. Available at: <https://doi.org/10.1016/j.lwt.2021.112580>.

Fahrullah, F. (2021) ‘PENGUNAAN MINYAK CENGKEH DALAM APLIKASI EDIBLE FILM WHEY TERHADAP KARAKTERISTIK KIMIAWI DAN MIKROBIOLOGIS KEJU GOUDA’, *AGROINTEK*, 15(2), pp. 592–600. Available at: <https://doi.org/10.21107/agrointek.v15i2.10060>.

Falguera, V. *et al.* (2011) ‘Edible films and coatings: Structures, active functions and trends in their use’, *Trends in Food Science & Technology*, 22(6), pp. 292–303. Available at: <https://doi.org/10.1016/j.tifs.2011.02.004>.

Gao, X. *et al.* (2020) ‘Adsorption of heavy metal ions by sodium alginate based adsorbent—a review and new perspectives’, *International Journal of Biological Macromolecules*, 164, pp. 4423–4434. Available at: <https://doi.org/10.1016/j.ijbiomac.2020.09.046>.

García, M.A., Martino, M.N. and Zaritzky, N.E. (1998) *Plasticized Starch-Based Coatings To Improve Strawberry (Fragaria × Ananassa) Quality and Stability*. Available at: <https://pubs.acs.org/sharingguidelines>.

Ghanbarzadeh, B. *et al.* (2006) ‘Investigation of water vapour permeability, hydrophobicity and morphology of zein films plasticized by polyols’, *Iranian Polymer Journal (English Edition)*, 15(9), pp. 691–700.

Ghasemlou, M. *et al.* (2011) ‘Development and characterisation of a new biodegradable edible film made from kefir, an exopolysaccharide obtained from kefir grains’, *Food Chemistry*, 127(4), pp. 1496–1502. Available at: <https://doi.org/10.1016/j.foodchem.2011.02.003>.

Gómez, P.L. *et al.* (2012) ‘Effect of pulsed light combined with an antibrowning pretreatment on quality of fresh cut apple’, *Innovative Food Science & Emerging Technologies*, 16, pp. 102–112. Available at: <https://doi.org/10.1016/j.ifset.2012.05.011>.

- Gómez-Guillén, M.C. *et al.* (2009) 'Fish gelatin: a renewable material for developing active biodegradable films', *Trends in Food Science & Technology*, 20(1), pp. 3–16. Available at: <https://doi.org/10.1016/j.tifs.2008.10.002>.
- González-Aguilar, G.A. *et al.* (2010) 'Preserving quality of fresh-cut products using safe technologies', *Journal für Verbraucherschutz und Lebensmittelsicherheit*, 5(1), pp. 65–72. Available at: <https://doi.org/10.1007/s00003-009-0315-6>.
- Guerreiro, A.C. *et al.* (2025) 'Edible coatings Enhance Storability and Preserve Quality of Kiwiberry (*Actinidia arguta* L.) cv. Ken's Red', *Horticulturae*, 11(1), p. 105. Available at: <https://doi.org/10.3390/horticulturae11010105>.
- Haro-González, J.N. *et al.* (2021) 'Clove Essential Oil (*Syzygium aromaticum* L. Myrtaceae): Extraction, Chemical Composition, Food Applications, and Essential Bioactivity for Human Health', *Molecules*, 26(21), p. 6387. Available at: <https://doi.org/10.3390/molecules26216387>.
- Haryati, D., Nadhifa, L. and Nurlaila Abdullah, dan (2019) 'EKSTRAKSI DAN KARAKTERISASI GELATIN KULIT IKAN BARONANG (*Siganus canaliculatus*) DENGAN METODE ENZIMATIS MENGGUNAKAN ENZIM BROMELIN (Extraction and Characterization of Gelatin from Baronang's (*Siganus canaliculatus*) Skin with Enzymatic Methode Using Bromelin Enzyme)', *Canrea Journal*, 2(1).
- Huda, M., Djayasinga, R. and Ningsih, D.S. (2018) 'EFEKTIVITAS EKSTRAK BUNGA CENGKEH (*Eugenia Aromatica*) TERHADAP PERTUMBUHAN BAKTERI *Staphylococcus aureus*', *Jurnal Analis Kesehatan*, 7(1), p. 710. Available at: <https://doi.org/10.26630/jak.v7i1.934>.
- Isroi, I. *et al.* (2018) 'Biodegradability of Cassava Edible Bioplastics in Landfill Soil and Plantation Soil', *Jurnal Kimia dan Kemasan*, 40(2), p. 129. Available at: <https://doi.org/10.24817/jkk.v40i2.3596>.
- Jafari, R., Zandi, M. and Ganjloo, A. (2022) 'Effect of gelatin–alginate coating containing anise (*Pimpinella anisum* L.) essential oil on physicochemical and visual properties of zucchini (*Cucurbita pepo* L.) fruit during storage', *Journal of Food Processing and Preservation*, 46(8). Available at: <https://doi.org/10.1111/jfpp.16756>.
- Jafarzadeh, S. *et al.* (2021) 'Application of bio-nanocomposite films and edible coatings for extending the shelf life of fresh fruits and vegetables', *Advances in Colloid and Interface Science*, 291, p. 102405. Available at: <https://doi.org/10.1016/j.cis.2021.102405>.
- Jitareerat, P. *et al.* (2007) 'Effect of chitosan on ripening, enzymatic activity, and disease development in mango (*mangifera indica*) fruit', *New Zealand Journal*

- of Crop and Horticultural Science*, 35(2), pp. 211–218. Available at: <https://doi.org/10.1080/01140670709510187>.
- Jouki, M. *et al.* (2013) ‘Effect of glycerol concentration on edible film production from cress seed carbohydrate gum’, *Carbohydrate Polymers*, 96(1), pp. 39–46. Available at: <https://doi.org/10.1016/j.carbpol.2013.03.077>.
- Jurwita, M., Nasir, M. and Haji, A.G. (2020) ‘Analisis Kadar Vitamin C Bawang Putih dan Hitam dengan Metode Spektrofotometri UV-Vis’, *KOVALEN: Jurnal Riset Kimia*, 6(3), pp. 252–261. Available at: <https://doi.org/10.22487/kovalen.2020.v6.i3.15289>.
- Karim, A.A. and Bhat, R. (2008) ‘Gelatin alternatives for the food industry: recent developments, challenges and prospects’, *Trends in Food Science & Technology*, 19(12), pp. 644–656. Available at: <https://doi.org/10.1016/j.tifs.2008.08.001>.
- Kementrian Pertanian (2023) *Outlook Komoditas Pertanian Subsektor Holtikultura Nanas*. Jakarta.
- Kocira, A. *et al.* (2021) ‘Polysaccharides as Edible Films and Coatings: Characteristics and Influence on Fruit and Vegetable Quality—A Review’, *Agronomy*, 11(5), p. 813. Available at: <https://doi.org/10.3390/agronomy11050813>.
- Kusrini, E. *et al.* (2015) ‘Improvement of Quality of Carica papaya L. with Clove Oil as Preservative in Edible coating Technology’, *Makara Journal of Technology*, 19(3), p. 148. Available at: <https://doi.org/10.7454/mst.v19i3.3047>.
- Lacroix, M. and Vu, K.D. (2014) ‘Edible coating and Film Materials’, in *Innovations in Food Packaging*. Elsevier, pp. 277–304. Available at: <https://doi.org/10.1016/B978-0-12-394601-0.00011-4>.
- Lakshan, N.D., Senanayake, C.M., Liyanage, T., dan Lankanayaka, A. (2024). Clove essential oil emulsions-loaded arrowroot starch-beeswax-based *edible coating* extends the shelf life and preserves the postharvest quality of fresh tomatoes (*Solanum lycopersicum* L.) stored at room temperature, *Sustainable Food Technology*, 4.
- Liao, X. *et al.* (2023) ‘Effect of Composite *Edible coatings* Combined with Modified Atmosphere Packaging on the Storage Quality and Microbiological Properties of Fresh-Cut Pineapple’, *Foods*, 12(6), p. 1344. Available at: <https://doi.org/10.3390/foods12061344>.
- Licodiedoff, S. *et al.* (2016) *Conservation of physalis by edible coating of gelatin and calcium chloride*, *International Food Research Journal*.

- Liñán-Atero, R. *et al.* (2024) 'Clove Essential Oil: Chemical Profile, Biological Activities, Encapsulation Strategies, and Food Applications', *Antioxidants*, 13(4), p. 488. Available at: <https://doi.org/10.3390/antiox13040488>.
- Lisdiana, W.S. (1997) *Budidaya nanas, pengolahan, dan pemasaran*. Solo: aneka.
- López-Córdoba, A. and Aldana-Usme, A. (2019) 'Edible coatings based on sodium alginate and ascorbic acid for application on fresh-cut pineapple (*Ananas comosus* (L.) Merr)', *Agronomía Colombiana*, 37(3), pp. 317–322. Available at: <https://doi.org/10.15446/agron.colomb.v37n3.76173>.
- Lv, L.C. *et al.* (2019) 'Fish gelatin: The novel potential applications', *Journal of Functional Foods*. Elsevier Ltd. Available at: <https://doi.org/10.1016/j.jff.2019.103581>.
- Ma, X. *et al.* (2021) 'An Active Gelatin Coating Containing Eugenol and Vacuum Delays the Decay of Chinese Seabass (*Lateolabrax maculatus*) Fillets during Cold Storage: A Microbiome Perspective', *Coatings*, 11(2), p. 147. Available at: <https://doi.org/10.3390/coatings11020147>.
- Mafazah, E.M., Pranoto, Y. and Rohman, A. (2018) 'Extracting of yellowfin tuna (*Thunnus albacares*) fish skin gelatin as influenced by alkaline concentration and extraction times', *IOP Conference Series: Earth and Environmental Science*, 139, p. 012047. Available at: <https://doi.org/10.1088/1755-1315/139/1/012047>.
- Maftoonazad, N., Ramaswamy, H.S. and Marcotte, M. (2008) 'Shelf-life extension of peaches through sodium alginate and methyl cellulose edible coatings', *International Journal of Food Science & Technology*, 43(6), pp. 951–957. Available at: <https://doi.org/10.1111/j.1365-2621.2006.01444.x>.
- Manthou, E. *et al.* (2021) 'Evolution of fungal community associated with ready-to-eat pineapple during storage under different temperature conditions', *Food Microbiology*, 97, p. 103736. Available at: <https://doi.org/10.1016/j.fm.2021.103736>.
- Mantilla, N. *et al.* (2013) 'Multilayered antimicrobial edible coating and its effect on quality and shelf-life of fresh-cut pineapple (*Ananas comosus*)', *LWT*, 51(1), pp. 37–43. Available at: <https://doi.org/10.1016/j.lwt.2012.10.010>.
- Matinong, A.M.E. *et al.* (2022) 'Collagen Extraction from Animal Skin', *Biology*, 11(6), p. 905. Available at: <https://doi.org/10.3390/biology11060905>.
- Maulida *et al.* (2018) 'Utilization of mango seed starch in manufacture of bioplastic reinforced with microparticle clay using glycerol as plasticizer', *IOP Conference Series: Materials Science and Engineering*, 309, p. 012068. Available at: <https://doi.org/10.1088/1757-899X/309/1/012068>.

- Milovanovic, I. and Hayes, M. (2018) 'Marine Gelatine from Rest Raw Materials', *Applied Sciences*, 8(12), p. 2407. Available at: <https://doi.org/10.3390/app8122407>.
- Misir, J., H. Brishti, F. and M. Hoque, M. (2014) 'Aloe vera gel as a Novel *Edible coating* for Fresh Fruits: A Review', *American Journal of Food Science and Technology*, 2(3), pp. 93–97. Available at: <https://doi.org/10.12691/ajfst-2-3-3>.
- Miteluṭ, A.C. *et al.* (2021) 'Latest Developments in *Edible coatings* on Minimally Processed Fruits and Vegetables: A Review', *Foods*, 10(11), p. 2821. Available at: <https://doi.org/10.3390/foods10112821>.
- Mohd Ali, M. *et al.* (2020) 'Pineapple (*Ananas comosus*): A comprehensive review of nutritional values, volatile compounds, health benefits, and potential food products', *Food Research International*, 137, p. 109675. Available at: <https://doi.org/10.1016/j.foodres.2020.109675>.
- Morillon, V. *et al.* (2002) 'Factors Affecting the Moisture Permeability of Lipid-Based Edible Films: A Review', *Critical Reviews in Food Science and Nutrition*, 42(1), pp. 67–89. Available at: <https://doi.org/10.1080/10408690290825466>.
- Morsy, N.E. and Rayan, A.M. (2019) 'Effect of different *edible coatings* on biochemical quality and shelf life of apricots (*Prunus armenica* L. cv Canino)', *Journal of Food Measurement and Characterization*, 13(4), pp. 3173–3182. Available at: <https://doi.org/10.1007/s11694-019-00240-2>.
- Nair, M.S. *et al.* (2020) 'Enhancing the functionality of chitosan- and alginate-based active *edible coatings*/films for the preservation of fruits and vegetables: A review', *International Journal of Biological Macromolecules*, 164, pp. 304–320. Available at: <https://doi.org/10.1016/j.ijbiomac.2020.07.083>.
- Nasution, I.S. (2012) *EFFECT OF APPLICATION EDIBLE COATING, CALCIUM CHLORIDE, AND PLASTIC PACKAGING TO THE QUALITY OF MINIMALLY PROCESSED OF PINEAPPLE*. Available at: <https://www.researchgate.net/publication/321824399>.
- Neveu, V. *et al.* (2010) 'Phenol-Explorer: an online comprehensive database on polyphenol contents in foods', *Database*, 2010(0), pp. bap024–bap024. Available at: <https://doi.org/10.1093/database/bap024>.
- Newton, R., Telfer, T. and Little, D. (2014) 'Perspectives on the Utilization of Aquaculture Coproduct in Europe and Asia: Prospects for Value Addition and Improved Resource Efficiency', *Critical Reviews in Food Science and Nutrition*, 54(4), pp. 495–510. Available at: <https://doi.org/10.1080/10408398.2011.588349>.

- Ngibad, K. *et al.* (2019) *Comparison of Measurement The Vitamin C Level using UV-Vis Spectrophotometry at Uv and Visible Wavelength, Borneo Journal Of Medical Laboratory Technology.*
- Ningrum, A. *et al.* (2021) ‘Characterization of Tuna Skin Gelatin Edible Films with Various Plasticizers-Essential Oils and Their Effect on Beef Appearance’, *Journal of Food Processing and Preservation*, 45(9). Available at: <https://doi.org/10.1111/jfpp.15701>.
- Nisah, K. (2019) ‘EFEK EDIBLE COATING PADA KUALITAS ALPOKAT (PERSEA AMERICA MILL ) SELAMA PENYIMPANAN’, *AMINA*, 1(1), pp. 11–17. Available at: <https://doi.org/10.22373/amina.v1i1.9>.
- Oliveira, M.A. de *et al.* (2011) ‘Microbiological quality of ready-to-eat minimally processed vegetables consumed in Brazil’, *Food Control*, 22(8), pp. 1400–1403. Available at: <https://doi.org/10.1016/j.foodcont.2011.02.020>.
- Oms-Oliu, G. *et al.* (2010) ‘Recent approaches using chemical treatments to preserve quality of fresh-cut fruit: A review’, *Postharvest Biology and Technology*, 57(3), pp. 139–148. Available at: <https://doi.org/10.1016/j.postharvbio.2010.04.001>.
- Oms-Oliu, G., Soliva-Fortuny, R. and Martín-Belloso, O. (2008) ‘Edible coatings with antibrowning agents to maintain sensory quality and antioxidant properties of fresh-cut pears’, *Postharvest Biology and Technology*, 50(1), pp. 87–94. Available at: <https://doi.org/10.1016/j.postharvbio.2008.03.005>.
- Pan, Y., Zhu, J. and Shouying, L. (2015) ‘Effects of pure oxygen and reduced oxygen modified atmosphere packaging on the quality and microbial characteristics of fresh-cut pineapple’, *Fruits*, 70(2), pp. 101–108. Available at: <https://doi.org/10.1051/fruits/2015003>.
- Pandey, V.K. *et al.* (2022) ‘A comprehensive review on the application of essential oils as bioactive compounds in Nano-emulsion based *edible coatings* of fruits and vegetables’, *Applied Food Research*, 2(1), p. 100042. Available at: <https://doi.org/10.1016/j.afres.2022.100042>.
- Pandey, V.K. *et al.* (2023) ‘Effects of clove essential oil (*Caryophyllus aromaticus* L.) nanoemulsion incorporated *edible coating* on shelf-life of fresh cut apple pieces’, *Journal of Agriculture and Food Research*, 14, p. 100791. Available at: <https://doi.org/10.1016/j.jafr.2023.100791>.
- Pattanasiri, T., Taparhudee, W. and Suppakul, P. (2017) ‘Anaesthetic efficacy of clove oil-coated LDPE bag on improving water quality and survival in the Siamese fighting fish, *Betta splendens*, during transportation’, *Aquaculture International*, 25(1), pp. 197–209. Available at: <https://doi.org/10.1007/s10499-016-0022-0>.

- Petriccione, M. *et al.* (2015) 'The Effect of Chitosan Coating on the Quality and Nutraceutical Traits of Sweet Cherry During Postharvest Life', *Food and Bioprocess Technology*, 8(2), pp. 394–408. Available at: <https://doi.org/10.1007/s11947-014-1411-x>.
- Phuoc Minh, N. *et al.* (2019) 'Quality and Shelf Life of Processed Pineapple by Different *Edible coatings*', *J. Pharm. Sci. & Res*, 11(4), pp. 1441–1446.
- Pizato, S. *et al.* (2013) 'Effects of Different *Edible coatings* in Physical, Chemical and Microbiological Characteristics of Minimally Processed Peaches (*Prunus persica* L. Batsch)', *Journal of Food Safety*, 33(1), pp. 30–39. Available at: <https://doi.org/10.1111/jfs.12020>.
- Pizato, S. *et al.* (2019) 'Evaluation of the shelf-life extension of fresh-cut pineapple (Smooth cayenne) by application of different *edible coatings*', *British Food Journal*, 121(7), pp. 1592–1604. Available at: <https://doi.org/10.1108/BFJ-11-2018-0780>.
- Pradana, A., Santosa, D. and Sulaiman, T.N.S. (2024) 'Potensi Cengkeh (*Syzygium aromaticum* (L.) Merr. & Perry) di Indonesia Sebagai Sumber Daya Alam dan Bahan Baku Obat Antibakteri dan Antijamur', *Majalah Farmaseutik*, 20(1), p. 70. Available at: <https://doi.org/10.22146/farmaseutik.v20i1.86004>.
- Pradarameswari, K.A. *et al.* (2018) 'The physico-chemical properties of pangas catfish (*Pangasius pangasius*) skin gelatin', *IOP Conference Series: Earth and Environmental Science*, 137, p. 012067. Available at: <https://doi.org/10.1088/1755-1315/137/1/012067>.
- Prakash, A., Baskaran, R. and Vadivel, V. (2020) 'Citral nanoemulsion incorporated *edible coating* to extend the shelf life of fresh cut pineapples', *LWT*, 118, p. 108851. Available at: <https://doi.org/10.1016/j.lwt.2019.108851>.
- Prihatman, K. (2000) *Nanas (Ananas comosus)*. Jakarta: TTG Budidaya Pertanian.
- Raghav, P.K., Agarwal, N. and Saini, M. (2016) '*EDIBLE COATING OF FRUITS AND VEGETABLES: A REVIEW*', *International Journal of Scientific Research and Modern Education (IJSRME)* [Preprint], (1). Available at: <https://www.researchgate.net/publication/331298687>.
- Rocculi, P. *et al.* (2009) 'Effect of 1-MCP treatment and N<sub>2</sub>O MAP on physiological and quality changes of fresh-cut pineapple', *Postharvest Biology and Technology*, 51(3), pp. 371–377. Available at: <https://doi.org/10.1016/j.postharvbio.2008.07.010>.
- Rodrigues, M.Á.V. *et al.* (2020) 'Chitosan and gelatin materials incorporated with phenolic extracts of grape seed and jaboticaba peel: Rheological, physicochemical, antioxidant, antimicrobial and barrier properties',

*International Journal of Biological Macromolecules*, 160, pp. 769–779.  
Available at: <https://doi.org/10.1016/j.ijbiomac.2020.05.240>.

Rojas-Graü, M.A., Soliva-Fortuny, R. and Martín-Belloso, O. (2009) ‘Edible coatings to incorporate active ingredients to fresh-cut fruits: a review’, *Trends in Food Science & Technology*, 20(10), pp. 438–447. Available at: <https://doi.org/10.1016/j.tifs.2009.05.002>.

Roldangutierrez, J., Ruizjimenez, J. and Luquedecastro, M. (2008) ‘Ultrasound-assisted dynamic extraction of valuable compounds from aromatic plants and flowers as compared with steam distillation and superheated liquid extraction’, *Talanta*, 75(5), pp. 1369–1375. Available at: <https://doi.org/10.1016/j.talanta.2008.01.057>.

Saha, T. *et al.* (2023) ‘Quality and shelf life of fresh-cut pineapple (*Ananas comosus*) coated with aloe vera and honey in the refrigerated condition’, *Journal of Agriculture and Food Research*, 14. Available at: <https://doi.org/10.1016/j.jafr.2023.100709>.

Saputra, R.H., Widistuti, I. and Supriadi, A. (2015) ‘Karakteristik Fisik Dan Kimia Gelatin Kulit Ikan Patin (*Pangasius Pangasius*) Dengan Kombinasi Berbagai Asam Dan Suhu’, *Fishtech*, 4(1), pp. 29–36.

Sekarina, A.S. *et al.* (2023) ‘Effects of *edible coatings* of chitosan - fish skin gelatine containing black tea extract on quality of minimally processed papaya during refrigerated storage’, *Carbohydrate Polymer Technologies and Applications*, 5. Available at: <https://doi.org/10.1016/j.carpta.2023.100287>.

Senturk Parreidt, T., Müller, K. and Schmid, M. (2018) ‘Alginate-Based Edible Films and Coatings for Food Packaging Applications’, *Foods*, 7(10), p. 170. Available at: <https://doi.org/10.3390/foods7100170>.

Shamsudin, R., Zulkifli, N.A. and Kamarul Zaman, A.A. (2020) ‘Quality attributes of fresh pineapple-mango juice blend during storage’, *International Food Research Journal*, 27(1), pp. 141–149.

Shan, B. *et al.* (2005) ‘Antioxidant Capacity of 26 Spice Extracts and Characterization of Their Phenolic Constituents’, *Journal of Agricultural and Food Chemistry*, 53(20), pp. 7749–7759. Available at: <https://doi.org/10.1021/jf051513y>.

Sharma, L., Singh Saini, C. and Sharma, H.K. (2018) ‘Development of crosslinked sesame protein and pineapple extract-based bilayer coatings for shelf-life extension of fresh-cut pineapple’, *Journal of Food Processing and Preservation*, 42(2), p. e13527. Available at: <https://doi.org/10.1111/jfpp.13527>.

Siburian, P. W., Falah, A. A. F., dan Manguwikarta, J. (2021). ‘Alginate-Based *Edible coatings* Enriched with Cinnamon Essential Oil Extend Storability and Maintain

- the Quality of Strawberries under Tropical Condition', *Journal of Agro Science*, 9 (1). Available at: [https:// 10.18196/pt.v9i1.10368](https://10.18196/pt.v9i1.10368).
- Silva, M.A. da, Bierhalz, A.C.K. and Kieckbusch, T.G. (2009) 'Alginate and pectin composite films crosslinked with Ca<sup>2+</sup> ions: Effect of the plasticizer concentration', *Carbohydrate Polymers*, 77(4), pp. 736–742. Available at: <https://doi.org/10.1016/j.carbpol.2009.02.014>.
- Singh, M., Saroj, R. and Kaur, D. (2024) 'Optimized chitosan *edible coating* for guava and its characterization', *Measurement: Food*, 14, p. 100145. Available at: <https://doi.org/10.1016/j.meafoo.2024.100145>.
- Soedarya (2009) *Agribisnis Nanas*. Bandung: CV. Pustaka grafika.
- Sudheer, K.P., Sankalpa, K.B. and Saranya, S. (2019) 'Effect of Preservatives and Temperature on Microbial and Physico-Chemical Attributes of Minimally Processed Pineapple', *International Journal of Current Microbiology and Applied Sciences*, 8(02), pp. 541–553. Available at: <https://doi.org/10.20546/ijcmas.2019.802.062>.
- Suhag, R. *et al.* (2020) 'Film formation and deposition methods of *edible coating* on food products: A review', *Food Research International*, 136, p. 109582. Available at: <https://doi.org/10.1016/j.foodres.2020.109582>.
- Suppakul, P. *et al.* (2006) 'Plasticizer and relative humidity effects on mechanical properties of cassava flour films', in *The 15th IAPRI World Conference on Packaging*. Tokyo, Japan.
- Suriati, L. *et al.* (2020) 'Physicochemical Characteristics of Fresh-cut Tropical Fruit during Storage', 10(4).
- Sutrisno, E. *et al.* (2021) 'Characterization of tuna (*Thunnus albacares*) skin gelatin edible film incorporated with clove and ginger essential oils and different surfactants', *Food Research*, 5(2), pp. 440–450. Available at: [https://doi.org/10.26656/fr.2017.5\(2\).285](https://doi.org/10.26656/fr.2017.5(2).285).
- Tapia, M.S. *et al.* (2007) 'Alginate- and Gellan-Based Edible Films for Probiotic Coatings on Fresh-Cut Fruits', *Journal of Food Science*, 72(4). Available at: <https://doi.org/10.1111/j.1750-3841.2007.00318.x>.
- Tapia, M.S. *et al.* (2008) 'Use of alginate- and gellan-based coatings for improving barrier, texture and nutritional properties of fresh-cut papaya', *Food Hydrocolloids*, 22(8), pp. 1493–1503. Available at: <https://doi.org/10.1016/j.foodhyd.2007.10.004>.
- Tekin, K., Akalın, M.K. and Şeker, M.G. (2015) 'Ultrasound bath-assisted extraction of essential oils from clove using central composite design', *Industrial Crops and*

- Products*, 77, pp. 954–960. Available at: <https://doi.org/10.1016/j.indcrop.2015.09.071>.
- Thu, H.-E. and Ng, S.-F. (2013) ‘Gelatin enhances drug dispersion in alginate bilayer film via the formation of crystalline microaggregates’, *International Journal of Pharmaceutics*, 454(1), pp. 99–106. Available at: <https://doi.org/10.1016/j.ijpharm.2013.06.082>.
- Tiwari, V.K. and Chandra Verma, V. (2022) *Edible coating for postharvest management of fruits and vegetables*. Available at: <http://www.thepharmajournal.com>.
- Tural, S., Sarıcaoğlu, F.T. and Turhan, S. (2017) ‘Edible films and coatings: their production, application methods, functions and uses in muscle foods.’, *Akademik Gıda*, 15(1), pp. 84–94.
- Ulanowska, M. and Olas, B. (2021) ‘Biological Properties and Prospects for the Application of Eugenol—A Review’, *International Journal of Molecular Sciences*, 22(7), p. 3671. Available at: <https://doi.org/10.3390/ijms22073671>.
- Ulfa, L.R., Ningrum, A. and Supriyadi (2024) ‘Effect of edible coating of gelatin-sodium alginate with the addition of green tea (*Camellia sinensis*) extract on the characteristics of star fruit (*Averrhoa carambola L.*) during storage’, *Journal of Food Science*, 89(10), pp. 6217–6231. Available at: <https://doi.org/10.1111/1750-3841.17311>.
- Ulusoy, B.H., Yildirim, F.K. and Hecer, C. (2018) ‘Edible Films and Coatings: A Good Idea From Past to Future Technology’, *Journal of Food Technology Research*, 5(1), pp. 28–33. Available at: <https://doi.org/10.18488/journal.58.2018.51.28.33>.
- Vital, A.C.P. *et al.* (2016) ‘Effect of Edible and Active Coating (with Rosemary and Oregano Essential Oils) on Beef Characteristics and Consumer Acceptability’, *PLOS ONE*, 11(8), p. e0160535. Available at: <https://doi.org/10.1371/journal.pone.0160535>.
- Wang, H. *et al.* (2021) ‘Edible films from chitosan-gelatin: Physical properties and food packaging application’, *Food Bioscience*, 40, p. 100871. Available at: <https://doi.org/10.1016/j.fbio.2020.100871>.
- Wang, Q., Zhang, L. and Ding, W. (2020) ‘Eugenol nanocapsules embedded with gelatin-chitosan for chilled pork preservation’, *International Journal of Biological Macromolecules*, 158, pp. 837–844. Available at: <https://doi.org/10.1016/j.ijbiomac.2020.04.182>.
- Ward, I.M. and Hadley, D.W. (1993) *An Introduction on the Mechanical Properties of Solid Polymers*. New York: Wiley.

- Warriner, K. *et al.* (2009) 'Chapter 4 Recent Advances in the Microbial Safety of Fresh Fruits and Vegetables', in, pp. 155–208. Available at: [https://doi.org/10.1016/S1043-4526\(09\)57004-0](https://doi.org/10.1016/S1043-4526(09)57004-0).
- Wasana, W.L.N. and Kariyawasam, H.K.P.P. (2020) *A Review on Minimal Processing of Fruits and Vegetables, European Modern Studies Journal*. Available at: <https://doi.org/ISSN2522-9400>.
- Xu, J.-G. *et al.* (2016) 'Chemical Composition, Antibacterial Properties and Mechanism of Action of Essential Oil from Clove Buds against *Staphylococcus aureus*', *Molecules*, 21(9), p. 1194. Available at: <https://doi.org/10.3390/molecules21091194>.
- Xue, W. *et al.* (2023) 'Permeability of biodegradable film comprising biopolymers derived from marine origin for food packaging application: A review', *Trends in Food Science & Technology*, 136, pp. 295–307. Available at: <https://doi.org/10.1016/j.tifs.2023.05.001>.
- Yang, Z. *et al.* (2024) 'Gelatin/sodium alginate-based biodegradable films functionalized by persimmon pectin/ovalbumin-stabilized neem essential oil Pickering emulsion: Application for cherry tomato preservation', *Progress in Organic Coatings*, 192, p. 108448. Available at: <https://doi.org/10.1016/j.porgcoat.2024.108448>.
- Yong, Y.Y. *et al.* (2022) 'Alginate and Aloe vera gel-based *edible coating* for the storage stability enhancement of fresh-cut MD2 pineapple', *Food Research*, 6(5), pp. 380–389. Available at: [https://doi.org/10.26656/fr.2017.6\(5\).628](https://doi.org/10.26656/fr.2017.6(5).628).
- Yousuf, B., Qadri, O.S. and Srivastava, A.K. (2018) 'Recent developments in shelf-life extension of fresh-cut fruits and vegetables by application of different *edible coatings*: A review', *LWT*, 89, pp. 198–209. Available at: <https://doi.org/10.1016/j.lwt.2017.10.051>.
- Yousuf, B. and Srivastava, A.K. (2019) 'Impact of honey treatments and soy protein isolate-based coating on fresh-cut pineapple during storage at 4 °C', *Food Packaging and Shelf Life*, 21, p. 100361. Available at: <https://doi.org/10.1016/j.fpsl.2019.100361>.
- Yun, J. *et al.* (2015) 'Natural surface coating to inactivate *Salmonella enterica* serovar Typhimurium and maintain quality of cherry tomatoes', *International Journal of Food Microbiology*, 193, pp. 59–67. Available at: <https://doi.org/10.1016/j.ijfoodmicro.2014.10.013>.
- Zdrojewicz, Z. *et al.* (2018) 'Health-promoting properties of pineapple', *Pediatrics i Medycyna Rodzinna*, 14(2), pp. 133–142. Available at: <https://doi.org/10.15557/PiMR.2018.0013>.

- Zeni, J. *et al.* (2011) ‘Screening of Pectinase-Producing Microorganisms with Polygalacturonase Activity’, *Applied Biochemistry and Biotechnology*, 163(3), pp. 383–392. Available at: <https://doi.org/10.1007/s12010-010-9046-5>.
- Zhu, L. *et al.* (2022) ‘Eugenol treatment delays the flesh browning of fresh-cut water chestnut (*Eleocharis tuberosa*) through regulating the metabolisms of phenolics and reactive oxygen species’, *Food Chemistry: X*, 14, p. 100307. Available at: <https://doi.org/10.1016/j.fochx.2022.100307>.