

DAFTAR PUSTAKA

- Alves, R. C., Domingues, M. R., Pintado, M., & Malcata, F. X. (2022). Recent advances on curcumin-based smart indicators in food packaging. *Trends in Food Science & Technology*, 120, 223–234.
- Astuti, R. D., Rachmawati, S., & Fitriyah, S. (2017). Karakteristik pewarna alami dari tanaman terhadap stabilitas warna pada produk pangan. *Jurnal Teknologi Pangan*, 8(1), 22–29.
- Badan Standardisasi Nasional. (2009). *SNI 7388:2009– Batas maksimum cemaran mikroba dalam pangan*. Jakarta: Badan Standardisasi Nasional.
- Badan Standardisasi Nasional. (2009). *SNI 7474:2009- Rendang sapi*. Jakarta: Badan Standardisasi Nasional.
- Badan Standardisasi Nasional. (2015). *SNI 3144:2015- Tempe*. Jakarta: Badan Standardisasi Nasional.
- Baldwin, D. E. (2022). Berbasis kurkumin untuk deteksi mutu pangan. *Jurnal Teknologi Hasil Pertanian*, 15(2), 90–98.
- Bora, G. C. (2018). Image processing analysis to track colour changes on apple and correlate to moisture content in drying stages. *Food Quality and Safety*, 2(2), 105–113.
- Brody, A. L., Bugusu, B., Han, J. H., Sand, C. K., & McHugh, T. H. (2008). Innovative food packaging solutions. *Journal of Food Science*, 73(8), 107–116.

Cencha, J., Martínez, J. A., & López, F. A. (2022). Smart packaging for monitoring food quality: Advances and applications. *Food Packaging and Shelf Life*, 33, 100880.

Chen, H., Zhang, M., & Bhandari, B. (2020). Development of smart packaging: Applications and developments. *Journal of Food Science and Technology*, 57(1), 1–13.

Chen, H., Zhang, M., & Bhandari, B. (2021). Development of smart packaging: Applications and developments. *Journal of Food Science and Technology*, 57(1), 1–13.

Consumer Response and Firm Strategy. (2020). *Journal of Retailing and Consumer Services*, 56, 102176.

Departemen Kesehatan Republik Indonesia. (2000). *Ekstrak tumbuhan obat*. Jakarta: Depkes RI.

Dewi, K. H., Sari, N. R., & Fadilla, R. (2023). Pengembangan rendang tempe koro pedang sebagai produk pangan lokal semi-basah. *Jurnal Teknologi Pangan dan Gizi*, 12(2), 45–52.

Dodero, A., Escher, A., Bertucci, S., Castellano, M., & Lova, P. (2021). Intelligent packaging for real-time monitoring of food-quality: Current and future developments. *Applied Sciences*, 11(8), 3532.

Dolgui, A., & Proth, J. M. (2010). *Pricing strategies and models*. Springer.

Etxabide, A., Kilmartin, P. A., & Maté, J. I. (2021). Color stability and pH-indicator ability of curcumin, anthocyanin and betanin containing colorants under different storage conditions for intelligent packaging development. *Food Control*, 121, 107645.

Filda, D., & Gusnita. (2020). Studi preferensi konsumen terhadap rendang produk komersial: Studi kasus rendang tempe. *Jurnal Inovasi Pangan Nusantara*, 5(1), 33–41.

Fitzgerald, B., & Lee, J. Y. (2020). Dynamic pricing in digital marketplaces: Food safety. *Food Control*, 123, 107735.

Gonzalez, R. C., & Woods, R. E. (2018). *Digital Image Processing* (4th ed.). Pearson Education.

Grozdanović, P., Gligorijević, A., Andrejić, M., Nikolić, M., & Kilibarda, M. (2023). A New Model for Determining the Price of Product Distribution Based on Fuzzy Logic. *Logistics*, 7(3), 62.

Guo, C., Li, Y., Zhang, H., Zhang, Q., Wu, X., Wang, Y., & Xia, X. (2024). A review on improving the sensitivity and color stability of naturally sourced pH-sensitive indicator films. *Comprehensive Reviews in Food Science and Food Safety*, 23(4), e13390.

Halim, G. E., & Tjahjono, M. (2023). Evaluation of Color Models for Quantitative Determination of Food Dyes using Smartphone-Based Digital Image Analysis. *JKPK*, 8(1).

Handayani, A., Putri, R. A., & Suryani, R. (2020). Pengembangan time temperature indicator berbasis kurkumin dan PVA untuk deteksi mutu produk pangan. *Jurnal Teknologi Hasil Pertanian*, 13(2), 123-132.

Huang, X., Li, J., He, J., Luo, J., Cai, J., Wei, J., ... & Zhong, H. (2024). Preparation of curcumin-loaded chitosan/polyvinyl alcohol intelligent active films for food packaging and freshness monitoring. *International Journal of Biological Macromolecules*, 276, 133807.

Kerry, J. P., O'Grady, M. N., & Hogan, S. A. (2021). Past, current and potential utilisation of active and intelligent packaging systems for meat and muscle-based products: A review. *Meat Science*, 174, 108418.

Kim, H. Y., Lee, S. H., & Park, J. H. (2021). Development of PVA-based intelligent food packaging applications. *Food Chemistry*, 344, 128605.

Kusumaningrum, R. P., Utami, T. S., & Arum, P. D. (2018). Aplikasi time temperature indicator (TTI) pada kemasan makanan sebagai upaya monitoring kualitas produk. *Jurnal Teknologi Pangan dan Gizi*, 9(1), 25-32.

Lanza, G.A.; Perez-Taborda, J.A.; Avila, A. (2023). Properties and Applications of Intelligent Packaging Indicators for Food Quality and Safety. *PMC*

Lee, K., Baek, S., Kim, D., & Seo, J. (2019). A freshness indicator for monitoring chicken-breast spoilage using a Tyvek® sheet and RGB color analysis. *Food Packaging and Shelf Life*, 19, 40-46.

- Lestari, R., Sari, D. K., & Pramitasari, I. C. (2019). Kajian nilai gizi dan mutu mikrobiologi rendang tempe sebagai alternatif makanan siap saji. *Jurnal Teknologi dan Industri Pangan*, 30(1), 45-51.
- Li, L., Li, W., Sun, W., Dong, Y., Yv, Y., Shi, W., & Sun, W. (2024). A visual ratio PVA/curcumin/indigo nanofibre membrane based on natural pigments for detecting mutton freshness. *International Journal of Food Science and Technology*, 59(8), 5742-5753.
- Li, Y., Li, L., & Wang, S. (2019). Dynamic pricing models for perishable products: A review. *European Journal of Operational Research*, 278(3), 715–735.
- Lin, Q. (2022). Dynamic pricing strategies for perishable food products under quality deterioration. *Journal of Retailing and Consumer Services*, 65, 102854.
- Liu, D., (2021). Corn starch/polyvinyl alcohol-based films incorporated with curcumin-loaded Pickering emulsion for application in intelligent packaging. *International Journal of Biological Macromolecules*, 188, 974–982.
- Ma, Y., Yang, W., Xia, Y., Xue, W., Wu, H., Li, Z., & Fu, C. (2022). Properties and applications of intelligent packaging indicators for food spoilage. *Membranes*, 12(5), 477.
- Mali, S. N., & Pandey, A. (2024). Development of curcumin integrated smart pH indicator, antibacterial, and antioxidant waste derived Artocarpus lakoocha starch-based packaging film. *International Journal of Biological Macromolecules*, 275, 133827.

- Mazur, F., Han, Z., Tjandra, A. D., & Chandrawati, R. (2024). Digitalization of colorimetric sensor technologies for food safety. *Advanced Materials*, 36(42), 2404274.
- Mergu, N., & Son, S. M. (2022). Application of time-temperature indicators in monitoring systems for food supply chains. *Sensors and Actuators in Smart Food Systems*, 18(1), 33–47.
- Minz, P. S., & Saini, C. S. (2021). RGB camera-based image technique for color measurement of flavored milk. *Measurement: Food*, 4(3), 100012.
- Mohseni-Shahri, F., Mehrzad, A., Khoshbin, Z., Sarabi-Jamab, M., Khanmohamadi, F., & Verdian, A. (2023). Polyphenol-loaded bacterial cellulose nanofiber as a green indicator for fish spoilage. *International Journal of Biological Macromolecules*, 224, 1174-1182.
- Nugraheni, M., Yuliani, S., & Hidayat, T. (2020). Pemanfaatan kurkumin sebagai indikator pH alami pada kemasan cerdas (smart packaging). *Jurnal Teknologi Hasil Pertanian*, 13(2), 123–130.
- Oliveira Filho, J. G., Nascimento, J. R., & Silva, L. A. (2024). Biodegradable film incorporating curcumin for smart packaging. *International Journal of Biological Macromolecules*, 231, 123498.

- Oyeyinka, S. A., Gbashi, S., Onarinde, B. A., Adebo, O. A., & Njobeh, P. B. (2022). Metabolite profile of raw and cooked pasta from whole wheat grain enriched with Bambara groundnut. *Journal of Food Processing and Preservation*, 46(12), e17152.
- Özkaya, P. T., & Dağbaşı, S. (2021). Usage of Natural Colour Indicators in Packaging Materials for Monitorization of Meat Freshness. *Turkish Journal of Agriculture-Food Science and Technology*, 9(10), 1869-1875.
- Palanisamy, Y., Kadirvel, V., & Ganesan, N. D. (2025). Recent technological advances in food packaging: sensors, automation, and application. *Sustainable Food Technology*.
- Pereira, A., Marques, M. A., Alves, J., Morais, M., Figueira, J., Pinto, J. V., & Moreira, F. T. (2024). Irreversible colorimetric bio-based curcumin bilayer membranes for smart food packaging temperature control applications. *RSC advances*, 14(13), 8981-8989.
- Pires, J. R. A., Rodrigues, C., Coelho, I., Fernando, A. L., & Souza, V. G. L. (2023). Current applications of bionanocomposites in food processing and packaging. *Polymers*, 15(10), 2336.
- Prasetya, R. D., & Asriani, D. (2023). Potensi pangan lokal sebagai bahan baku smart packaging. *Jurnal Rekayasa Pangan dan Pertanian*, 8(2), 85-92.

- Pratama, R. A., Nugroho, R. A., & Lestari, N. (2020). Inovasi smart packaging: Pengembangan label indikator perubahan mutu produk pangan. *Jurnal Rekayasa Pangan dan Pertanian*, 8(2), 85-92.
- Putri, D. S., & Sari, R. M. (2019). Pemanfaatan pewarna alami dalam industri pangan dan kesehatannya. *Jurnal Ilmu dan Teknologi Pangan*, 4(2), 50-58.
- Roy, S., & Rhim, J. W. (2019). Curcumin-based colorimetric indicators for quality. *Journal of Food Quality*, 42(3), 112–120.
- Sari, M. D., & Nugroho, E. (2020). Analisis penggunaan Visual Studio Code dalam pengembangan aplikasi web berbasis JavaScript. *Jurnal Teknologi Informasi*, 11(2), 55-62.
- Sari, R. M., Wulandari, A. S., & Putri, D. S. (2020). Karakteristik fisikokimia dan mutu mikrobiologi rendang tempe sebagai produk semi basah. *Jurnal Gizi dan Pangan*, 15(2), 85-93.
- Setyani, E., Rahmawati, I., & Pratiwi, R. (2022). Karakterisasi film indikator berbasis kurkumin dan PVA. *Jurnal Teknologi Hasil Pertanian*, 15(2), 90–98.
- Sharma, J., Singh, R. P., Kumar, V., & Kaur, A. (2024). Impact of digital technologies on the risk assessment in food supply chain: a wake towards digitalisation. *International Journal of Food Science & Technology*, 59(5), 3491-3504.
- Sharma, K., Yadav, R., & Rajput, R. (2025). Smart Packaging Materials: A Review of Existing and Emerging Packaging Technologies and their Applications. *Journal of Scientific Research and Reports*, 31(5), 53-68.

Sudarsono, J., Widyastuti, D., & Herminawati, D. (2000). *Farmakognosi dan fitokimia*. Jakarta: Depkes RI.

Sugiyono. (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.

Susanti, E., Wahyuni, R., & Handayani, N. (2020). Sifat fisik, kimia, dan sensoris tempe koro pedang putih dengan variasi waktu fermentasi dan jenis pengemas. Yogyakarta: Universitas Gadjah Mada.

Tempe di Kota Padang. (2019). Tempe di Kota Padang. *Jurnal Pangan Lokal Nusantara*, 4(1), 33–38.

Thiyagarajan, A., Subramaniyam, N., Thiyagarajan, V., Pushparaj, C., Kandasamy, S., & Subramani, R. (2025). Betacyanin–curcumin smart films for detecting fresh chicken quality in real time. *Sustainable Food Technology*.

Wahyuni, R., Fitriyah, S., & Putra, A. (2021). Studi pemanfaatan Visual Studio Code sebagai media pengembangan aplikasi mobile dan web. *Jurnal Sistem Informasi*, 9(1), 33-40.

Wang, D., Zhou, S., Li, N., & Lin, D. (2025). Curcumin: A Magical Small Molecule with a Large Role in Active and Intelligent Packaging Applications. *International Journal of Molecular Sciences*, 26(7), 3189

Wang, D., Zhou, S., Li, N., & Lin, D. (2025). Curcumin: A Magical Small Molecule with a Large Role in Active-Intelligent Degradable Food Packaging. *International Journal of Molecular Sciences*, 26(8), 3917.

Wang, S.; Liu, X.; Yang, M.; Zhang, Y.; Xiang, K.; Tang, R. (2020). Review of Time Temperature Indicators as Quality Monitors in Food Packaging.

Wulandari, A. S., Setyaningsih, D., & Nuryani, W. (2020). Aplikasi pewarna alami sebagai indikator mutu dalam kemasan cerdas (smart packaging). *Jurnal Teknologi Hasil Pertanian*, 13(1), 33-41.

Xie, L., Li, W., Sun, W., (2023). Visual ratio PVA/curcumin/indigo nanofibre membrane based on natural pigments for detecting mutton freshness. *International Journal of Food Science & Technology*, 59(8), 5742–5753.

Xie, W., Li, J., & Zhao, Y. (2022). Dynamic pricing strategy in perishable food supply chains considering product quality. *Journal of Cleaner Production*, 358, 13193.

Xiong, F., Kühn, N., & Stauder, M. (2024). Designing a computer-vision-based artifact for automated quality control: a case study in the food industry. *Flexible Services and Manufacturing Journal*, 36(4), 1422-1449.

Yuliani, S., & Setyabudi, F. M. C. (2019). Pengembangan label indikator berbasis ekstrak alami untuk deteksi mutu pangan. *Jurnal Ilmu dan Teknologi Pangan*, 4(2), 45-53.

Yusof, N. L., Othman, N., Mohamed, N. M., Halim, N. S., & Mohamad, R. (2021). Efficacy of Biopolymer/Starch-Based Antimicrobial Films on the Preservation of Chicken Fillet: pH, Colour, and Microbial Correlation. *Foods*, 10(10), 2379. MDPI.

Zhang, J., Huang, X., Zou, X., Shi, J., Zhai, X., Liu, L., ... & Xiao, J. (2021). A visual indicator based on curcumin with high stability for monitoring the freshness of freshwater shrimp, *Macrobrachium rosenbergii*. *Journal of Food Engineering*, 292, 110290.

Zhang, X. et al. (2023). Fish Freshness Indicator for Sensing Fish Quality during Storage. *Foods*, 12(9), 1801. MDPI.

Zhang, Y., & Lin, Q. (2022). Temperature abuse impact on microbial and physicochemical properties of perishable foods during distribution: An overview. *Food Research International*, 150, 110772.

Zhang, Z., Wang, Y., & Chen, J. (2021). Integration of IoT-based smart packaging and dynamic pricing for food supply chains. *Computers and Electronics in Agriculture*, 190, 106474.

