

DAFTAR PUSTAKA

- Altiok, E. (2003). *Production of proanthocyanidins from grape seeds*. 1–90. <https://core.ac.uk/download/pdf/47251822.pdf>
- Beta, T., Rooney, L. W., Marovatsanga, L. T., & Taylor, J. R. N. (2000). Effect of chemical treatments on polyphenols and malt quality in sorghum. *Journal of Cereal Science*, 31(3), 295–302. <https://doi.org/10.1006/jcrs.2000.0310>
- Bröhan, M., Jerkovic, V., Wilmotte, R., & Collin, S. (2011). Catechins and derived procyanidins in red and white sorghum: Their contributions to antioxidant activity. *Journal of the Institute of Brewing*, 117(4), 600–607. <https://doi.org/10.1002/j.2050-0416.2011.tb00510.x>
- Chen, Y., Zhang, W., Zhao, T., Li, F., Zhang, M., Li, J., Zou, Y., Wang, W., Cobbina, S. J., Wu, X., & Yang, L. (2016). Adsorption properties of macroporous adsorbent resins for separation of anthocyanins from mulberry. *Food Chemistry*, 194, 712–722. <https://doi.org/10.1016/j.foodchem.2015.08.084>
- Chu, M. J., Liu, X. M., Yan, N., Wang, F. Z., Du, Y. M., & Zhang, Z. F. (2018). Partial purification, identification, and quantitation of antioxidants from wild rice (*Zizania latifolia*). *Molecules*, 23(11). <https://doi.org/10.3390/molecules23112782>
- Chun Lin, Y., Meng Choong, Y., & Ling Chu, H. (2021). Effects of Processing Time and Temperature on Flavanol and Procyanidin, Proanthocyanidin and Antioxidant Activity of Cocoa Bean in Taiwan. *Journal of Food and Nutrition Research*, 9(1), 10–17. <https://doi.org/10.12691/jfnr-9-1-2>
- De La Iglesia, R., Milagro, F. I., Campión, J., Boqué, N., & Martínez, J. A. (2010). Healthy properties of proanthocyanidins. *BioFactors*, 36(3), 159–168. <https://doi.org/10.1002/biof.79>
- Deka, H., & Saikia, M. D. (2015). Structural and thermodynamic factors on adsorptive interaction of certain flavonoids onto polymeric resins and activated carbon. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 469, 51–59. <https://doi.org/10.1016/j.colsurfa.2015.01.007>
- Earp, C. F., McDonough, C. M., & Rooney, L. W. (2004). Microscopy of pericarp development in the caryopsis of *Sorghum bicolor* (L.) Moench. *Journal of Cereal Science*, 39(1), 21–27. [https://doi.org/10.1016/S0733-5210\(03\)00060-2](https://doi.org/10.1016/S0733-5210(03)00060-2)
- Erkey, C. (2011). Thermodynamics and dynamics of adsorption of metal complexes on surfaces from supercritical solutions. In *Supercritical Fluid Science and Technology* (Vol. 1, Issue 1 E). <https://doi.org/10.1016/B978-0-08-045329-3.00004-4>
- Gao, C., Zhao, S., Yagiz, Y., & Gu, L. (2018). Static, Kinetic, and Isotherm Adsorption Performances of Macroporous Adsorbent Resins for Recovery and Enrichment of Bioactive Procyanidins from Cranberry Pomace. *Journal of Food Science*, 83(5), 1249–1257. <https://doi.org/10.1111/1750-3841.14142>

- Hou, M., Hu, W., Xiu, Z., Jiang, A., Men, L., Hao, K., Sun, X., & Cao, D. (2019). Preparative Purification of Total Flavonoids from *Sophora tonkinensis* Gagnep. By macroporous resin column chromatography and comparative analysis of flavonoid profiles by HPLC-PAD. *Molecules*, 24(17). <https://doi.org/10.3390/molecules24173200>
- Kurmukov, A. G. (2013). Phytochemistry of medicinal plants. *Medicinal Plants of Central Asia: Uzbekistan and Kyrgyzstan*, 1(6), 13–14. https://doi.org/10.1007/978-1-4614-3912-7_4
- Li, J., & Chase, H. A. (2010). Development of adsorptive (non-ionic) macroporous resins and their uses in the purification of pharmacologically-active natural products from plant sources. *Natural Product Reports*, 27(10), 1493–1510. <https://doi.org/10.1039/c0np00015a>
- Lin, L., Zhao, H., Dong, Y., Yang, B., & Zhao, M. (2012). Macroporous resin purification behavior of phenolics and rosmarinic acid from *Rabdosia serra* (MAXIM.) HARA leaf. *Food Chemistry*, 130(2), 417–424. <https://doi.org/10.1016/j.foodchem.2011.07.069>
- Lynam, M. M., Kilduff, J. E., & Weber, W. J. (1995). Adsorption of p-nitrophenol from dilute aqueous solution: An experiment in physical chemistry with an environmental application. *Journal of Chemical Education*, 72(1), 80–84. <https://doi.org/10.1021/ed072p80>
- Rauf, A., Imran, M., Abu-Izneid, T., Iahtisham-Ul-Haq, Patel, S., Pan, X., Naz, S., Sanches Silva, A., Saeed, F., & Rasul Suleria, H. A. (2019). Proanthocyanidins: A comprehensive review. *Biomedicine and Pharmacotherapy*, 116(May). <https://doi.org/10.1016/j.biopha.2019.108999>
- Ren, J., Zheng, Y., Lin, Z., Han, X., & Liao, W. (2017). Macroporous resin purification and characterization of flavonoids from *Platycladus orientalis* (L.) Franco and their effects on macrophage inflammatory response. *Food and Function*, 8(1), 86–95. <https://doi.org/10.1039/c6fo01474g>
- Saha, P., & Chowdhury, S. (2011). Insight Into Adsorption Thermodynamics. *Thermodynamics*. <https://doi.org/10.5772/13474>
- Seader, Henley, & Roper. (2011). separation process principles: chemical and biochemical operations. In *John Wiley & Sons, Inc* (Vol. 1, Issue 4).
- Shazeli, M., Zain, C., Lee, S. Y., Teo, C. Y., & Shaari, K. (2020). Flavonoids from oil palm (*Elaeis guineensis* Jacq.). *Molecules*, 25(1), 1–17.
- Susanti, A. D. (2017). *Studi pemisahan oryzanol dari minyak bekatul dengan proses adsorpsi*. Universitas Gadjah Mada.
- Susanti, D. Y., Sediawan, W. B., Fahrurrozi, M., & Hidayat, M. (2020). Optimization of Agitation and Kinetic Studies on Proanthocyanidin Compound Extraction from Red Sorghum Grains in Agitated Vessel. *IOP Conference Series: Materials Science and Engineering*, 778(1). <https://doi.org/10.1088/1757-899X/778/1/012085>
- Susanti, Devi Yuni, Sediawan, W. B., Fahrurrozi, M., & Hidayat, M. (2021). The Effects of Ultrasound Wave on the Extraction of Proanthocyanidins from Red Sorghum Grain

Using Green Solvent and a Kinetics Model of the Extraction. *Key Engineering Materials*, 884, 212–219. <https://doi.org/10.4028/www.scientific.net/kem.884.212>

- Tao, Y., Wu, Y., Han, Y., Chemat, F., Li, D., & Show, P. L. (2020). Insight into mass transfer during ultrasound-enhanced adsorption/desorption of blueberry anthocyanins on macroporous resins by numerical simulation considering ultrasonic influence on resin properties. *Chemical Engineering Journal*, 380(August 2019), 122530. <https://doi.org/10.1016/j.cej.2019.122530>
- Wan, P., Sheng, Z., Han, Q., Zhao, Y., Cheng, G., & Li, Y. (2014). Enrichment and purification of total flavonoids from Flos Populi extracts with macroporous resins and evaluation of antioxidant activities in vitro. *Journal of Chromatography B: Analytical Technologies in the Biomedical and Life Sciences*, 945–946, 68–74. <https://doi.org/10.1016/j.jchromb.2013.11.033>
- Wu, S., Wang, Y., Gong, G., Li, F., Ren, H., & Liu, Y. (2015). Adsorption and desorption properties of macroporous resins for flavonoids from the extract of Chinese wolfberry (*Lycium barbarum* L.). *Food and Bioprocess Processing*, 93(June 2013), 148–155. <https://doi.org/10.1016/j.fbp.2013.12.006>
- Yang, Q., Zhao, M., & Lin, L. (2016). Adsorption and desorption characteristics of adlay bran free phenolics on macroporous resins. *Food Chemistry*, 194, 900–907. <https://doi.org/10.1016/j.foodchem.2015.08.070>
- Zhang, Y., Li, S., Wu, X., & Zhao, X. (2007). Macroporous Resin Adsorption for Purification of Flavonoids in *Houttuynia cordata* Thunb. *Chinese Journal of Chemical Engineering*, 15(6), 872–876. [https://doi.org/10.1016/S1004-9541\(08\)60017-8](https://doi.org/10.1016/S1004-9541(08)60017-8)
- Zhang, Z. F., Liu, Y., Luo, P., & Zhang, H. (2009). Separation and purification of two flavone glucuronides from *Erigeron multiradiatus* (Lindl.) Benth with macroporous resins. *Journal of Biomedicine and Biotechnology*, 2009. <https://doi.org/10.1155/2009/875629>
- Zheng, J., He, X., Cai, C., Xiao, J., Liu, Y., Chen, Z., Pan, B., & Lin, X. (2020). Adsorption isotherm, kinetics simulation and breakthrough analysis of 5-hydroxymethylfurfural adsorption/desorption behavior of a novel polar-modified post-cross-linked poly (divinylbenzene-co-ethyleneglycoldimethacrylate) resin. *Chemosphere*, 239(100), 124732. <https://doi.org/10.1016/j.chemosphere.2019.124732>
- Zhou, X., & Zhou, X. (2014). the Unit Problem in the Thermodynamic Calculation of Adsorption Using the Langmuir Equation. *Chemical Engineering Communications*, 201(11), 1459–1467. <https://doi.org/10.1080/00986445.2013.818541>
- Zubair, A., & Padjadjaran, U. (2018). *SORGUM - Tanaman Multi Manfaat ISBN 978-602-6308-93-1* (Issue March).
- Pubchem. (2021). *Proantosianidin*. Diakses pada 24 Juli 2021, dari <https://pubchem.ncbi.nlm.nih.gov/compound/Proantosianidin#section=Information-Sources>