

## DAFTAR PUSTAKA

- Aina, M. (2013). Uji kualitatif vitamin C pada berbagai makanan dan pengaruhnya terhadap pemanasan. *Journal of Chemical Information and Modeling*, 53.
- Alberts, A., Moldoveanu, E.-T., Niculescu, A.-G., & Grumezescu, A. M. (2025). Vitamin C: A Comprehensive Review of Its Role in Health, Disease Prevention, and Therapeutic Potential. *Molecules*, 30(3), 748. <https://doi.org/10.3390/molecules30030748>
- Alhumaydhi, F. A., Younus, H., & Khan, M. A. (2025). *Catalase Functions and Glycation: Their Central Roles in Oxidative Stress, Metabolic Disorders, and Neurodegeneration*. *Catalysts*, 15(9), 817. <https://doi.org/10.3390/catal15090817>
- Anjani, D. A. V. N. (2023). *Non-alcoholic Fatty Liver Disease: Diagnosis and Treatment*. *Jurnal Biologi Tropis*, 23(3), 213–224. <https://doi.org/10.29303/jbt.v23i3.5016>
- Antunes, C., Azadfard, M., Hoilat, G. J., & Gupta, M. (2023). *Fatty liver*. In *StatPearls*. StatPearls Publishing.
- Badan Kebijakan Pembangunan Kesehatan. (2021). Laporan nasional Risesdas 2023: Bab 5. Status Gizi Penduduk Indonesia. Kementerian Kesehatan Republik Indonesia.
- Badaring, D. R., Sari, S. P. M., Nurhabiba, S., Wulan, W., & Lembang, S. A. R. (2020). Uji ekstrak daun maja (*Aegle marmelos L.*) terhadap pertumbuhan bakteri *Escherichia coli* dan *Staphylococcus aureus*. *Indonesian Journal of Fundamental Sciences*, 6(1), 16.
- Bastías-Pérez, M., Serra, D., & Herrero, L. (2020). *Dietary Options for Rodents in the Study of Obesity*. *Nutrients*, 12(11), 3234. <https://doi.org/10.3390/nu12113234>
- Buzzetti, E., Pinzani, M., & Tsochatzis, E. A. (2016). *The multiple-hit pathogenesis of non-alcoholic fatty liver disease (NAFLD)*. *Metabolism*, 65(8), 1038–1048. <https://doi.org/10.1016/j.metabol.2015.12.012>
- Cesar, A. R. (2022). Pengaruh Pemberian Ekstrak Akar Kayu Kuning (*Arcangelisia flava Merr.*) Terhadap Aktivitas Enzim Katalase Mencit (*Mus musculus*) yang Diinduksi Galaktosa. Universitas Andalas.

- Chalasan, N., Younossi, Z., Lavine, J. E., Diehl, A. M., Brunt, E. M., Cusi, K., Charlton, M., & Sanyal, A. J. (2012). *The diagnosis and management of non-alcoholic fatty liver disease: practice guideline by the American Association for the Study of Liver Diseases, American College of Gastroenterology, and the American Gastroenterological Association. Hepatology, 55(6), 2005–2023.*
- Darmawan, A., Lumadi, S. A., & Firdaus, A. D. (2022). *Literature Review: Faktor-Faktor Yang Berhubungan Dengan Kejadian Obesitas Pada Remaja Literature Review: Factors Associated With Obesity In Teenager. Journal of Nursing Care and Biomoleculer, 7(1), 52–60.*
- Dias, M. de M. e, dos Reis, S. A., da Conceição, L. L., Sedyama, C. M. N. de O., Pereira, S. S., de Oliveira, L. L., Gouveia Peluzio, M. do C., Martinez, J. A., & Milagro, F. I. (2021). *Diet-induced obesity in animal models: points to consider and influence on metabolic markers. Diabetology & Metabolic Syndrome, 13(1), 32.* <https://doi.org/10.1186/s13098-021-00647-2>
- Elizabeth, L. D., Budhy, T. I., & Rahayu, R. P. (2024). *Moringa Oleifera Extract Can Inhibit Glomerulus Damage Of Rattus Novergicus Injected Cyclophosphamide. Jurnal Biosains Pascasarjana, 26(1).*
- Endarini, L. H. (2016). *Farmakognosi dan Fitokimia.* Pusdik SDM Kesehatan.
- Fadilah, N., & Sefrina, L. R. (2022). *Hubungan Pola Makan, Asupan Kebiasaan Makan, Dan Aktifitas Fisik Terhadap Kejadian Obesitas Pada Anak Sekolah Dasar: Literature Review. JUMANTIK (Jurnal Ilmiah Penelitian Kesehatan), 7(3), 200.*
- Fiqih, M. (2019). *Pengaruh Pemberian Ekstrak dan Infusa Daun Kelor (Moringa oleifera) Terhadap Aktivitas Enzim Katalase Hepar Mencit (Mus musculus) Obesitas yang Diinduksi 2-Nitropropane.* UPN Veteran Jakarta .
- Fitriana, W. D., Ersam, T., Shimizu, K., & Fatmawati, S. (2018). *Antioxidant Activity of Moringa oleifera Extracts. Indonesian Journal of Chemistry, 16(3), 297.* <https://doi.org/10.22146/ijc.21145>
- Fitriana, Y. A. N., & Fitri, A. S. (2020). *Analisis Kadar Vitamin C pada Buah Jeruk Menggunakan Metode Titrasi Iodometri. Sainteks, 17(1), 27.* <https://doi.org/10.30595/sainteks.v17i1.8530>
- Gashgari, A. M. N., Alhusainy, K. M., & Alharbi, F. O. E. (2018). *Nonalcoholic Fatty Liver Disease (NAFLD). The Egyptian Journal of Hospital Medicine, 70(1), 181–186.* <https://doi.org/10.12816/0042982>

- Gopalakrishnan, L., Doriya, K., & Kumar, D. S. (2016). *Moringa oleifera: A review on nutritive importance and its medicinal application. Food Science and Human Wellness*, 5(2), 49–56. <https://doi.org/10.1016/j.fshw.2016.04.001>
- Guo, X., Yin, X., Liu, Z., & Wang, J. (2022). *Non-Alcoholic Fatty Liver Disease (NAFLD) Pathogenesis and Natural Products for Prevention and Treatment. International Journal of Molecular Sciences*, 23(24), 15489. <https://doi.org/10.3390/ijms232415489>
- Halliwell, B., & Gutteridge, J. M. C. (2015). *Free radicals in biology and medicine* (5th ed.). Oxford University Press.
- Hani, R. C., & Milanda, T. (2016). Review: Manfaat antioksidan pada tanaman buah di Indonesia. *Farmaka*.
- Harjono, F. F., & Hardiany, N. S. (2024). Efek Ekstrak Etanol Biji Ketumbar (*Coriandrum Sativum L.*) terhadap Aktivitas Spesifik Enzim Katalase pada Jaringan Ginjal Tikus Obesitas. Fakultas Kedokteran Universitas Indonesia (FKUI).
- Heck, D. E., Shakarjian, M., Kim, H. D., Laskin, J. D., & Vetrano, A. M. (2010). *Mechanisms of oxidant generation by catalase. Annals of the New York Academy of Sciences*, 1203(1), 120–125. <https://doi.org/10.1111/j.1749-6632.2010.05603.x>
- Hermawan. (2020). Mengenal Obesitas. Andi.
- Ichihara, S., & Yamada, Y. (2008). *Genetic factors for human obesity. Cellular and Molecular Life Sciences*.
- Isola, G., Polizzi, A., Muraglie, S., Leonardi, R., & Lo Giudice, A. (2019). *Assessment of Vitamin C and Antioxidant Profiles in Saliva and Serum in Patients with Periodontitis and Ischemic Heart Disease. Nutrients*, 11(12), 2956. <https://doi.org/10.3390/nu11122956>
- Jin, X., Qiu, T., Li, L., Yu, R., Chen, X., Li, C., Proud, C. G., & Jiang, T. (2023). *Pathophysiology of obesity and its associated diseases. Acta Pharmaceutica Sinica B*, 13(6), 2403–2424. <https://doi.org/10.1016/j.apsb.2023.01.012>
- Kim, Y., Jaja-Chimedza, A., Merrill, D., Mendes, O., & Raskin, I. (2018). *A 14-day repeated-dose oral toxicological evaluation of an isothiocyanate-enriched hydro-alcoholic extract from Moringa oleifera Lam. seeds in rats. Toxicology Reports*, 5, 418–426. <https://doi.org/10.1016/j.toxrep.2018.02.012>

- Korcowska-Łacka, I., Słowikowski, B., Piekut, T., Hurła, M., Banaszek, N., Szymanowicz, O., Jagodziński, P. P., Kozubski, W., Permoda-Pachuta, A., & Dorszewska, J. (2023). *Disorders of Endogenous and Exogenous Antioxidants in Neurological Diseases. Antioxidants*, 12(10), 1811. <https://doi.org/10.3390/antiox12101811>
- Kudaravalli, P., & John, S. (2023). *Nonalcoholic fatty liver. In StatPearls. StatPearls Publishing.*
- Kulvinder & Allahbadia, Gautam & Singh, Mandeep. (2021). *The Association of Non Viral Liver Diseases from NAFLD to NASH to HCC with the Pandemic of Obesity, Type 2 Diabetes, or Diabesity & Metabolic Syndrome Etiopathogenetic Correlation along with Utilization for Diagnostic & Therapeutic Purposes-A Systematic Review. Journal of Endocrinology Research*. 3. 1-24. 10.30564/jer.v3i2.3520.
- Lalus, F. N., Agusta, L., & Arvinda. (2021). Analisis Kandungan Flavanoid Total Pada Ekstrak Etanol Buah Kelor (*Moringa Oleifera*) Dengan Menggunakan Metode Spektrofotometer Uv-Vis
- Leone, A., Spada, A., Battezzati, A., Schiraldi, A., Aristil, J., & Bertoli, S. (2016). *Moringa oleifera Seeds and Oil: Characteristics and Uses for Human Health. International Journal of Molecular Sciences*, 17(12), 2141. <https://doi.org/10.3390/ijms17122141>
- Lismont, C., Revenco, I., Li, H., Costa, C. F., Lenaerts, L., Hussein, M. A. F., De Bie, J., Knoop, B., Van Veldhoven, P. P., Derua, R., & Franssen, M. (2022). *Peroxisome-Derived Hydrogen Peroxide Modulates the Sulfenylation Profiles of Key Redox Signaling Proteins in Flp-In T-REx 293 Cells. Frontiers in Cell and Developmental Biology*, 10. <https://doi.org/10.3389/fcell.2022.888873>
- Liu, C., Yuan, Y.-C., Guo, M.-N., Xin, Z., Chen, G.-J., Ding, N., Zheng, J.-P., Zang, B., & Yang, J.-K. (2024). *Rising incidence of obesity-related cancers among younger adults in China: A population-based analysis (2007–2021). Med*, 5(11), 1402-1412.e2. <https://doi.org/10.1016/j.medj.2024.07.012>
- Mahboob, A., Samuel, S. M., Mohamed, A., Wani, M. Y., Ghorbel, S., Miled, N., Büsselberg, D., & Chaari, A. (2023). *Role of flavonoids in controlling obesity: molecular targets and mechanisms. Frontiers in Nutrition*, 10. <https://doi.org/10.3389/fnut.2023.1177897>
- Marhaeni, L. S. (2021). Daun kelor (*Moringa oleifera*) sebagai sumber pangan fungsional dan antioksidan. *AGRISIA: Jurnal Ilmu-Ilmu Pertanian*, 13(2).

- Masood, B., & Moorthy, M. (2023). *Causes of obesity: a review. Clinical Medicine*, 23(4), 284–291. <https://doi.org/10.7861/clinmed.2023-0168>
- Masriani, M., Melania, P., Muharini, R., Alimuddin, A. H., & Sartika, R. P. (2024). *Total phenolic and flavonoids content, and antioxidant activity of Kratom (Mitragyna speciosa Korth.) leaf ethanol extract. Jurnal Natural*, 24(1), 16–21.
- McMurray, F., Patten, D. A., & Harper, M. (2016). *Reactive Oxygen Species and Oxidative Stress in Obesity—Recent Findings and Empirical Approaches. Obesity*, 24(11), 2301–2310. <https://doi.org/10.1002/oby.21654>
- Mulyadi, T. A. (2022). Efek Pemberian Ekstrak Etanol Daun Kelor (*Moringa oleifera*) Terhadap Kadar Enzim Katalase Tikus Putih (*Rattus norvegicus*) Model Hiperurisemia [Skripsi]. Universitas Jenderal Soedirman.
- Nandi, A., Yan, L.-J., Jana, C. K., & Das, N. (2019). *Role of Catalase in Oxidative Stress- and Age-Associated Degenerative Diseases. Oxidative Medicine and Cellular Longevity*, 2019, 1–19. <https://doi.org/10.1155/2019/9613090>
- Nayak, S., & Khuntia, S. kumar. (2019). *Development and study of properties of Moringa oleifera fruit fibers/ polyethylene terephthalate composites for packaging applications. Composites Communications*, 15, 113–119. <https://doi.org/10.1016/j.coco.2019.07.008>
- Obernier, J. A., & Baldwin, R. L. (2006). *Establishing an Appropriate Period of Acclimatization Following Transportation of Laboratory Animals. ILAR Journal*, 47(4), 364–369. <https://doi.org/10.1093/ilar.47.4.364>
- Pallant, J. (2020). *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using IBM SPSS* (7th ed.). Routledge.
- Pandiangan, A., Wulan, A. J., Setyaningrum, E., & Ismunandar, H. (2022). Pengaruh Pemberian Vitamin C Terhadap Obesitas Tikus Putih (*Rattus norvegicus*) Jantan Galur Sprague Dawley Yang Diinduksi Monosodium Glutamat. *Jurnal Ilmu Kedokteran Dan Kesehatan*, 9(1).
- Pareek, A., Pant, M., Gupta, M. M., Kashania, P., Ratan, Y., Jain, V., Pareek, A., & Chaturgoon, A. A. (2023). *Moringa oleifera: An Updated Comprehensive Review of Its Pharmacological Activities, Ethnomedicinal, Phytopharmaceutical Formulation, Clinical, Phytochemical, and Toxicological Aspects. International Journal of Molecular Sciences*, 24(3), 2098. <https://doi.org/10.3390/ijms24032098>

- Pidada, I. A. A., Setiasih, N. L. E., & Winaya, I. B. O. (2018). Daun Kelor Memperbaiki Histopatologi Hati Tikus Putih yang Mengalami Diabetes Melitus. *Buletin Veteriner Udayana*, *10*(1), 50–56.
- Pratiwi, D. A. (2019). *Aktivitas Enzim Katalase Darah Sebagai Indikator Tingkat Kematangan Daging Ayam [Skripsi]*. Universitas Lampung.
- Puspitasari, F. A., Kartikasari, N. B., Mutiyastika, S., Purnamasari, R., Lusiana, N., & Agustina, E. (2023). *Effect of Different Solvents in the Extraction Process of Kelor Moringa oleifera) Leaves on Bioactive Resources and Phenolic Acid Content. International Conference on Sustainable Health Promotion*, *3*(1), 167–178.
- Rahma, S., Wiratmini, N. I., & Sudatri, N. W. (2022). Uji Efektivitas Vitamin C sebagai Neuroprotektor pada Mencit (*Mus musculus*) yang Diinduksi Akrilamida. *Metamorfosa: Journal of Biological Sciences*, *9*(1), 79.
- Riastiwi, I., Damayanto, I. P. G. P., Ridwan, R., Handayani, T., & Leksonowati, A. (2018). *Moringa oleifera distribution in Java and lesser Sunda Islands which is attributed with annual rainfall. Biosaintifika: Journal of Biology & Biology Education*, *10*(3), 613–621.
- Sadsyam, S., Awaluddin, N., & Suharniyanti, S. (2025). Potensi Ekstrak Etanol Buah Kelor (*Moringa Oleifera L.*) Sebagai Bahan Aktif Sediaan Gel Terhadap Penyembuhan Luka Diabetes Pada Tikus Putih Jantan. *Pharmacology And Pharmacy Scientific Journals*, *4*(1), 27–39. <https://doi.org/10.51577/papsjournals.v4i1.692>
- Shinde, A., Mahale, Y., Bukatre, A., Thore, P., & Jadhav, A. (2025). *Moringa's Role In Modern Health: From Traditional Use To Cutting-Edge Nutritional Insights. International Journal of Creative Research Thoughts (IJCRT)*, *13*(3), 2320–2882.
- Sibagariang. (2010). *Gizi Dalam Kesehatan Reproduksi*. Trans Info Media.
- Siddiqui, S., Upadhyay, S., Ahmad, I., Hussain, A., & Ahamed, M. (2021). *Cytotoxicity of Moringa oleifera fruits on human liver cancer and molecular docking analysis of bioactive constituents against caspase-3 enzyme. Journal of Food Biochemistry*, *45*(5). <https://doi.org/10.1111/jfbc.13720>
- Sierra-Campos, E., Valdez-Solana, M., Avitia-Domínguez, C., Campos-Almazán, M., Flores-Molina, I., García-Arenas, G., & Téllez-Valencia, A. (2020). *Effects of Moringa oleifera Leaf Extract on Diabetes-Induced Alterations in Paraoxonase 1 and Catalase in Rats Analyzed through Progress Kinetic and*

*Blind Docking. Antioxidants*, 9(9), 840.  
<https://doi.org/10.3390/antiox9090840>

Sugiyanto. (1995). *Petunjuk Praktikum Farmasi Edisi IV. Laboratorium Farmasi dan Taksonomi UGM.*

Sugiyono. (2020). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D.* Alfabeta.

Sulaiman, A. S., Hasan, I., Lesmana, C. R. A., Kurniawan, J., Jasirwan, C. O. M., Nababan, S. H. H., Kalista, K. F., Aprilicia, G., & Gani, R. A. (2023). Perlemakan Hati Non-Alkoholik dan Risiko Fibrosis Hati pada Pasien Hepatitis B Kronik. *Jurnal Penyakit Dalam Indonesia*, 10(3), 2.

Suprasetya, E. (2023). *Buku ajar: Teknologi bahan alam (1st ed.).* Science Techno

Susantiningih, T. (2021). *Biokimia Stress Oksidatif dan Prosedur Laboratorium.* Aura CV. Anugrah Utama Raharja.

Syahrudin, F. I., Aprilani Hattah, D. K., & N. Akib, M. (2025). PkM Deteksi Dini dan Edukasi Penyakit Fatty Liver (Perlemakan Hati) pada Masyarakat di Desa Paddinging, Kabupaten Takalar. *Jurnal Pengabdian Kedokteran Indonesia*, 6(1), 8–16. <https://doi.org/10.33096/jpki.v6i1.340>

Thadeus, M. S., Susantiningih, T., Muktamiroh, H., Fauziah, C., Citrawati, M., Irmarahayu, A., Wahyuningsih, S., Harjono Hadiwardjo, Y., Yusmaini, H., Bahar, M., Zulfa, F., Agustini, D., & Chairani, A. (2024). *Moringa oleifera fruit extract as a potential antioxidant against liver injury by 2-Nitropropane induction in obese male mice model: pre-clinical study.* *F1000Research*, 12, 300. <https://doi.org/10.12688/f1000research.121695.2>

Tjitrosoepomo, G. (2020). *Morfologi tumbuhan (Spermatophyta) (22nd ed.).* Gadjah Mada University Press.

Tun, Steven & Spainhower, Caleb & Cottrill, Cameron & Lakhani, Hari Vishal & Pillai, Sneha & Dilip, Anum & Chaudhry, Hibba & Shapiro, Joseph & Sodhi, Komal. (2020). *Therapeutic Efficacy of Antioxidants in Ameliorating Obesity Phenotype and Associated Comorbidities.* *Frontiers in Pharmacology*. 11. 10.3389/fphar.2020.01234.

Wahyuwardani, S., Noor, S. M., & Bakrie, B. (2020). *Animal welfare ethics in research and testing: Implementation and its barrier.* *Indonesian Bulletin of Animal and Veterinary Sciences*, 30(4), 211.

Wolfensohn, S., & Lloyd, M. (2013). *Handbook of laboratory animal management and welfare (4th ed.).* Wiley-Blackwell.

Nabila Yasmin Surya Ananda, 2026

**PENGARUH PEMBERIAN EKSTRAK BUAH KELOR (*Moringa oleifera* fruits) TERHADAP KADAR ENZIM KATALASE HEPAR TIKUS (*Rattus norvegicus*) GALUR Sprague Dawley MODEL OBESITAS**

UPN Veteran Jakarta, Fakultas Kedokteran, S1 Kedokteran

[[www.upnvj.ac.id](http://www.upnvj.ac.id)-[www.library.upnvj.ac.id](http://www.library.upnvj.ac.id)-[www.repository.upnvj.ac.id](http://www.repository.upnvj.ac.id)]

World Health Organization. (2022). *Obesity and overweight*.

Xu, Y.-B., Chen, G.-L., & Guo, M.-Q. (2019). *Antioxidant and Anti-Inflammatory Activities of the Crude Extracts of Moringa oleifera from Kenya and Their Correlations with Flavonoids*. *Antioxidants*, 8(8), 296. <https://doi.org/10.3390/antiox8080296>