

DAFTAR PUSTAKA

- Adikwu, E., Bokolo, B., & Kemelayefa, J. (2020). Ethanolic Leaf Extract of *Ipomoea aquatica* Forsk Abrogates Cisplatin-induced Hepatotoxicity in Albino Rats. *Journal of Reports in Pharmaceutical Sciences*, 9(1), 25–30.
- Bagheri, M., Mohammad, S., Mostafa, Z., Hossein, S., & Nafchi, M. (2025). In Vitro , In Vivo , and Clinical Trial Approaches to Investigate the Effects of Medicinal Plants on Burn Wound Healing: A Systematic Review. *International Wound Journal*, 1–10. <https://doi.org/10.1111/iwj.70779>
- Baura, V. A., Pareta, D. N., Tulandi, S. S., & Untu, S. D. (2021). Uji Aktivitas Antibakteri Ekstrak Etanol Daun Kangkung Air *Ipomoea aquatica* Forsk Terhadap Bakteri *Staphylococcus aureus*. *Biofarmasetikal Tropis*, 4(1), 10–20. <https://doi.org/10.55724/j.biofar.trop.v4i1.303>
- Bhaigybati, T., Sanasam, S., Gurumayum, J., Bag, G. C., Singh, L. R., & Devi, P. G. (2020). Phytochemical profiling , antioxidant activity , antimicrobial activity and GC-MS analysis of *Ipomoea aquatica* Forsk collected from EMA market , Manipur. *Journal of Pharmacognosy and Phytocgemistry*, 9(1), 2335–2342.
- Bokolo, B., & Adikwu, E. (2019). Ethanolic leaf extract of *Ipomoea aquatica* Forsk abrogates cisplatin-induced kidney damage in albino rats. *Journal of Nephropharmacology*, 8(1), 1–7. <https://doi.org/10.15171/npj.2019.02>
- Das, R., Devi, K. S., Dutta, S., Das, A., Das, P., Krishna, K., & Devi, P. (2017). Effects of *Ipomoea aquatica* Forsk . in cyclophosphamide induced dyslipidaemia in albino rats. *International Journal of Basic & Clinical Pharmacology*, 6(11), 2743–2748.
- Datta, S., Manna, K., Dey, S., Dhar, P., & Ghosh, M. (2021). **Protective role of *Ipomoea aquatica* Forsk. crude extract on rat tissues in the presence of acephate and carbofuran by histopathology and cytometric determination**. *Indian Journal of Experimental Biology*, 59(February), 118–124. <https://doi.org/10.56042/ijeb.v59i02.45724>
- Dewanjee, S., Joardar, S., Bhattacharjee, N., Dua, T. K., Das, S., Kalita, J., &

- Manna, P. (2017). Edible leaf extract of *Ipomoea aquatica* Forssk . (Convolvulaceae) attenuates doxorubicin-induced liver injury via inhibiting oxidative impairment , MAPK activation and intrinsic pathway of apoptosis. *Food and Chemical Toxicology*, 105, 322–336. <https://doi.org/10.1016/j.fct.2017.05.002>
- Dirir, A. M., Daou, M., Yousef, A. F., & Yousef, L. F. (2022). A review of alpha-glucosidase inhibitors from plants as potential candidates for the treatment of type-2 diabetes. In *Phytochemistry Reviews* (Vol. 21, Issue 4). Springer Netherlands. <https://doi.org/10.1007/s11101-021-09773-1>
- El-Sawi, N., Gad, M. H., Al-Seeni, M. N., Younes, S., El-Ghadban, E.-M., & Ali, S. S. (2017). Evaluation of Antidiabetic Activity of *Ipomoea Aquatica* Fractions in Streptozotocin Induced Diabetic in Male Rat Model. *Sohag Journal of Science An International Journal Sohag J. Sci*, 2(1), 9. <http://dx.doi.org/10.18576/sjs/020102>
- Elshafie, H. S., Camele, I., & Mohamed, A. A. (2023). A Comprehensive Review on the Biological , Agricultural and Pharmaceutical Properties of Secondary Metabolites Based-Plant Origin. *International Journal of Molecular Sciences Review*, 24(4), 3266.
- Forman, H. J., & Zhang, H. (2021). Targeting oxidative stress in disease : *Nature Reviews Drug Discovery*. <https://doi.org/10.1038/s41573-021-00233-1>
- Furman, D., Campisi, J., Verdin, E., Carrera-bastos, P., Targ, S., Franceschi, C., Ferrucci, L., Gilroy, D. W., Fasano, A., Miller, G. W., Miller, A. H., Mantovani, A., Weyand, C. M., & Barzilai, N. (2019). Chronic inflammation in the etiology of disease across the life span. *Nature Medicine*, 25(12), 1822–1832. <https://doi.org/10.1038/s41591-019-0675-0>
- Gad, M. H., Demeyer, K., Vander Heyden, Y., & Mangelings, D. (2021). Cytotoxic, Antioxidant, and Antidiabetic Activities versus UPLC-ESI-QTOF-MS Chemical-Profile Analysis of *Ipomoea aquatica* Fractions. *Planta Medica*, 87(12–13), 1089–1100. <https://doi.org/10.1055/a-1554-2733>
- Gad, M. H., Tuenter, E., El-sawi, N., Younes, S., Demeyer, K., & Pieters, L. (2017). *Identification of some Bioactive Metabolites in a Fractionated Methanol Extract from Ipomoea aquatica (Aerial Parts) through TLC , HPLC , UPLC-*

- ESI-QTOF-MS and LC-SPE-NMR Fingerprints Analyses. June.*
<https://doi.org/10.1002/pca.2709>
- Gaston, T. E., Mendrick, D. L., Paine, M. F., Roe, A. L., & Yeung, C. K. (2020). “Natural ” is not synonymous with “ Safe ” : Toxicity of natural products alone and in combination with pharmaceutical agents ☆. *Regulatory Toxicology and Pharmacology*, 113(January), 104642.
<https://doi.org/10.1016/j.yrtph.2020.104642>
- Gautam, K. M., Siddiqui, A. W., & Sharma, D. K. (2024). Evaluation Of Anti-Tumor Potential Of Selected Medicinal Plants Using MTT Assay. *Journal of Biomedical Research*, 27(4), 10979–10983.
- GBIF. (2023). *GBIF Backbone Taxonomy*. <https://doi.org/10.15468/39omei>
- Granato, D., Barba, F. J., Lorenzo, J. M., Cruz, A. G., & Putnik, P. (2020). Functional Foods : Product Development , Technological Trends , Efficacy Testing , and Safety. *Annual Review of Food Science and Technology*, 11, 93–118.
- Gulcin, İ. (2025). Antioxidants : a comprehensive review. *Archives of Toxicology. SpringerLink*, 1893–1997. <https://doi.org/10.1007/s00204-025-03997-2>
- Hochma, E., Yarmolinsky, L., Khalfin, B., Nisnevitch, M., Ben-shabat, S., & Nakonechny, F. (2021). Antimicrobial Effect of Phytochemicals from Edible Plants. *Processes*, 9(6), 1022.
- Jitäreanu, A., Trifan, A., Vieriu, M., Caba, I.-C., Mârt, I., & Agoroaei, L. (2023). Current Trends in Toxicity Assessment of Herbal Medicines : A Narrative Review. *Processes*, 11(1), 83.
- Joshi, G., & Johnson, J. A. (2013). The Nrf2-ARE pathway: a valuable therapeutic target for the treatment of neurodegenerative diseases. *Recent Pat CNS Drug Discov*, 7(3), 218–229.
- Kabera, justin. N., Semana, E., R, M. A., & He, X. (2014). Plant secondary metabolites: Biosynthesis, classification, functions and pharmacological properties. *Journal of Pharmacy and Pharmacology*, 2(7), 377–392.
- Kalita, T., & Dutta, U. (2023). Phytochemistry, antioxidant activity and traditional uses of Ipomoea aquatica Forssk among the people of Lower Assam, India. *International Journal of Ayurvedic Medicine*, 13(4), 896–904.

<https://doi.org/10.47552/ijam.v13i4.3096>

- Kaur, J., Rawat, A., Kumar, S., & Narain, S. (2016). Taxonomy , Phytochemistry , Traditional Uses and Cultivation of *Ipomoea Aquatica* Forsk . *Imperial Journal of Interdisciplinary Research (IJIR)*, 2(10), 408–412.
- Kose, T., Moreno-fernandez, J., Vera-aviles, M., Sharp, P. A., & Latunde-dada, G. O. (2023). Ferulic acid protects HepG2 cells and mouse liver from iron-induced damage. *Biochemistry and Biophysics Reports*, 35(July), 101521. <https://doi.org/10.1016/j.bbrep.2023.101521>
- Lawal, U., Leong, S. W., Shaari, K., Ismail, I. S., Khatib, A., & Abas, F. (2017). α -Glucosidase Inhibitory and Antioxidant Activities of Different *Ipomoea aquatica* Cultivars and LC–MS/MS Profiling of the Active Cultivar. *Journal of Food Biochemistry*, 41(2). <https://doi.org/10.1111/jfbc.12303>
- Lawal, U., Shaari, K., Ismail, I. S., Khatib, A., & Abas, F. (2016). *Antioxidant and α -Glucosidase Inhibitory Activities of Isolated Compounds from Ipomoea aquatica*. 6, 701–707.
- Majid, M., Nasir, B., Zahra, S. S., Khan, M. R., & Mirza, B. (2018). *Ipomoea batatas* L . Lam . ameliorates acute and chronic inflammations by suppressing inflammatory mediators , a comprehensive exploration using in vitro and in vivo models. *BMC Complementary and Alternative Medicine*, 18(216), 1–20.
- Malakar, C., & Choudhury, P. P. N. (2015). Pharmacological potentiality and medicinal uses of *Ipomoea aquatica* forsk: A review. *Asian Journal of Pharmaceutical and Clinical Research*, 8(2), 60–63.
- Manvar, M. N., & Desai, T. R. (2013). Phytochemical and pharmacological profile of *Ipomoea aquatica*. *Indian Journal of Medical Sciences*, 67(3), 49–60. <https://doi.org/10.4103/0019-5359.121115>
- Mariani, R., Perdana, F., Fadhlillah, F. M., Qowiyyah, A., & Triyana, H. (2019). Antioxidant activity of Indonesian water spinach and land spinach (*Ipomoea aquatica*): A comparative study. *Journal of Physics: Conference Series*, 1402(5), 055091. <https://doi.org/10.1088/1742-6596/1402/5/055091>
- Martirosyan, D. M., & Singh, J. (2015). A new definition of functional food by FFC : what makes a new definition unique ? *Functional Foods in Health and Disease*, 5(6), 209–223.

- Mattera, R., Benvenuto, M., Giganti, M. G., Tresoldi, I., Pluchinotta, F. R., Bergante, S., Tettamanti, G., Masuelli, L., Manzari, V., Modesti, A., & Bei, R. (2017). Effects of Polyphenols on Oxidative Stress-Mediated Injury in Cardiomyocytes. *Nutrients*, 9(5), 523. <https://doi.org/10.3390/nu9050523>
- Mukta, M. M., Hossain, J., Akter, M., Banik, B., Mithun, M. M. Z., Sarwar, S., Arefin, S., Islam, M. R., & Islam, S. N. (2023). Cardioprotection of Water Spinach (*Ipomoea aquatica*), Wood Apple (*Limonia acidissima*) and Linseed (*Linum usitatissimum* L.) on Doxorubicin-Induced Cardiotoxicity and Oxidative Stress in Rat Model. *Nutrition and Metabolic Insights*, 16. <https://doi.org/10.1177/11786388231212116>
- Nadila, N. (2020). Studi Variasi Morfologi Genus *Ipomoea* Di Kota Tarakan. *Borneo Journal of Biology Education*, 2(1), 33–41. <https://doi.org/10.52222/bjbe.v2i1.1738>
- Octavia, Y., Tocchetti, C. G., Gabrielson, K. L., Janssens, S., Crijns, H. J., & Moens, A. L. (2012). Cardiology Doxorubicin-induced cardiomyopathy: From molecular mechanisms to therapeutic strategies. *Journal of Molecular and Cellular Cardiology*, 52(6), 1213–1225. <https://doi.org/10.1016/j.yjmcc.2012.03.006>
- Putri, N. S. E., Pramesti Eka Putri, N., & Rahmawati, I. (2024). Struktur Morfologi Kangkung Air (*Ipomoea aquatica*) Asal Area Kediri Raya. *Seminar Nasional Sains, Kesehatan, Dan Pembelajaran* 3, 201–205.
- Razik, M. R. M., Angielina, S., Rashidi, R. A., Al-dhalli, S., Khan, J., Nilugal, K. C., Fattepur, S., Kaleemullah, M., Jie, C., Asmani, F., & Yusuf, E. (2018). Evaluation of Antibacterial Activity of Different Extract of *Ipomoea aquatica* Leaves against *Staphylococcus aureus* and *Streptococcus pyogenes* 1 INTRODUCTION Phytochemical Screening of Leaf Extracts. *International Journal of Pharmaceutical Sciences and Research*, 10(7), 227–239. <https://doi.org/10.5220/0008360502270239>
- Safari, T., Miri, S., Ghofran, O., & Fereidooni, F. (2017). Gender differences in response to vitamin E and C in gentamicin induced nephrotoxicity in Wistar rats. 6(March), 338–345. <https://doi.org/10.15171/jnp.2017.54>
- Sahid, A., & Kalpana, G. (2016). A Study Of The Hypolipidemic And Antioxidant

- Activities Of Whole Plant Extracts Of Ipomoea Aquatica Fork In Experimentally Induced Hyperlipidemia In Rabbits. *International Journal of Pharmacy and Pharmaceutical Science*, 8(10).
- Saikia, K., Dey, S., Hazarika, S. N., Handique, G. K., Thakur, D., & Handique, A. K. (2023). Chemical and biochemical characterization of Ipomoea aquatica : genoprotective potential and inhibitory mechanism of its phytochemicals against α -amylase and α -glucosidase. *Frontiers in Nutrition*. <https://doi.org/10.3389/fnut.2023.1304903>
- Salahshoor, M. R., Abdolmaleki, A., Shabanizadeh, A., Jalali, A., & Roshankhah, S. (2020). Ipomoea aquatica Extract Reduces Hepatotoxicity by Antioxidative Properties following Dichlorvos Administration in Rats. *Chinese Journal of Physiology*, 63(2), 77–84. <https://doi.org/10.4103/CJP.CJP>
- Saptiani, G., Hardi, E. H., & Pebrianto, C. A. (2016). galanga and Piper betle against the aquatic microbials. *Nusantara Bioscience*, 8(2), 252–257. <https://doi.org/10.13057/nusbiosci/n080218>
- Sarwar, S., Hossain, J., Irfan, N., Ahsan, T., Arefin, S., Emran, T. Bin, & Islam, S. N. (2022). Renoprotection of Selected Antioxidant-Rich Foods (Water Spinach and Red Grape) and Probiotics in Gentamicin-Induced Nephrotoxicity and Oxidative Stress in Rats.
- Sasikala, M., Mohan, S., Swarnakumari, S., & Nagarajan, A. (2022). Isolation and in vivo evaluation of anti-breast cancer activity of resin glycoside merremoside from Ipomoea aquatica Forsskal in overcoming multi-drug resistance. *Phytomedicine Plus*, 2(4), 100359. <https://doi.org/10.1016/j.phyplu.2022.100359>
- Sasikala, M., Sundaraganapathy, R., & Mohan, S. (2020). MTT Assay on Anticancer Properties of Phytoconstituents from Ipomoea aquatica forsskal using MCF – 7 cell lines for breast cancer in Women. *Research J Pharm*, 13(March), 1356–1360. <https://doi.org/10.5958/0974-360X.2020.00250.4>
- Sharmin, R., Hossain, I., Rahman, S., Momtaz, A., Sarmin, K., & Mosaddek, M. A. S. (2016). Study on the Effect of Ethanol Extract of Ipomoea Aquatica (Kalmi Shak) Leaves on Gentamicin Induced Nephrotoxic Rats. 1(3), 9–14.
- Sivaraman, D., Panneerselvam, P., & Muralidharan, P. (2016). Memory and Brain

- Neurotransmitter Restoring Potential of Hydroalcoholic Extract of *Ipomoea aquatica* Forsk on Amyloid Beta A β (25-35) Induced Cognitive Deficits in Alzheimer ' s Mice. *International Journal of Pharmacology*, 12(2), 52–65. <https://doi.org/10.3923/ijp.2016.52.65>
- So, V., Poul, P., Oeung, S., Srey, P., Mao, K., Ung, H., Eng, P., Heim, M., Srun, M., Chheng, C., Chea, S., & Srisongkram, T. (2023). Analysis of Nine Edible Sprouts in Cambodia. *Molecules*, 28(6), 2874.
- Sule, R. O., Condon, L., & Gomes, A. V. (2022). A Common Feature of Pesticides : Oxidative Stress — The Role of Oxidative Stress in Pesticide-Induced Toxicity. *Hindawi*, 2022, 1–31. <https://doi.org/10.1155/2022/5563759>
- Suni, R. A., Julyani, S., Rasfayanah, Sommeng, F., & Maharani, R. N. (2022). Pengaruh Ekstrak Kangkung Air (*Ipomoea Aquatica*) Terhadap Efek Sedasi pada Mencit (*Mus Musculus*). *Fakumi Medical Journal: Jurnal Mahasiswa Kedokteran*, 2(10), 718–726. <https://doi.org/10.33096/fmj.v2i10.132>
- Vaou, N., Stavropoulou, E., Voidarou, C. C., & Tsakris, Z. (2022). Interactions between Medical Plant-Derived Bioactive Compounds: Focus on Antimicrobial Combination Effects. *Antibiotics*, 11(8), 1014.
- Wang, X., Altaf, M. A., Hao, Y., Wang, Z., & Zhu, G. (2023). Effect of Heat Stress on Root Architecture, Photosynthesis, and Antioxidant Profile of Water Spinach (*Ipomoea aquatica* Forsk) Seedlings. *Horticulturae*, 9(8). <https://doi.org/10.3390/horticulturae9080923>
- World Health Organization. (2017). *WHO guidelines for selecting marker substances of herbal origin for quality control of herbal medicines*.
- World Health Organization. (2025a). *Global traditional medicine strategy 2025–2034*. World Health Organization. <https://www.who.int/publications/i/item/9789240113176>
- World Health Organization. (2025b). *Noncommunicable diseases*. World Health Organization. <https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/ncd-mortality>
- Wulandari, Z., Ugiarto, M., & Hairah, U. (2017). Sistem Informasi Obat-Obatan Herbal. *Prosiding Seminar Ilmu Komputer Dan Teknologi Informasi*, 2(1), 227–234.

Zhao, Y., Wu, J., Liu, X., Chen, X., & Wang, J. (2025). Decoding nature : multi-target anti-inflammatory mechanisms of natural products in the TLR4 / NF- κ B pathway. *Frontiers in Pharmacology*, 15(1), 1–20. <https://doi.org/10.3389/fphar.2024.1467193>