DAFTAR PUSTAKA

Afandi, R., & Purwanto, A. (2018). Spektrofotometer Cahaya Tampak…(Riski Afandi)161 Spketofrmeter Cahaya Tampak Sederhana Untuk Menentukan Panjang Gelombang Serapan Maksimum Larutan Fe(SCN) 3 DAN CuSO 4 Simple Visible Light Spectroscopy to Determine The Maximum Absorbance Wavelength of. *Journal Spektrofotometer Cahaya Tampak*, *2*(4), 116–130.

Agustina, S., Ruslan, & Wiraningtyas, A. (2016). Skrining Fitokimia Tanaman Obat Di Kabupaten Bima. *Cakra Kimia (Indonesian E-Journal Of Applied Chemistry)*, *4*(1), 71–76.

Ahriani, Zelviani, S., Hernawati, & Fitriyanti. (2021). Analisis Nilai Absorbansi Untuk Menentukan Kadar Flavonoid Daun Jarak Merah (Jatropha gossypilofia L.) Menggunakan Spektrofotometri UV-Vis. *Jurnal Fisika Dan Terapannya*, *8*(2), 56–64. https://doi.org/10.24252/jft.v8i2.23379

Alfian, R., & Susanti, H. (2012). Penetapan Kadar Fenolik Total Ekstrak Metanol Kelopak Bunga Rosela Merah (Hibiscus sabdariffa Linn) Dengan Variasi Tempat Tumbuh Secara Spektrofotometri. *Pharmaciana*, *2*(1). https://doi.org/10.12928/pharmaciana.v2i1.655

Aminah, A., Tomayahu, N., & Abidin, Z. (2017). Penetapan Kadar Flavonoid Total Ekstrak Etanol Kulit Buah Alpukatr (Persea americana Mill.) Dengan Metode Spektrofotometri UV-VIS. *Jurnal Fitofarmaka Indonesia*, *4*(2), 226–230. https://doi.org/10.33096/jffi.v4i2.265

Anggarani, M. A., Ilmiah, M., & Mahfudhah, D. N. (2023). Indonesian Journal of Chemical Science Literature Review of Antioxidant Activity of Several Types of Onions and Its Potensial as Health Supplements. *Indonesian Journal of Chemical Science*, *12*(1), 104–111.

Arnanda, Q. P., & Nuwarda, R. F. (2019). Penggunaan Radiofarmaka Teknisium-99M Dari Senyawa Glutation dan Senyawa Flavonoid Sebagai Deteksi Dini Radikal

Bebas Pemicu Kanker. *Farmaka Suplemen*, *14*(1), 1–15. https://jurnal.unpad.ac.id/farmaka/article/view/22071

Aryanti, R., Perdana, F., & Syamsudin, R. A. M. R. (2021). Telaah Metode Pengujian Aktivitas Antioksidan pada Teh Hijau (Camellia sinensis (L.) Kuntze). *Jurnal Surya Medika*, *7*(1), 15–24. https://doi.org/10.33084/jsm.v7i1.2024

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. https://doi.org/10.26858/ijfs.v6i1.13941

Balachandran, S., Kentish, S. E., Mawson, R., & Ashokkumar, M. (2006). Ultrasonic enhancement of the supercritical extraction from ginger. *Ultrasonics Sonochemistry*, *13*(6), 471–479. https://doi.org/10.1016/j.ultsonch.2005.11.006

Balasundram, N., Sundram, K., & Samman, S. (2006). Phenolic compounds in plants and agri-industrial by-products: Antioxidant activity, occurrence, and potential uses. *Food Chemistry*, *99*(1), 191–203. https://doi.org/10.1016/j.foodchem.2005.07.042

Baliyan, S., Mukherjee, R., Priyadarshini, A., Vibhuti, A., Gupta, A., Pandey, R. P., & Chang, C. M. (2022). Determination of Antioxidants by DPPH Radical Scavenging Activity and Quantitative Phytochemical Analysis of Ficus religiosa. *Molecules*, *27*(4). https://doi.org/10.3390/molecules27041326

Benzie, I. F. F., & Devaki, M. (2017). The ferric reducing/antioxidant power (FRAP) assay for non-enzymatic antioxidant capacity: Concepts, procedures, limitations and applications. *Measurement of Antioxidant Activity and Capacity: Recent Trends and Applications*, 77–106. https://doi.org/10.1002/9781119135388.ch5

Benzie, I. F. F., & Strain, J. J. (1996). The ferric reducing ability of plasma (FRAP) as a measure of “antioxidant power”: The FRAP assay. *Analytical Biochemistry*, *239*(1), 70–76. https://doi.org/10.1006/abio.1996.0292

Cabrera, L., Xavier, L., & Zecchi, B. (2024). Extraction of phenolic compounds with antioxidant activity from olive pomace using natural deep eutectic solvents: modelling and optimization by response surface methodology. *Discover Food*, *4*(1). https://doi.org/10.1007/s44187-024-00100-z

Cannavacciuolo, C., Pagliari, S., Frigerio, J., Giustra, C. M., Labra, M., & Campone, L. (2023). Natural Deep Eutectic Solvents (NADESs) Combined with Sustainable Extraction Techniques: A Review of the Green Chemistry Approach in Food Analysis. *Foods*, *12*(1). https://doi.org/10.3390/foods12010056

Clara, G., Viñas-ospino, A., Puchades-colera, P., Daniel, L., & Fr, A. (2022). *Sustainable Development and Storage Stability of Orange By-Products Extract Using Natural Deep Eutectic Solvents*. 1–15.

Dewi, I. K. (2021). Parameter Mutu Ekstrak Herba Seledri (Apium graveolens L.) Dengan Metode Ekstraksi Maserasi dan Digesti. *Jurnal Jamu Kusuma*, *1*(1), 22–26. https://doi.org/10.37341/jurnaljamukusuma.v1i1.6

Fajrina, A., Bakhtra, D. D. A., & Mawarni, A. E. (2020). Isolasi dan Uji Aktivitas Antimikroba Ekstrak Etil Asetat Jamur Endofit dari Daun Matoa (Pometia pinnata). *Jurnal Farmasi Higea*, *12*(1), 81–89. http://jurnalfarmasihigea.org/index.php/higea/article/view/267

Ferreira, S. S., Brito, T. A., Santana, A. P. R., Guimarães, T. G. S., Lamarca, R. S., Ferreira, K. C., Gomes, P. C. F. L., Oliveira, A., Amaral, C. D. B., & Gonzalez, M. H. (2022). Greenness of procedures using NADES in the preparation of vegetal samples: Comparison of five green metrics. *Talanta Open*, *6*(May). https://doi.org/10.1016/j.talo.2022.100131

Franco, C. (2021). *Ultrasonic-Assisted Extraction and Natural Deep Eutectic Solvents Combination : A Green Strategy to Improve the Recovery of Phenolic Compounds from Lavandula pedunculata*.

Fransworth. (1966). Biological and Phytochemical Screening of Plants. *Journal of*

Pharmaceutical Sciences, *55*.

Franyoto, Y. D., Mutmainah, Kusmita, L., & Masduqi, A. F. (2019). Ekstraksi Alkaloid Kerang Hijau (Perna viridis) dan Potensinya Sebagai Antioksidan. *Repository Stifar*. https://repository.stifar.ac.id/Repository/article/view/157

Garuda, R. S., & Syafruddin, K. (2014). Buku Seri Tanaman Khas Papua (Matoa). *Jurnal Badan Penelitian Dan Pengembangan Teknologi Pertanian Kementrian Pertanian*, *49*, 1–15.

Grozdanova, T., Trusheva, B., Alipieva, K., Popova, M., Dimitrova, L., Najdenski, H., Zaharieva, M. M., Ilieva, Y., Vasileva, B., Miloshev, G., Georgieva, M., & Bankova, V. (2020). Extracts of medicinal plants with natural deep eutectic solvents: enhanced antimicrobial activity and low genotoxicity. *BMC Chemistry*, *14*(1), 1–9. https://doi.org/10.1186/s13065-020-00726-x

H.Kartikaningsih, H. Djamaludin, Fauziyah, J. N., N. Audina, L. Noviyanti, & D. Saputra. (2024). Green Extraction Of Avicennia marina Leaves By Natural Deep Eutectic Solvent: Phytochemical Profile, Antioxidant Activity, Moleculer Docking and Admet Analysis. *RASAYAN Journal of Chemistry*, *17*(03), 1123–1133. https://doi.org/10.31788/rjc.2024.1738923

Hajar, S., Rahmah, W., Maharani Putri, E., Septian Ressandy, S., Hamzah, H., Kalimantan Timur, M., & Ir Juanda No, J. (2021). Potensi Ekstrak Buah Matoa (Pometia Pinnata) Sebagai Sumber Antioksidan: Literatur Review Potential of Matoa Fruit Extract (Pometia Pinnata) As Antioxidant Source. *Jfsp*, *7*(1), 2579–4558. http://journal.ummgl.ac.id/index.php/pharmacy

Hapsari, A. M., Masfria, M., & Dalimunthe, A. (2018). Pengujian Kandungan Total Fenol Ekstrak Etanol Tempuyung (Shoncus arvensis L.). *Talenta Conference Series: Tropical Medicine (TM)*, *1*(1), 284–290. https://doi.org/10.32734/tm.v1i1.75

Harbone, J. B. (1987). *Metode Fitokimia Penuntun Cara Modern Menganalisis*

Tumbuhan (Edisi I). ITB.

Hasan, N., Mun'im, A., & Hayun, H. (2022). Application of Ionic Liquids based Microwave-Assisted Extraction to Bioactive Compounds Comfrey (Symphytum officinale L.) Leaves. *Jurnal Aisyah : Jurnal Ilmu Kesehatan*, *7*(1), 39–46. https://doi.org/10.30604/jika.v7i1.764

Hikmawanti, N. P. E., Ramadon, D., Jantan, I., & Mun'im, A. (2021). Natural deep eutectic solvents (Nades): Phytochemical extraction performance enhancer for pharmaceutical and nutraceutical product development. *Plants*, *10*(10). https://doi.org/10.3390/plants10102091

Joshi, D. R., & Adhikari, N. (2019). An Overview on Common Organic Solvents and Their Toxicity. *Journal of Pharmaceutical Research International*, *28*(3), 1–18. https://doi.org/10.9734/jpri/2019/v28i330203

Katuuk, R. H. H., Wanget, S. A., & Tumewu, P. (2019). Pengaruh perbedaan ketinggian tempat terhadap kandungan metabolit sekunder pada gulma babadotan (Ageratum conyzoides L.). *Jurnal COCOS*, *1*(4), 6. https://ejournal.unsrat.ac.id/index.php/cocos/article/view/24162

Kemenkes RI. (2017). *Farmakope Herbal Indonesia Edisi 2*. 561.

Lobo, V., Patil, A., Phatak, A., & Chandra, N. (2010). Free radicals, antioxidants and functional foods: Impact on human health. *Pharmacognosy Reviews*, *4*(8), 118–126. https://doi.org/10.4103/0973-7847.70902

Magiera, S., & Adamek, J. (n.d.). Evaluation of new natural deep eutectic solvents for the extraction of isoflavones from. *Talanta*, *168*, 329–335.

Mahardani, O. T., & Yuanita, L. (2021). Efek Metode Pengolahan Dan Penyimpanan Terhadap Kadar Senyawa Fenolik Dan Aktivitas Antioksidan. *Unesa Journal of Chemistry*, *10*(1), 64–78. https://doi.org/10.26740/ujc.v10n1.p64-78

Mardawati, E., F. dan H. H. (2008). Kajian Aktivitas Antioksidan Ekstrak Kulit

Manggis (Garcinia mangostana L) dalam Rangkah Pemanfaatan Limbah Kulit Manggis di Kecamatan Puspahiang Kabupaten Tasikmalaya. *Universitas Stuttgart*, *29*(4), 475–481.

Martinović, M., Krgović, N., Nešić, I., Žugić, A., & Tadić, V. M. (2022). Conventional vs. Green Extraction Using Natural Deep Eutectic Solvents—Differences in the Composition of Soluble Unbound Phenolic Compounds and Antioxidant Activity. *Antioxidants*, *11*(11). https://doi.org/10.3390/antiox11112295

Maryam, S. (2015). Kadar Antioksidan dan IC 50 Tempe Kacang Merah (Phaseulus vulgaris L) Yang Difermentasi Dengan Lama Fermentasi Berbeda. *Proceedings Seminar Nasional FMIPA UNDIKSHA V*, 347–352.

Maryam, S., Pratama, R., Effendi, N., & Naid, T. (2016). Dengan Metode Cupric Ion Reducing Antioxidant Capacity. Fakultas Farmasi Universitas Muslim Indonesia , Makassar. *Jurnal Fitofarmaka Indonesia*, *2*(1), 90–93.

Muflihunna, A., Syarif, S., & Rahmawati, D. (2014). Uji Aktivitas Antioksidan Varian Jus Delima (Punicagranatum L.) Dengan Metode Frap. *Jurnal Ilmiah As-Syifaa*, *6*(2), 145–153. https://doi.org/10.33096/jifa.v6i2.44

Mukhtarini. (2014). Mukhtarini, "Ekstraksi, Pemisahan Senyawa, dan Identifikasi Senyawa Aktif," J. Kesehat., vol. VII, no. 2, p. 361, 2014. *J. Kesehat.*, *VII*(2), 361. https://doi.org/10.1007/s11293-018-9601-y

Nofita, D., Sari, S. N., & Mardiah, H. (2020). Penentuan Fenolik Total dan Flavonoid Ekstrak Etanol Kulit Batang Matoa (Pometia pinnata J.R& G.Forst) secara Spektrofotometri. *Chimica et Natura Acta*, *8*(1), 36. https://doi.org/10.24198/cna.v8.n1.26600

Nugrahani, R., Andayani, Y., & Hakim, A. (2016). Skrining Fitokimia Dari Ekstrak Buah Buncis (Phaseolus vulgaris L) DALAM SEDIAAN SERBUK. *Jurnal Penelitian Pendidikan IPA*, *2*(1). https://doi.org/10.29303/jppipa.v2i1.38

Nugroho Agung. (2017). Buku Ajar: Teknologi Bahan Alam. In *Lambung Mangkurat*

University Press (Issue January 2017).

Pal, C. B. T., & Jadeja, G. C. (2019). Microwave-assisted deep eutectic solvent extraction of phenolic antioxidants from onion (Allium cepa L.) peel: a Box–Behnken design approach for optimization. *Journal of Food Science and Technology*, *56*(9), 4211–4223. https://doi.org/10.1007/s13197-019-03891-7

Panche, A. N., Diwan, A. D., & Chandra, S. R. (2016). Flavonoids: An overview. *Journal of Nutritional Science*, *5*. https://doi.org/10.1017/jns.2016.41

Panić, M., Gunjević, V., Radošević, K., Bubalo, M. C., Ganić, K. K., & Redovniković, I. R. (2021). Cosmotherm as an effective tool for selection of deep eutectic solvents based ready-to-use extracts from Graševina grape pomace. *Molecules*, *26*(16). https://doi.org/10.3390/molecules26164722

Parlin, D. A., Nasution, M. ., Nasution, H. ., & Daulay, A. S. (2022). Skrining Fitokimia dan Uji Sitotoksisitas Ekstrak Etanol Daun Matoa (Pometia pinnata) dengan Metode BSLT. *FARMASAINKES: Jurnal Farmasi, Sains, Dan Kesehatan*, *2*(1), 38–48.

Parwata, M. O. A. (2016). Antioksidan. *Kimia Terapan Program Pascasarjana Universitas Udayana*, *April*, 1–54.

Pisoschi, A. M., & Negulescu, G. P. (2012). Methods for Total Antioxidant Activity Determination: A Review. *Biochemistry & Analytical Biochemistry*, *01*(01), 1–10. https://doi.org/10.4172/2161-1009.1000106

Popovic, B. M., Micic, N., Potkonjak, A., Blagojevic, B., Pavlovic, K., Milanov, D., & Juric, T. (2022). Novel extraction of polyphenols from sour cherry pomace using natural deep eutectic solvents – Ultrafast microwave-assisted NADES preparation and extraction. *Food Chemistry*, *366*(May 2021), 130562. https://doi.org/10.1016/j.foodchem.2021.130562

Prayudo, A. N., Novian, O., Setyadi, & Antaresti. (2015). Koefisien Transfer Massa Kurkumin dari Temulawak. *Jurnal Ilmiah Widya Teknik*, *14*(1), 26–31.

Putri, D. M., & Lubis, S. S. (2020). Skrining Fitokimia Ekstrak Daun Kalayu (Erioglossum rubiginosum (Roxb.) Blum). *Amina*, *2*(3), 120–121.

Rahman, M. K., Fachriyah, E., & Kusrini, D. (2023). Ekstraksi Daun Salam Berbasis Natural Deep Eutectic Solvent dan Pemanfaatannya sebagai Antioksidan. *Greensphere: Journal of Environmental Chemistry*, *2*(2), 7–12. https://doi.org/10.14710/gjec.2022.16569

Rezaie, M., Farhoosh, R., Iranshahi, M., Sharif, A., & Golmohamadzadeh, S. (2015). Ultrasonic-assisted extraction of antioxidative compounds from Bene (Pistacia atlantica subsp. mutica) hull using various solvents of different physicochemical properties. *Food Chemistry*, *173*, 577–583. https://doi.org/10.1016/j.foodchem.2014.10.081

Rizki, I. F. (2021). Pengembangan Metode Ekstraksi Fitonutrien Crude Palm Oil (Cpo) Ramah Lingkungan Untuk Industri Pangan Dan Farmasi. *WARTA Pusat Penelitian Kelapa Sawit*, *26*(3), 132–141. https://doi.org/10.22302/iopri.war.warta.v26i3.57

Santini, N. K. D., Sudharsana, T. I. R. C., & Diantari, N. K. Y. (2023). Matoa : Analogi Morfologi Buah Endemik Daerah Papua 'Matoa' Sebagai Inspirasi Penciptaan Karya Busana Berkolaborasi Dengan PT. Sangkara Indah Sejahtera. *BHUMIDEVI: Journal of Fashion Design*, *3*(1), 122–132. https://doi.org/10.59997/bhumidevi.v3i1.2241

Sari, A. K., & Ayuchecaria, N. (2017). Penetapan Kadar Fenolik Total dan Flavonoid Total Ekstrak Beras Hitam (Oryza Sativa L) dari Kalimantan Selatan. *Jurnal Ilmiah Ibnu Sina*, *2*(2), 327–335.

Sari, D. Y., R, W., & AN, T. (2021). Penentuan Kadar Flavonoid Total Ekstrak Etanol Jamur Susu Harimau (Lignosus rhinocerus). *Jurnal Farmasi Udayana*, *10*(1), 23. https://doi.org/10.24843/jfu.2021.v10.i01.p03

Sariyem, S., Sadimin, S., Sunarjo, L., & Haniyati, M. (2015). Efektifitas Ekstrak Daun

Sukun Hasil Perebusan Terhadap Pertumbuhan Koloni Bakteri Streptococcus Mutans. *Jurnal Kesehatan Gigi*, *2*(2), 104–109. https://doi.org/10.31983/jkg.v2i02.3298

Sasadara, M. M. V., & Wiranata, I. G. (2022). Pengaruh Pelarut dan Metode Ekstraksi terhadap Kandungan Metabolit Sekunder dan Nilai IC50 Ekstrak Umbi Bit (Beta vulgaris L.). *Usadha*, *2*(1), 7–13. https://doi.org/10.36733/usadha.v2i1.5277

Schuh, L., Reginato, M., Florêncio, I., Falcao, L., Boron, L., Gris, E. F., Mello, V., & Báo, S. N. (2023). From Nature to Innovation: The Uncharted Potential of Natural Deep Eutectic Solvents. *Molecules*, *28*(22). https://doi.org/10.3390/molecules28227653

Setiawan, F., Yunita, O., & Kurniawan, A. (2018). Uji aktivitas antioksidan ekstrak etanol kayu secang dan FRAP. *Media Pharmaceutica Indonesiana*, *2*(2), 82–89.

Shafie, M. H., Yusof, R., & Gan, C. Y. (2019). Synthesis of citric acid monohydrate-choline chloride based deep eutectic solvents (DES) and characterization of their physicochemical properties. *Journal of Molecular Liquids*, *288*. https://doi.org/10.1016/j.molliq.2019.111081

Suedee, A., Tewtrakul, S., & Panichayupakaranant, P. (2013). Anti-HIV-1 integrase compound from Pometia pinnata leaves. *Pharmaceutical Biology*, *51*(10), 1256–1261. https://doi.org/10.3109/13880209.2013.786098

Suhaera, S., Sammulia, S. F., & Arischa, I. (2019). Penetapan Kadar Fenolat Total Dan Aktivitas Antioksidan Dari Ekstrak Daun Nyireh (Xylocarpus granatum) Secara Spektrofotometri Uv-Vis. *Seminar Nasional Sains, Teknologi, Dan Sosial Humaniora UIT*, 1–12.

Suharti, T. (2017). *Dasar-Dasar Spektrofotometri UV-Vis dan Spektrometri Massa Untuk Penentuan Struktur Senyawa Organik*. CV. Anugrah Utama Raharja.

Susanty, S., & Bachmid, F. (2016). Perbandingan Metode Ekstraksi Maserasi dan Refluks Terhadap Kadar Fenolik Dari Ekstrak Tongkol Jagung (Zea mays L.).

Jurnal Konversi, *5*(2), 87. https://doi.org/10.24853/konversi.5.2.87-92

Tri, A., Pratita, K., Aisy, N. R., Wardani, A., & Fathurohman, M. (2022). Isolasi dan Aktivitas Antioksidan dengan Menggunakan Metode ABTS (2,2 Azinobis (3-Ethylbenzotiazolin) 6 Sulfonat) Senyawa Superoksida Dismutase pada Mikroalga Chlorrela vulgaris. *Prosiding Seminar Nasional Diseminasi*, *2*, 177–184.

Utami, W., Mardawati, E., & Putri, S. H. (2020). Pengujian Aktivitas Antioksdian Kulit Buah Naga Merah (Hylocereus polyrhizus) Sebagai Masker Gel Peel Off. *Jurnal Industri Petranian*, *02*(2009), 1–8. http://jurnal.unpad.ac.id/justin

Utoro, P. A. R., Witoyo, J. E., & Alwi, M. (2022). Tinjauan literatur singkat bioaktivitas ekstrak daun matoa (Pometia pinnata) dari Indonesia dan aplikasinya pada produk pangan. *Journal of Tropical AgriFood*, *4*(2), 67. https://doi.org/10.35941/jtaf.4.2.2022.9293.67-76

Vikri, M., Ghinan, M., & Ardhe, V. (2022). Identifikasi Kadar Kurkumin pada Minuman Serbuk Berbahan Temulawak dengan Metode Spektrofotometri Uv-Vis. *Lumbung Farmasi: Jurnal Ilmu Kefarmasian*, *3*(2), 191–196.

Wardani, F. M. (2017). Perbedaan Aktivitas Antioksidan Ekstrak Metanol Daun Matoa (Pometia pinnata J.R & G.Forst) Dengan Metode 1,1-Difenil-2 Pikrilhidrazil (DPPH) dan Feric Reducing Antioxidant Power (FRAP). *Artikel , Sekolah Tinggi Ilmu Farmasi. Semarang*.

Widyasari, E. M., Sriyani, M. E., Daruwati, I., Halimah, I., & Nuraeni, W. (2019). Karakteristik Fisikokimia Senyawa Bertanda 99mTc-KUERSETIN. *Jurnal Sains Dan Teknologi Nuklir Indonesia*, *20*(1), 9. https://doi.org/10.17146/jstni.2019.1.1.4108

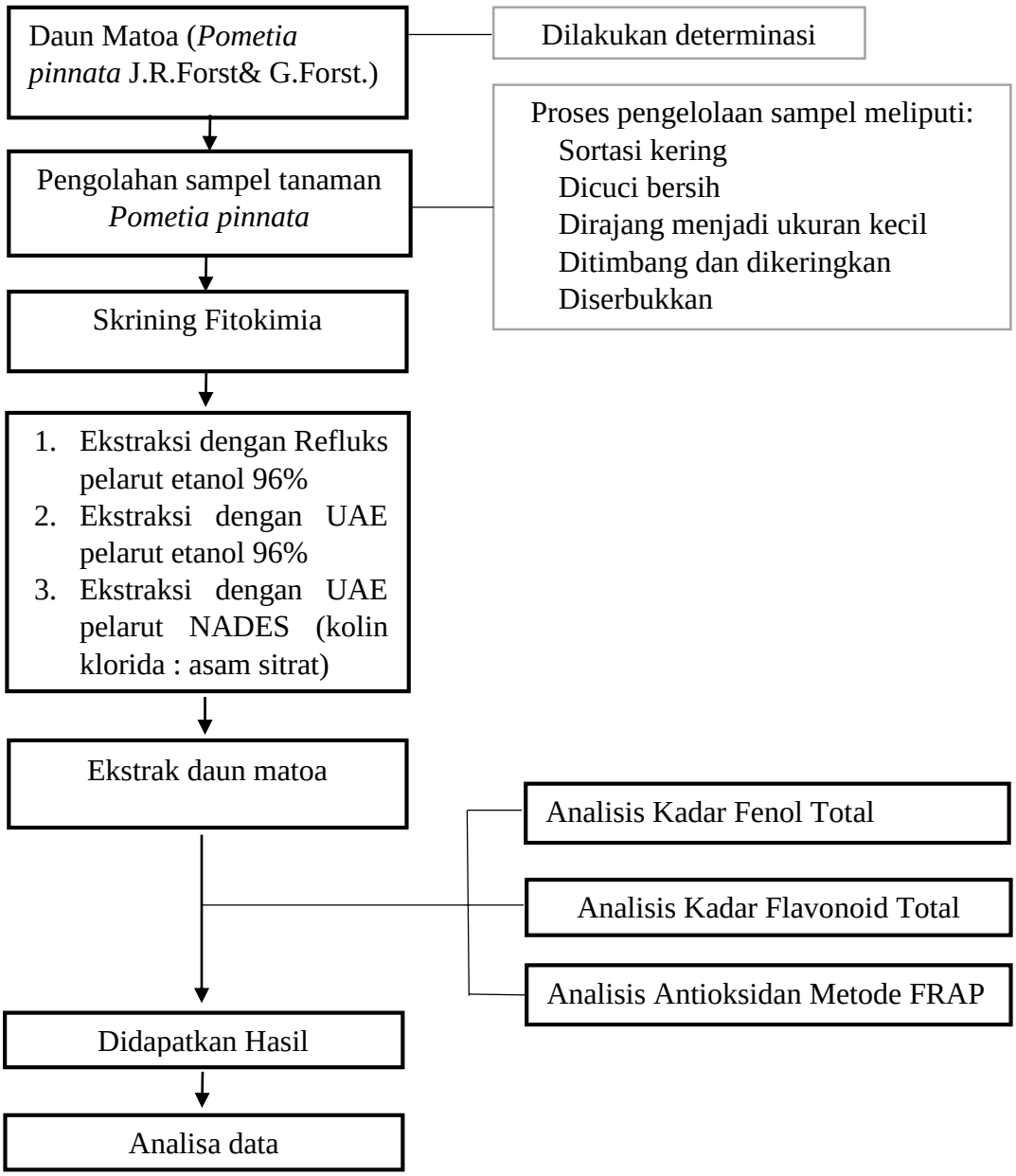
Yuliarni, F. F., Ayu Puji Lestari, K., Kun Arisawati, D., Dwi Winda Sari, R., & Ratna K., K. (2022). Ekstraksi Jamur Auricularia Dengan Menggunakan Pelarut Etanol Dan Metanol. *Jurnal Teknologi Technoscientia*, *14*(2), 129–137. https://doi.org/10.34151/technoscientia.v14i2.3637

Yuniarto, K., Okta Muvianto, C. M., & Ernia, E. (2021). Aplikasi Ultrasound Assisted Extraction Untuk Produksi Minyak Bawang Putih Varietas Lokal. *Jurnal Teknologi Pertanian*, *22*(3), 177–186. https://doi.org/10.21776/ub.jtp.2021.022.03.3

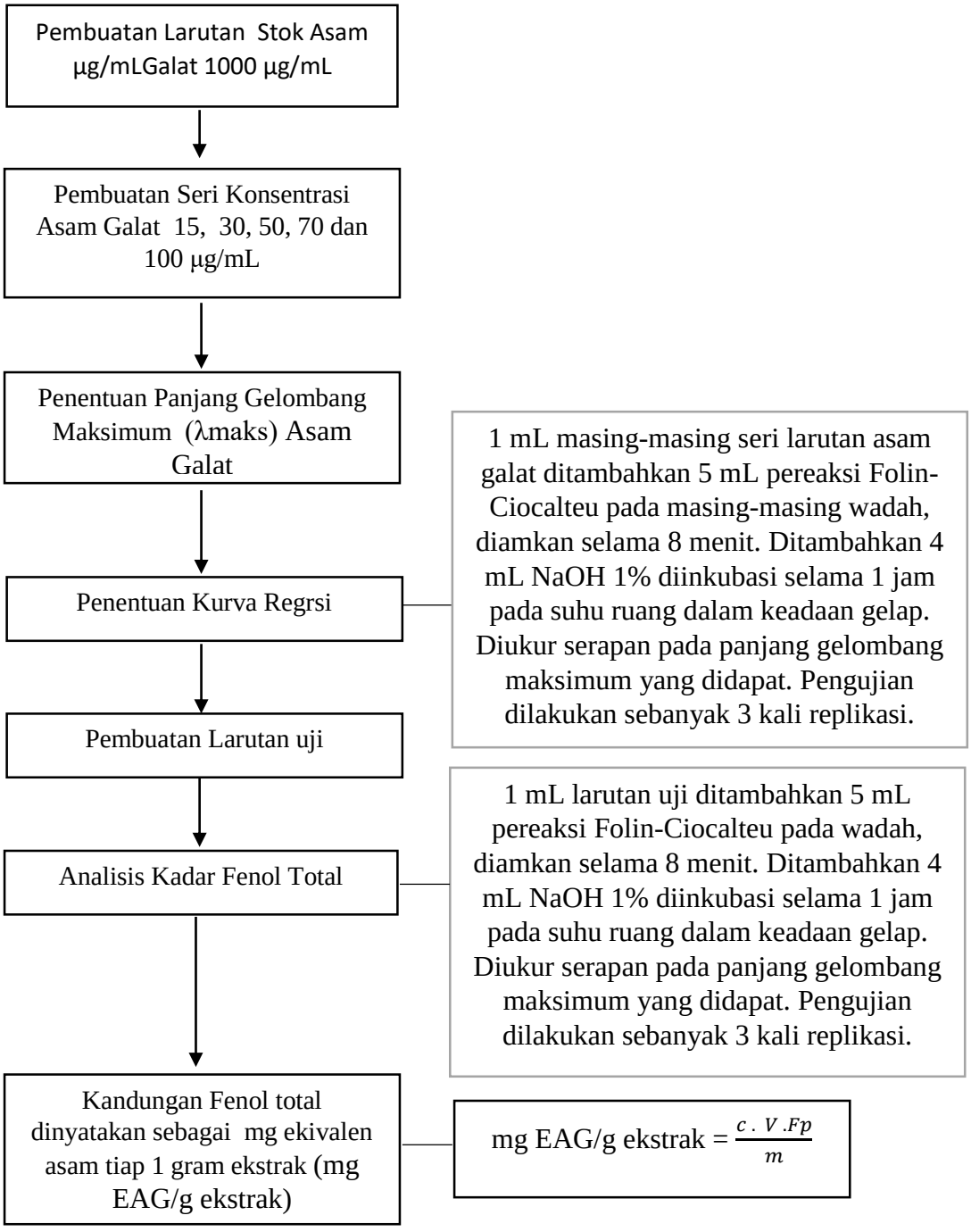
Zubaydah, W. O., Sitti, Fandinata, & Septi Selly. (2020). Formulasi Sediaan Masker Gel Peel-Off Dari Ekstrak Buah Tomat (Solanum Lycopersicum L .). *Journal Syifa Sciences and Clinical Research*, *2*(September), 73–82.

LAMPIRAN

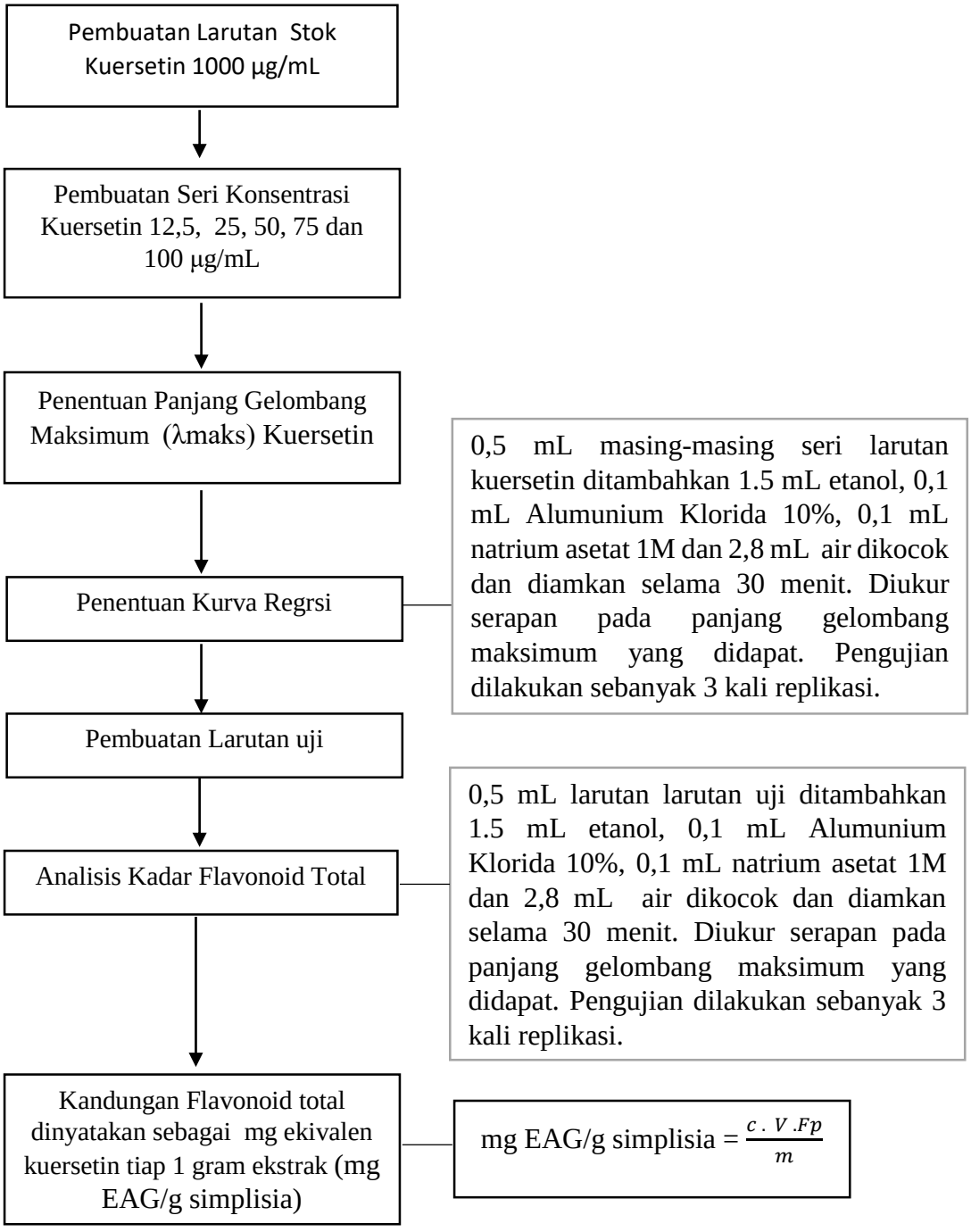
Lampiran 1. Skema Alur Penelitian



Lampiran 2. Skema Kerja Analisis Kadar Fenol Total



Lampiran 3. Skema Kerja Analisis Kadar Flavonoid Total



Lampiran 4. Determinasi Tanaman Matoa

HERBARIUM UNIVERSITAS ANDALAS (ANDA)

Departemen Biologi FMIPA Universitas Andalas Kampus Limau Manih Padang
Sumbar Indonesia 25163 Telp. +62-751-777427 e-mail: herbariumanda@yahoo.com

Nomor : 865/K-ID/ANDA/XII/2023
Lampiran : -
Perihal : Hasil Identifikasi

Kepada yth,
Suhaera, M. Pharm. Sci
Di
Tempat

Dengan hormat,
Sehubungan dengan surat permohonan determinasi sampel dari Institut Kesehatan Mitra Bunda tanggal 19 Desember 2023 di Herbarium Universitas Andalas Departemen Biologi FMIPA Universitas Andalas, kami telah membantu mengidentifikasi tumbuhan yang dibawa, dari:

Nama : Suhaera,M. Pharm. Sci
Instansi : Institut Kesehatan Mitra Bunda

Berikut ini diberikan hasil identifikasi yang dikeluarkan dari Herbarium Universitas Andalas.

No	Family	Spesies	Nama Lokal
1.	Sapindaceae	*Pometia pinnata* J.R.Forst. & G.Forst.	Matoa
2.	Pandanaceae	*Pandanus tectorius* Parkinson	Pandan laut

Demikian surat ini dibuat untuk dapat digunakan seperlunya.

Padang, 19 Desember 2023
Kepala,

Dr. Nurainas
NIP. 196908141995122001

Lampiran 5. Fitokimia Simplisia Daun Matoa

Metabolit Sekunder	Simplisa Daun Matoa	Hasil Uji	Keterangan	Fajrina et al (2020)
- Alkaloid				
Mayer		(+)	Terbentuk Endapan Putih	(+)
Dragendorf		(+)	Terbentuk warna jingga	(+)
Bouchardat		(+)	terjadi endapan berwarna coklat hingga hitam	(+)
- Fenolik		(+)	Terbentuk warna biru kehitaman	(+)
- Flavonoid		(+)	Terbentuk warna merah pada lapisan etanol	(+)

- Tanin		(+)	terjadi perubahan warna dari warna awal hijau muda menjadi hijau kehitaman	(+)
- Saponin		(+)	Terbentuk buih	(+)
- Terpenoid		(+)	Terbentuk warna kecoklatan pada antar permukaan	(+)
- Steroid		(-)	Tidak terjadi perubahan warna dari ungu ke biru atau hijau	(-)

Lampiran 6. Perhitungan Pencampuran NADES

1. Massa kolin klorida : Asam sitrat (1 : 1)

   Mr ChCl = 139, 63 g/mol ; Mr As sitrat = 192 g/mol

   Total masa yang ditimbang 50 mg

   $$n = \frac{massa\ total}{(Mr\ ChCl\ x\ 1) + (Mr\ As\ sitrat\ x\ 1)}$$

   $$n = \frac{50\ mg}{(139{,}63\ \text{g/mol}\ x\ 1) + (192\ \text{g/mol}\ x\ 1)}$$

   n = 0,150 mol

   Massa ChCl = (Mr ChCl) x n

   = 139,63 g/mol x 0,150 mol = 21,05 g

   Massa as sitrat = (Mr As Sitrat) x n

   = 192 g/mol x 0,150 mol = 28,8 g

2. Massa kolin klorida : Asam sitrat (1 : 2)

   Mr ChCl = 139, 63 g/mol ; Mr As sitrat = 192 g/mol

   Total masa yang ditimbang 50 mg

   $$n = \frac{massa\ total}{(Mr\ ChCl\ x\ 1) + (Mr\ As\ sitrat\ x\ 2)}$$

   $$n = \frac{50\ mg}{(139{,}63\ \text{g/mol}\ x\ 1) + (192\ \text{g/mol}\ x\ 2)}$$

   n = 0,095 mol

Massa ChCl = (Mr ChCl) x n

= 139,63 g/mol x 0,095 mol = 13,33 g

Massa as sitrat = (Mr As Sitrat x 2) x n

= (192 g/mol x 2) x 0,095 mol = 36,48 g

3. Massa kolin klorida : Asam sitrat (2 : 1)

Mr ChCl = 139, 63 g/mol ; Mr As sitrat = 192 g/mol

Total masa yang ditimbang 50 mg

$$n = \frac{massa\ total}{(Mr\ ChCl\ x\ 2) + (Mr\ As\ sitrat\ x\ 1)}$$

$$n = \frac{50\ mg}{(139{,}63\ \text{g/mol}\ x\ 2) + (192\ \text{g/mol}\ x\ 1)}$$

n = 0,106 mol

Massa ChCl = (Mr ChCl x 2) x n

= (139,63 g/mol x 2) x 0,212 mol = 29,60 g

Massa as sitrat = (Mr As Sitrat) x n

= 192 g/mol x 0,106 mol = 20,37 g

4. Massa kolin klorida : Asam sitrat (1 : 3)

Mr ChCl = 139, 63 g/mol ; Mr As sitrat = 192 g/mol

Total masa yang ditimbang 50 mg

$$n = \frac{massa\ total}{(Mr\ ChCl\ x\ 1) + (Mr\ As\ sitrat\ x\ 3)}$$

$$n = \frac{50\ mg}{(139{,}63\ \text{g/mol}\ \ x\ 1) + (192\ \text{g/mol}\ \ x\ 3)}$$

n = 0,069 mol

Massa ChCl = (Mr ChCl) x n

= 139,63 g/mol x 0,069 mol = 9,63 g

Massa as sitrat = (Mr As Sitrat x 3) x n

= (192 g/mol x 3) x 0,056 mol = 39,74 g

5. Massa kolin klorida : Asam sitrat (3 : 1)

Mr ChCl = 139, 63 g/mol ; Mr As sitrat = 192 g/mol

Total masa yang ditimbang 50 mg

$$n = \frac{massa\ total}{(Mr\ ChCl\ x\ 3) + (Mr\ As\ sitrat\ \ x\ 1)}$$

$$n = \frac{50\ mg}{(139{,}63\ \text{g/mol}\ \ x\ 3) + (192\ \text{g/mol}\ \ x\ 1)}$$

n = 0.0818 mol

Massa ChCl = (Mr ChCl x 3) x n

= 418,89 g/mol x 0,0818 mol = 34,26 g

Massa as sitrat = (Mr As Sitrat) x n

= 192 g/mol x 0,0818 mol = 15,70 g

Lampiran 7. Perhitungan Pembuatan Larutan Analisis Kadar Fenol Total

1. Folin-Ciocalteu 7,5% (V/V) = $\frac{7{,}5}{100\ mL}$
2. NaOH 1 % (b/v) = $\frac{1\ g}{100\ mL}$
3. Asam Galat 1000 µg/mL = $\frac{50\ mg}{0{,}05\ L} = \frac{50.000\ mg}{50\ mL} = 1000$ µg/mL

   Asam Galat 100 µg/mL

   V1 x C1 = V2 x C2

   V1 x 1000 µg/mL = 100 mL x 100 µg/mL

   V1 = $\frac{100\ \text{mL x } 100\ \mu\text{g/mL}}{1000\ \mu\text{g/mL}}$

   V1 = 10 mL
4. Seri Konsentrasi Asam Galat

Asam Galat 15 µg/mL	Asam Galat 30 µg/mL
V1 x C1 = V2 x C2	V1 x C1 = V2 x C2
V1 x 100 µg/mL = 10 mL x 15 µg/mL	V1 x 100 µg/mL = 10 mL x 30 µg/mL
V1 = $\frac{10\ \text{mL x } 15\ \mu\text{g/mL}}{100\ \mu\text{g/mL}}$	V1 = $\frac{10\ \text{mL x } 300\ \mu\text{g/mL}}{100\ \mu\text{g/mL}}$
V1 = 1,5 mL	V1 = 3 mL
Asam Galat 50 µg/mL	Asam Galat 70 µg/mL
V1 x C1 = V2 x C2	V1 x C1 = V2 x C2
V1 x 100 µg/mL = 10 mL x 50 µg/mL	V1 x 100 µg/mL = 10 mL x 70 µg/mL
V1 = $\frac{10\ \text{mL x } 50\ \mu\text{g/mL}}{100\ \mu\text{g/mL}}$	V1 = $\frac{10\ \text{mL x } 70\ \mu\text{g/mL}}{100\ \mu\text{g/mL}}$
V1 = 5 mL	V1 = 7 mL

Asam Galat 100 µg/mL

V1 x C1 = V2 x C2

V1 x 100 µg/mL = 10 mL x 100 µg/mL

$V1 = \frac{10\ mL\ x\ 100\ \mu g/mL}{100\ \mu g/mL}$

V1 = 10 mL

5. Pembuatan Larutan Uji 8.000 µg/mL = $\frac{200\ \mu g/mL}{25\ mL} = \frac{200.000\ \mu g}{25\ mL}$ = 8.000 µg/mL

Larutan Uji 400 µg/mL

V1 x C1 = V2 x C2

V1 x 100 µg/mL = 10 mL x 100 µg/mL

$V1 = \frac{10\ mL\ x\ 100\ \mu g/mL}{100\ \mu g/mL}$

V1 = 10 mL

Lampiran 8. Perhitungan Pembuatan Larutan Analisis Kadar Flavonoid Total

1. $AlCl_3$ 10 % (b/v) = $\frac{10\ g}{100\ mL} = \frac{1}{10\ mL}$

2. CH3COONA 1 M = $\frac{g}{Mr}$ x $\frac{1000}{V\ (mL)}$

   1 M = $\frac{g}{136{,}08\ g/mol}$ x $\frac{1000}{10\ mL}$

   1000 gr = 1360,8

   gr = 1,3608 g

3. Kuersetin 1000 µg/mL = $\frac{50\ mg}{0{,}05\ L} = \frac{50.000\ mg}{50\ mL} = 1000$ µg/mL

   Kuersetin 100 µg/mL

   V1 x C1 = V2 x C2

   V1 x 1000 µg/mL = 100 mL x 100 µg/mL

   V1 = $\frac{100\ mL\ x\ 100\ \mu g/mL}{1000\ \mu g/mL}$

   V1 = 10 mL

4. Seri Konsentrasi kuersetin

   Kuersetin 12,5 µg/mL

   V1 x C1 = V2 x C2

   V1 x 100 µg/mL = 10 mL x 12,5 µg/mL

   V1 = $\frac{10\ mL\ x\ 12{,}5\ \mu g/mL}{100\ \mu g/mL}$

   V1 = 1,25 mL

   Kuersetin 25 µg/mL

   V1 x C1 = V2 x C2

   V1 x 100 µg/mL = 10 mL x 25 µg/mL

   V1 = $\frac{10\ mL\ x\ 25\ \mu g/mL}{100\ \mu g/mL}$

   V1 = 2,5 mL

   Kuersetin 50 µg/mL

   V1 x C1 = V2 x C2

   V1 x 100 µg/mL = 10 mL x 50 µg/mL

   V1 = $\frac{10\ mL\ x\ 50\ \mu g/mL}{100\ \mu g/mL}$

   V1 = 5 mL

   Kuersetin 75 µg/mL

   V1 x C1 = V2 x C2

   V1 x 100 µg/mL = 10 mL x 75 µg/mL

   V1 = $\frac{10\ mL\ x\ 75\ \mu g/mL}{100\ \mu g/mL}$

   V1 = 7,5 mL

Kuersetin 100 µg/ mL

V1 x C1 = V2 x C2

V1 x 100 µg/mL = 10 mL x 100 µg/mL

$V1 = \frac{10\ mL\ x\ 100\ \mu g/mL}{100\ \mu g/mL}$

V1 = 10 mL

5. Pembuatan Larutan Uji 8.000 µg/mL = $\frac{200\ \mu g/mL}{25\ mL} = \frac{200.000\ \mu g}{25\ mL}$ = 8.000 µg/mL

Larutan Uji 400 µg/mL

V1 x C1 = V2 x C2

V1 x 8.000 µg/mL = 10 mL x 4.000 µg/mL

$V1 = \frac{10\ mL\ x\ 2000\ \mu g/mL}{8.000\ \mu g/mL}$

V1 = 2,5 mL

Lampiran 9. Perhitungan Pembuatan Larutan Analisis Aktivitas Antioksidan

1. Pembuatan FeS04.7H2O 1 mmol/L (0,001 M)

   $M = \frac{g}{BM} \times \frac{1000}{V\ (mL)}$

   $0{,}001\ M = \frac{g}{278\ g/mol} \times \frac{1000}{100\ mL}$

   $1000\ g = 27{,}8$

   $g = \frac{278}{1000} = 0{,}0278\ g\ /\ 27{,}8\ mg$

2. HCl 40 mmol/L (40 mmol/L = 0,04 M)

   $M = \frac{\%\ .\ bj.10}{BM}$

   $M = \frac{32\ .\ 1{,}19\ .\ 10}{36{,}5}$

   M = 10,43 M (HCl 32%)

   V1 x M1 = V2 x M2

   V1 x 10,43 M = 250 mL x 0,04 M

   $V1 = \frac{10\ mL\ x\ 2000\ \mu g/mL}{8.000\ \mu g/mL}$

   V1 = 2,5 mL

3. $FeCl_3.6H_20$ 20 mmol/L (20 mmol = 0,02 M)

   $M = \frac{g}{BM} \times \frac{1000}{V\ (mL)}$

   $0{,}02\ M = \frac{g}{270{,}296\ g/mol} \times \frac{1000}{100\ mL}$

   $1000\ g = 540{,}592$

   $g = \frac{540{,}592}{1000} = 0{,}540592$

4. TPTZ 10 mmol/L dalam HCl 40 mmol/L (10 mmol/L = 0,01 M)

   $M = \frac{g}{BM} \times \frac{1000}{V\ (mL)}$

   $0{,}01\ M = \frac{g}{312{,}33\ g/mol} \times \frac{1000}{10\ mL}$

   $1000\ g = 31{,}233$

g = $\frac{31,233}{1000}$ = 0,540592

5. Reagen FRAP (10:1:1)

   Buffer Asetat pH 3,6 : TPTZ 10 mmol/L : FeCl36H20 20 mmol/L

   25 mL : 2,5 mL : 2,5 mL

6. Pembuatan Larutan Uji 8.000 µg/mL = $\frac{200\ \mu g/mL}{25\ mL}$ = $\frac{200.000\ \mu g}{25\ mL}$ = 8.000 µg/mL

   Larutan Uji 400 µg/mL

   V1 x C1 = V2 x C2

   V1 x 8.000 µg/mL = 10 mL x 4.000 µg/mL

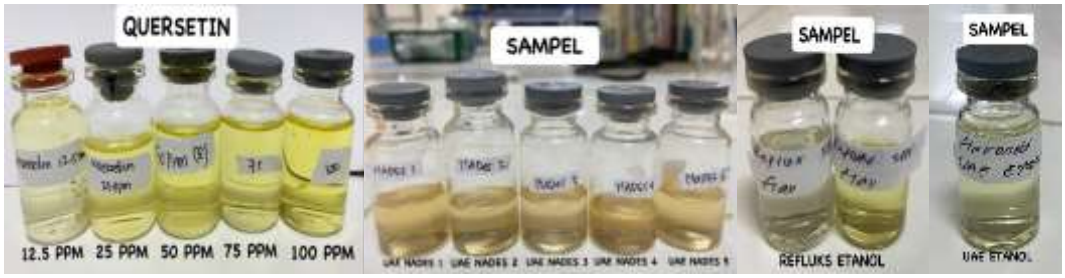
   V1 = $\frac{10\ mL\ x\ 2000\ \mu g/mL}{8.000\ \mu g/mL}$

   V1 = 2,5 mL

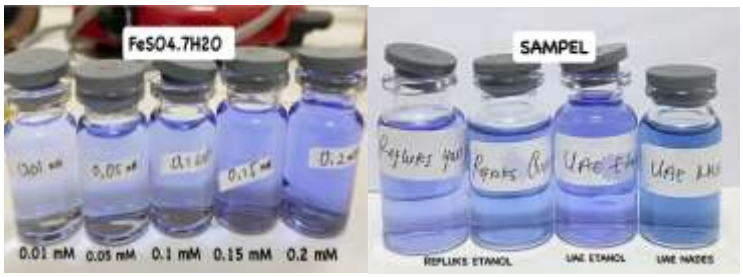
Lampiran 10. Pengujian Kadar Fenol Total



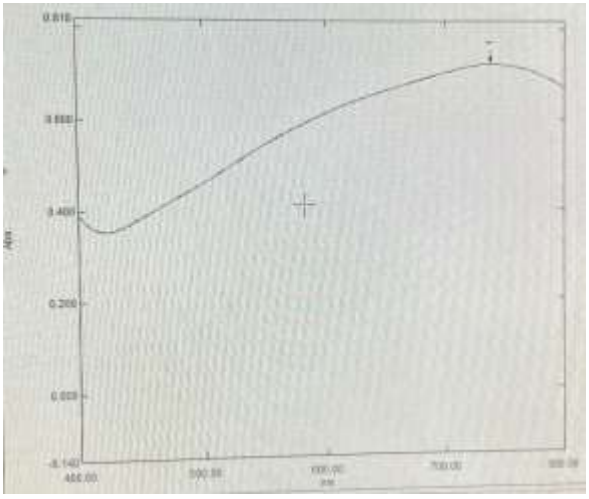
Lampiran 11. Pengujian Kadar Flavonoid Total



Lampiran 12. Pengujian Aktivitas Antioksidan FRAP

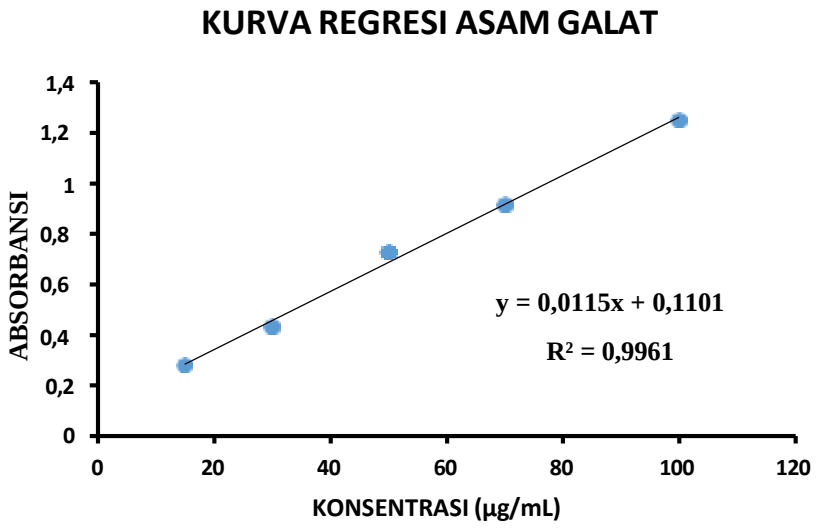


Lampiran 13. Spektrum Panjang Gelombang Maksimum Asam Galat 50 ppm



Lampiran 14. Kurva Regresi Asam Galat

Larutan Standar	Konsentrasi	Absorbansi
Asam Galat	15 PPM	0,279
	30 PPM	0,432
	50 PPM	0,726
	70 PPM	0,914
	100 PPM	1,25



Lampiran 15. Data Kadar Fenol Total

Ekstrak			Absorbansi	x (µg/mL)	X (mg/mL)	mg EAG/g simplisia	Rata-rata	SD	% RSD
KONVENSIONAL UAE		Rep 1	0.871	66.165	0.066165	66.165	66.252	0.0870	0.1313
		Rep 2	0.873	66.339	0.066339	66.339			
		Rep 3	0.872	66.252	0.066252	66.252			
KONVENSIONAL REFLUKS		Rep 1	0.913	69.817	0.069817	58.367	58.561	0.2752	0.4699
		Rep 2	0.914	69.904	0.069904	58.440			
		Rep 3	0.920	70.426	0.070426	58.876			
NADES UAE	1 : 1	Rep 1	0.910	69.557	0.069557	69.557	69.933	0.3921	0.5607
		Rep 2	0.919	70.339	0.070339	70.339			
		Rep 3	0.914	69.904	0.069904	69.904			
	1 : 2	Rep 1	0.584	41.209	0.041209	41.209	41.354	0.3292	0.7961
		Rep 2	0.583	41.122	0.041122	41.122			
		Rep 3	0.590	41.730	0.041730	41.730			
	2 : 1	Rep 1	0.789	59.035	0.059035	59.035	59.238	0.2795	0.4719
		Rep 2	0.795	59.557	0.059557	59.557			
		Rep 3	0.790	59.122	0.059122	59.122			
	1 : 3	Rep 1	0.941	72.252	0.072252	72.252	72.774	0.5217	0.7169
		Rep 2	0.947	72.774	0.072774	72.774			
		Rep 3	0.953	73.296	0.073296	73.296			
	3 : 1	Rep 1	0.689	50.339	0.050339	50.339	51.180	0.8265	1.6148
		Rep 2	0.699	51.209	0.051209	51.209			
		Rep 3	0.708	51.991	0.051991	51.991			

- x (µg/mL)

  $y = a + bx$

  $y = 0{,}1101 + 0{,}0115x$

  $x = \frac{y - 0{,}1101}{0{,}0115}$

Konven UAE (1)	Konven UAE (2)	Konven UAE (3)
$x = \frac{0{,}871 - 0{,}1101}{0{,}0115}$	$x = \frac{0{,}873 - 0{,}1101}{0{,}0115}$	$x = \frac{0{,}872 - 0{,}1101}{0{,}0115}$
x = 66.165 µg/mL	x = 66.339 µg/mL	x = 66.252 µg/ mL

Konven Refluks 200 (1)	Konven Refluks 200 (2)	Konven Refluks 200 (3)
$x = \frac{0.913 - 0{,}1101}{0{,}0115}$	$x = \frac{0.914 - 0{,}1101}{0{,}0115}$	$x = \frac{0.920 - 0{,}1101}{0{,}0115}$
x = 58.367 µg/mL	x = 58.440 µg/mL	x = 58.876 µg/ mL

NADES UAE 1:3 (1)	NADES UAE 1:3 (2)	NADES UAE 1:3 (3)
$x = \frac{0{,}941 - 0{,}1101}{0{,}0115}$	$x = \frac{0{,}947 - 0{,}1101}{0{,}0115}$	$x = \frac{0{,}953 - 0{,}1101}{0{,}0115}$
x = 72.252 µg/mL	x = 72.774 µg/mL	x = 73.296 µg/ mL

- X (mg/mL)

$$X\ (mg/mL) = \frac{x\ (\mu g/mL)}{1000}$$

$$= \frac{66.165\ \mu g/mL}{1000}$$

$$= 0.066165\ mg/mL$$

- mg EAG/g simplisia

Konvensional UAE

$$= \frac{C \times V \times Fp}{m} = \frac{0.066165\ mg/mL \times 25 \times 50}{2\ g} = 66.165\ mg\ EAG/g\ simplisia$$

Konvensional Refluks 200 ppm

$$= \frac{C \times V \times Fp}{m} = \frac{0.06817 \times 25 \times 27}{0.2\ g} = 350{,}246\ mg\ EAG/g\ ekstrak$$

$$= \text{mg EK/g simplisia} = \frac{\text{mg EAG/g ekstrak x berat ekstrak (g)}}{\text{berat simplisia}}$$

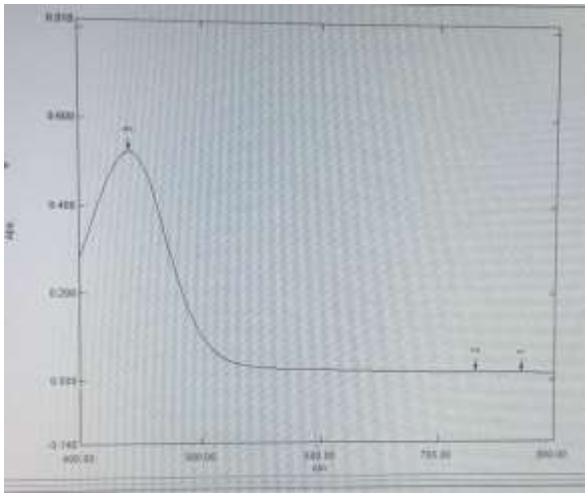
$$= \frac{350{,}246 \text{ mg EAG/g ekstrak x } 1.672 \text{ g}}{10 \text{ g}}$$

$$= 58.367 \text{ mg EAG/g simplisia}$$

NADES UAE

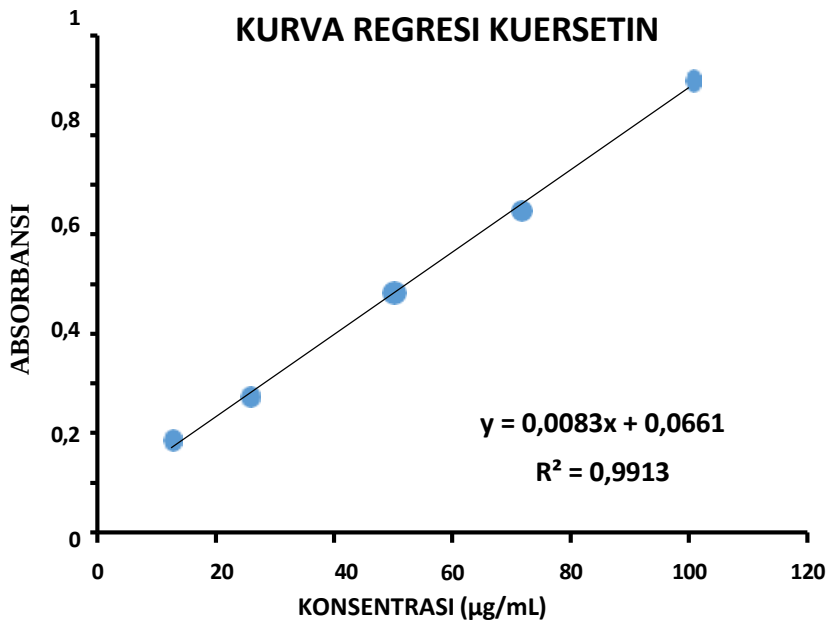
$$= \frac{\text{C x V x Fp}}{\text{m}} = \frac{0.073296 \text{ x } 25 \text{ x } 50}{2 \text{ g}} = 73.296 \text{ mg EAG/g simplisia}$$

Lampiran 16. Spektrum Panjang Gelombang Maksimum Kuersetin 50 ppm



Lampiran 17. Kurva Regresi Kuersetin

Larutan Standar	Konsentrasi	Absorbansi
Kuersetin	12,5 PPM	0,185
	25 PPM	0,270
	50 PPM	0,481
	75 PPM	0,645
	100 PPM	0,927



Lampiran 18. Data Kadar Flavonoid Total

Ekstrak			Abs	x (µg/mL)	X (mg/mL)	mg EK/g simplisia	Rata-rata	SD	% RSD
KONVENSIONAL UAE		Rep 1	0.285	26.373	0.0264	2.637	2.593	0.0423	1.6317
		Rep 2	0.278	25.530	0.0255	2.553			
		Rep 3	0.281	25.892	0.0259	2.589			
KONVENSIONAL REFLUKS		Rep 1	0.243	21.313	0.0213	1.781	1.818	0.0407	2.2382
		Rep 2	0.246	21.675	0.0217	1.812			
		Rep 3	0.251	22.277	0.0223	1.862			
NADES UAE	1 : 1	Rep 1	0.345	33.602	0.0336	3.360	3.312	0.0417	1.2601
		Rep 2	0.339	32.880	0.0329	3.288			
		Rep 3	0.339	32.880	0.0329	3.288			
	1 : 2	Rep 1	0.289	26.855	0.0269	2.686	2.633	0.1010	3.8370
		Rep 2	0.290	26.976	0.0270	2.638			
		Rep 3	0.275	25.169	0.0252	2.517			
	2 : 1	Rep1	0.263	23.723	0.0237	2.372	2.344	0.0251	1.0699
		Rep2	0.260	23.361	0.0234	2.336			
		Rep3	0.259	23.241	0.0232	2.324			
	1 : 3	Rep 1	0.443	45.410	0.0454	4.541	4.441	0.0872	1.9628
		Rep 2	0.431	43.964	0.0440	4.396			

		Rep 3	0.430	43.843	0.0438	4.384			
	3 : 1	Rep 1	0.268	24.325	0.0243	2.433	2.348	0.0790	3.3645
		Rep 2	0.260	23.361	0.0234	2.336			
		Rep 3	0.255	22.759	0.0228	2.276			

- x (µg/mL)

  y = a + bx

  y = 0,0661 + 0,0083x

  $x = \frac{y - 0,0661}{0,0083}$

  Konven UAE (1)

  $x = \frac{0,285 - 0,0661}{0,0083}$

  x = 26.373 µg/mL

  Konven UAE (2)

  $x = \frac{0,278 - 0,0661}{0,0083}$

  x = 25.530 µg/mL

  Konven UAE (3)

  $x = \frac{0.281 - 0,0661}{0,0083}$

  x = 25.892 µg/mL

  Konven Refluks 300 (1)

  $x = \frac{0.243 - 0,0661}{0,0083}$

  x = 21.313 µg/mL

  Konven Refluks 300 (2)

  $x = \frac{0.246 - 0,0661}{0,0083}$

  x = 21.675 µg/mL

  Konven Refluks 300 (3)

  $x = \frac{0.251 - 0,0661}{0,0083}$

  x = 22.277 µg/mL

  NADES UAE 1:3 (1)

  $x = \frac{0.443 - 0,0661}{0,0083}$

  x = 45.410 µg/Ml

  NADES UAE 1:3 (2)

  $x = \frac{0.431 - 0,0661}{0,0083}$

  x = 43.964 µg/mL

  NADES UAE 1:3 (3)

  $x = \frac{0.430 - 0,0661}{0,0083}$

  x = 43.843 µg/mL

- X (mg/mL)

  $X\ (mg/mL) = \frac{x\ (\mu g/mL)}{1000}$

$$= \frac{26.373\ \mu g/mL}{1000}$$

= 0,0264 mg/mL

- mg EK/g simplisia

  Konvensional UAE

  $$= \frac{C \times V \times Fp}{m} = \frac{0.0264 \times 25 \times 5}{2\ g} = 2.637\ \text{mg EK/g simplisia}$$

  Konvensional Refluks 2000 ppm

  $$= \frac{C \times V \times Fp}{m} = \frac{0.0243 \times 25 \times 4}{0.2\ g} = 10{,}878\ \text{mg EK/g ekstrak}$$

  $$= \text{mg EK/g simplisia} = \frac{\text{mg EK/g ekstrak} \times \text{berat ekstrak (g)}}{\text{berat simplisia}}$$

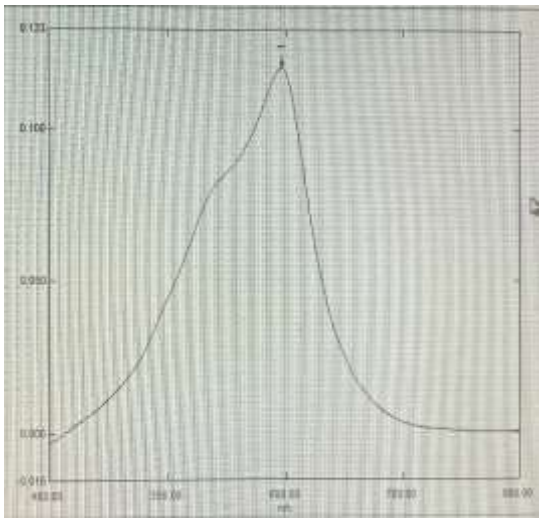
  $$= \frac{10{,}878\ \text{mg EK/g ekstrak} \times 1.672\ g}{10\ g}$$

  = 1,781 µmol EK/g simplisia

  NADES UAE

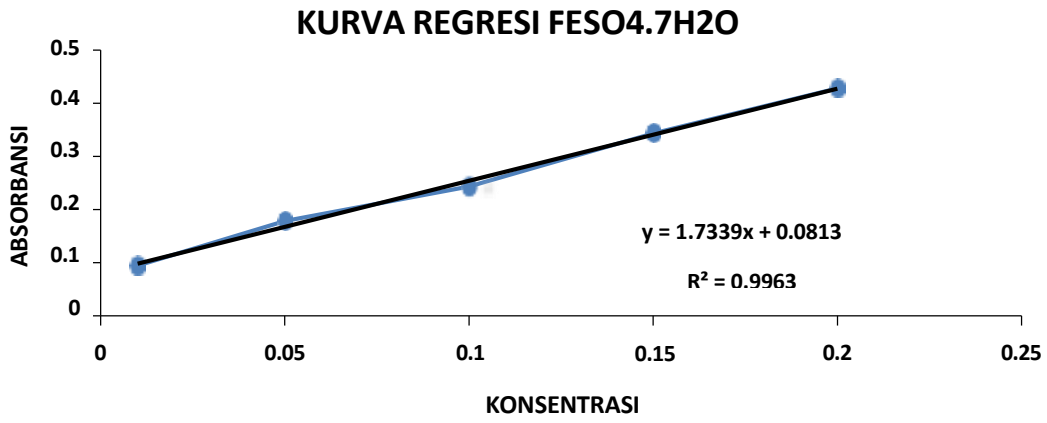
  $$= \frac{C \times V \times Fp}{m} = \frac{0.0454 \times 25 \times 5}{2\ g} = 4.541\ \text{mg EK/g simplisia}$$

Lampiran 19. Spektrum Panjang Gelombang Maksimum FeSO4.7H2O 0,1 mM



Lampiran 20. Kurva Regresi FeSO4.7H2O

Larutan Standar	Konsentrasi	Absorbansi
Ferro Sulfat	0,01 mM	0,095 nm
	0,05 mM	0,179 nm
	0,1 mM	0,244 nm
	0,15 mM	0,344 nm
	0,2 mM	0,429 nm



Lampiran 21. Data Aktivitas Antioksidan FRAP Ekstrak Daun Matoa

Ekstrak		Abs	x (µmol/mL)	µmol EFeSO4/g simplisia	Rata-rata	SD	% RSD
KONVENSIONAL UAE	Rep 1	0.502	0.237	9.486	9.577	0.0902	0.9418
	Rep 2	0.506	0.239	9.577			
	Rep 3	0.510	0.242	9.667			
REFLUKS	Rep 1	0.564	0.272	5.687	5.6754	0.0118	0.2076
	Rep 2	0.563	0.272	5.675			
	Rep 3	0.562	0.271	5.663			
NADES UAE	Rep 1	0.489	0.230	9.193	9.118	0.0792	0.8685
	Rep 2	0.482	0.226	9.035			
	Rep 3	0.486	0.228	9.126			

- x (µmol/mL)

  $y = a + bx$

  $y = 0.0813 + 1.7339x$

  $x = \frac{y - 0.0813}{1.7339}$

  Konven UAE (1)

  $x = \frac{0.502 - 0.0813}{1.7339}$

  x = 0.237 µmol/mL

  Konven UAE (2)

  $x = \frac{0.506 - 0.0813}{1.7339}$

  x = 0.239 µmol/mL

  Konven UAE (3)

  $x = \frac{0.510 - 0.0813}{1.7339}$

  x = 0.242 µmol/mL

  Konven Refluks 300 (1)

  $x = \frac{0.564 - 0.0813}{1.7339}$

  x = 0.272 µmol/mL

  Konven Refluks 300 (2)

  $x = \frac{0.563 - 0.0813}{1.7339}$

  x = 0.272 µmol/mL

  Konven Refluks 300 (3)

  $x = \frac{0.562 - 0.0813}{1.7339}$

  x = 0.271 µmol/mL

NADES UAE 1:3 (1)	NADES UAE 1:3 (2)	NADES UAE 1:3 (3)
$x = \frac{0.489 - 0.0813}{1.7339}$	$x = \frac{0.482 - 0.0813}{1.7339}$	$x = \frac{0.486 - 0.0813}{1.7339}$
x = 0.230 µmol/Ml	x = 0.226 µmol/mL	x = 0.228 µmol/mL

- µmol EFeSO4/g simplisia

  Konvensional UAE

  $= \frac{C \times V \times Fp}{m} = \frac{0.237 \times 40 \times 2}{2\ g} = 9.486$ µmol EFeSO4/g simplisia

  Konvensional Refluks 2000 ppm

  $= \frac{C \times V \times Fp}{m} = \frac{0.272 \times 25 \times 1}{0.2\ g} = 33{,}014$ µmol EFeSO4/g ekstrak

  = µmol EFeSO4/g simplisia $= \frac{\text{µmol EFeSO4/g ekstrak x berat ekstrak (g)}}{\text{berat simplisia}}$

  $= \frac{33.014\ \text{µmol EFeSO4/g ekstrak x } 1.672\ g}{10\ g}$

  = 9.577 µmol EFeSO4/g simplisia

  NADES UAE

  $= \frac{C \times V \times Fp}{m} = \frac{0.230 \times 40 \times 2}{2\ g} = 9.193$ mg EFeSO4/g simplisia

Lampiran 22. One Way ANOVA Test

Kadar Fenol Total

Tujuan : Mengidentifikasi ada tidaknya perbedaan kadar fenol total yang signifikan antara ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

Hipotesis : Ho : Tidak terdapat perbedaan kadar fenol total ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

Ha : Terdapat perbedaan kadar fenol total ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

α : 0,05

Kriteria : Ho ditolak jika nilai signifikansi < α

Hasil : Nilai signifikasi < α

Kesimpulan : Ho ditolak dan Ha diterima, terdapat perbedaan kadar fenol total yang signifikan antara ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

Uji Normalitas

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Ekstrak	Statistic	df	Sig.	Statistic	df	Sig.
KFT	Konvensional UAE	.175	3	.	1.000	3	1.000
	Konvensional Refluks	.337	3	.	.855	3	0.254
	NADES UAE	.175	3	.	1.000	3	1.000

Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
KFT	Based on Mean	1.839	2	6	.238
	Based on Median	1.302	2	6	.339
	Based on Median and with adjusted df	1.302	2	3.895	.369
	Based on trimmed mean	1.813	2	6	.242

ANOVA

ANOVA

KFT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	303.697	2	151.849	1280.328	<0.001
Within Groups	.712	6	.119		
Total	304.409	8			

Post Hoc Test

Multiple Comparisons

Dependent Variable: KFT

Bonferroni

(I) Ekstrak	(J) Ekstrak	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Konvensional UAE	Konvensional Refluks	7.69100*	.28119	<.001	6.7666	8.6154
	NADES UAE	-6.52200*	.28119	<.001	-7.4464	-5.5976
Konvensional Refluks	Konvensional UAE	-7.69100*	.28119	<.001	-8.6154	-6.7666
	NADES UAE	-14.21300*	.28119	<.001	-15.1374	-13.2886
NADES UAE	Konvensional UAE	6.52200*	.28119	<.001	5.5976	7.4464
	Konvensional Refluks	14.21300*	.28119	<.001	13.2886	15.1374

*. The mean difference is significant at the 0.05 level.

Kadar Flavonoid Total

Tujuan : Mengidentifikasi ada tidaknya perbedaan kadar flavonoid total yang signifikan antara ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

Hipotesis : Ho : Tidak terdapat perbedaan kadar flavonoid total ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

Ha : Terdapat perbedaan kadar flavonoid total ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

α : 0,05

Kriteria : Ho ditolak jika nilai signifikansi < α

Hasil : Nilai signifikasi < α

Kesimpulan : Ho ditolak dan Ha diterima, terdapat perbedaan kadar flavonoid total yang signifikan antara ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

Uji Normalitas

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Ekstrak	Statistic	df	Sig.	Statistic	df	Sig.
KFLT	Konvensional UAE	.204	3	.	.993	3	.843
	Konvensional Refluks	.228	3	.	.982	3	.743
	NADES UAE	.361	3	.	.807	3	.131

a. Lilliefors Significance Correction

Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
KFLT	Based on Mean	2.440	2	6	.168
	Based on Median	.239	2	6	.794
	Based on Median and with adjusted df	.239	2	2.802	.802
	Based on trimmed mean	2.119	2	6	.201

ANOVA

ANOVA

KFLT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.888	2	5.444	1473.603	<.001
Within Groups	.022	6	.004		
Total	10.910	8			

Post Hoc Test

Multiple Comparisons

Dependent Variable: KFLT

Bonferroni

(I) Ekstrak	(J) Ekstrak	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Konvensional UAE	Konvensional Refluks	.77467*	.04963	<.001	.6115	.9378
	NADES UAE	-1.84733*	.04963	<.001	-2.0105	-1.6842
Konvensional Refluks	Konvensional UAE	-.77467*	.04963	<.001	-.9378	-.6115
	NADES UAE	-2.62200*	.04963	<.001	-2.7851	-2.4589
NADES UAE	Konvensional UAE	1.84733*	.04963	<.001	1.6842	2.0105
	Konvensional Refluks	2.62200*	.04963	<.001	2.4589	2.7851

*. The mean difference is significant at the 0.05 level.

Aktivitas Antioksidan FRAP

Tujuan : Mengidentifikasi ada tidaknya perbedaan aktivitas antioksidan FRAP yang signifikan antara ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

Hipotesis : Ho : Tidak terdapat perbedaan aktivitas antioksidan FRAP ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

Ha : Terdapat perbedaan aktivitas antioksidan FRAP ekstrak konvensional refluks, konvensional UAE dan NADES UAE.

α : 0,05

Kriteria : Ho ditolak jika nilai signifikansi < α

Hasil : Nilai signifikasi < α

Kesimpulan : Ho ditolak dan Ha diterima, terdapat perbedaan aktivitas antioksidan FRAP yang signifikan antara ekstrak konvensional refluks, konvensional UAE dan NADES UAE daun matoa.

Uji Normalitas

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Ekstrak	Statistic	df	Sig.	Statistic	df	Sig.
FRAP	Konvensional UAE	.175	3	.	1.000	3	.994
	Konvensional Refluks	.175	3	.	1.000	3	1.000
	NADES UAE	.207	3	.	.992	3	.833

a. Lilliefors Significance Correction

Uji Homogenitas

Tests of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
FRAP	Based on Mean	1.689	2	6	.262
	Based on Median	1.437	2	6	.309
	Based on Median and with adjusted df	1.437	2	4.035	.338
	Based on trimmed mean	1.675	2	6	.264

ANOVA

ANOVA

FRAP

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27.288	2	13.644	2799.050	<.001
Within Groups	.029	6	.005		
Total	27.317	8			

Post Hoc Test

Multiple Comparisons

Dependent Variable: FRAP

Bonferroni

(I) Ekstrak	(J) Ekstrak	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Konvensional UAE	Konvensional Refluks	3.90167*	.05701	<.001	3.7143	4.0891
	NADES UAE	.45867*	.05701	<.001	.2713	.6461
Konvensional Refluks	Konvensional UAE	-3.90167*	.05701	<.001	-4.0891	-3.7143
	NADES UAE	-3.44300*	.05701	<.001	-3.6304	-3.2556
NADES UAE	Konvensional UAE	-.45867*	.05701	<.001	-.6461	-.2713
	Konvensional Refluks	3.44300*	.05701	<.001	3.2556	3.6304

*. The mean difference is significant at the 0.05 level.

Lampiran 23. Pearson Correlation Test

Korelasi Kadar Fenol Total Terhadap Aktivitas Antioksidan FRAP

Tujuan : Mengetahui korelasi kadar fenol total terhadap aktivitas antioksidan FRAP.

Hipotesis : Ho : Tidak terdapat Korelasi kadar fenol total terhadap aktivitas antioksidan FRAP.

Ha : terdapat korelasi kadar fenol total terhadap aktivitas antioksidan FRAP.

α : 0,05

Kriteria : Ho ditolak jika nilai signifikansi < α

Hasil : Nilai signifikasi > α

Kesimpulan : Ho diterima dan Ha ditolak, tidak terdapat Korelasi kadar fenol total terhadap aktivitas antioksidan FRAP.

Correlations

			KFT	FRAP
Spearman's rho	KFT	Correlation Coefficient	1.000	.417
		Sig. (2-tailed)	.	.265
		N	9	9
	FRAP	Correlation Coefficient	.417	1.000
		Sig. (2-tailed)	.265	.
		N	9	9

Korelasi Kadar Flavonoid Total Terhadap Aktivitas Antioksidan FRAP

Tujuan : Mengetahui korelasi kadar flavonoid total terhadap aktivitas antioksidan FRAP.

Hipotesis : Ho : Tidak terdapat Korelasi kadar flavonoid total terhadap aktivitas antioksidan FRAP

Ha : Terdapat korelasi kadar flavonoid total terhadap aktivitas antioksidan FRAP.

α : 0,05

Kriteria : Ho ditolak jika nilai signifikansi < α

Hasil : Nilai signifikasi > α

Kesimpulan : Ho diterima dan Ha ditolak, tidak terdapat Korelasi kadar flavonoid total terhadap aktivitas antioksidan FRAP.

Correlations

			KFT	FRAP
Spearman's rho	KFLT	Correlation Coefficient	1.000	.417
		Sig. (2-tailed)	.	.265
		N	9	9
	FRAP	Correlation Coefficient	.417	1.000
		Sig. (2-tailed)	.265	.
		N	9	9