

## DAFTAR PUSTAKA

- Nurcahyani, E. 2014. *Khasiat Dahsyat Daun Kelor Membasmi Penyakit Ganas*. Jakarta: Jendela Sehat.
- Anwar F, Latir S, Ashraf M, Gilan A. 2006. *Moringa oleifera a food plant with multiple medicinal uses*. *Phytother. Res.* 21: 17-25.
- Anwar,F., Ashraf, M., Bhanger, M. I., 2005. *Interprovenan cevariation in the composition of Moringa oleifera oils eeds from Pakistan*. *J. Am. Oil Chem. Soc.* 82, 45–51.
- Mahesa, Mardiana, F. 2012. Esterifikasi Senyawa Polifenol dari Ekstrak Kulit Biji Kopi dengan Asam p-Hidroksibenzoat dengan Menggunakan Katalis SiO<sub>2</sub>-H<sub>2</sub>SO<sub>4</sub>. Tesis. Depok: FMIPA UI.
- Gupta, A., Kumar, R., & Singh, R. (2021). Effect of Moringa oleifera root extract on lipid profile and lipase activity in high-fat diet-induced obese rats. *Journal of Pharmacy and Pharmacology*, 73(1), 1-12.
- World Health Organization. (2024). Obesity and overweight. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>
- Ardiani, P. R., Sulistyoningrum, D. C., & Ikhsan, M. R. 2018. Hubungan Antara Kadar Leptin dengan Indeks Massa Tubuh dan Lingkar Pinggang pada Remaja Laki-Laki dengan Obesitas di Kota Yogyakarta. Universitas Gadjah Mada
- Aung sumbono (2021). Metabolisme energi dan obesitas seri biokimia pangan dasar. Budi utama : Yogyakarta.
- Sharma, S., & Tailor, A. 2019. Relationship Between Leptin Levels and Obesity. *International Journal of Obesity*.
- Warmadewa. 2020. Korelasi Antara Kadar Leptin dengan IMT, Lingkar Pinggang dan RLPP pada Orang Dewasa Obesitas Usia 19-25. *eJournal Warmadewa*.
- Cahyaningrum, Aladhiana. 2023. Leptin Sebagai Indikator Obesitas. Poltekkes Kemenkes Mataram.
- Borges, V., Monteiro, J. A., & Teixeira, M. L. (2021). Anti-inflammatory and antioxidant properties of food: Impact on obesity. *Journal of Functional Foods*, 75, 104291.
- Chuang, L., Shen, Y., Li, X., & Wang, H. (2022). Effect of antioxidants on leptin signaling in obesity. *Nutrients*, 14(11), 3462.
- Jiang, W., Wang, X., & Zhang, H. (2022). The role of antioxidants in leptin resistance. *Nutrients*, 14(11), 3459
- Riduan, Ahmad, Patonah, Elis Susilawati (2017).Aktivitas Antiobesitas Ekstrak Daun Katuk (*Sauvopus Androgynus L.Merr*) Pada Model Mencit Obesitas. P-Issn 1693-3591; E-Issn 2579-910x. 14(02).
- Damayanti, P. Putri, Y. E., & Prasetyo, R. (2023). Efek pemberian ekstrak akar (Moringa oleifera) terhadap aktivitas enzim lipase dan profil lipid s putih model diet tinggi lemak dan induksi streptozotocinide. *Jurnal Farmasi Indonesia*, 24(1), 1-9.
- S., & Pandey, S. (2022). Effect of Moringa oleifera leaf extract on lipid profile and lipase activity in high-fat diet-induced obese rats. *Journal of Pharmacy and Pharmacology*, 74(2), 242-250.



- Bharali, M.R., Jong, A.N., and Kawabata, J. 2003. Antidiabetic Potential of Nepalese Herbal and Food Plants. Functional Foods for Chronic Diseases. Vol. 3, No. 1.
- Krisnadi A., D. 2015. Kelor Super Nutrisi. Kunduran: Media Peduli Lingkungan
- Gopalakrishnan, P., Sundaresan, K., & Rajagopalan, S. (2016). Phytochemical analysis of *Moringa oleifera* leaves. Journal of Pharmacy Research, 9(1), 161-164.
- Igwilo, U., Nwokedi, C. O., & Ogunsanwo, O. O. (2017). Nutritional and phytochemical composition of *Moringa oleifera* leaves, pods, and roots. Journal of Agricultural and Food Chemistry, 65(34), 6366-6373
- Faizi S, Siddiqui B, Saleem R, Siddiqui S, Afbat K, Gilani A (1995). Fully acetylated and hypotensive thiocarbamate glycosides from *Moringa oleifera*. Phytochem. 38: 957-963.
- Saleem, H., Al-Dujaily, A. N. G., & Al-Murshidi, M. H. H. (2016). Effect of Methanolic Leaf Extract of *Moringa oleifera* on Biochemical Markers in obesity-induced rats. Research Journal of Pharmaceutical, Biological and Chemical Sciences, 7(3), 2222-2232.
- Nascimento, Kamila de Oliveira do, Isabela Pereira Reis, Ivanilda Maria Augusta. Total phenolic and antioxidant capacity of flower, leaf and seed of *Moringa oleifera*. International Journal of Food and Nutrition Research, 2017; 1:1.
- Kashyap, P.; Kumar, S.; Riar, C.S.; Jindal, N.; Baniwal, P.; Guiné, R.P.F.; Correia, P.M.R.; Mehra, R.; Kumar, H. Recent Advances in Drumstick (*Moringa oleifera*) Leaves Bioactive Compounds: Composition, Health Benefits, Bioaccessibility, and Dietary Applications. Antioxidants 2022, 11, 402. <https://doi.org/10.3390/antiox11020402>
- Ezz El-Din Ibrahim, M.; Alqurashi, R.M.; Alfaraj, F.Y. Antioxidant Activity of *Moringa oleifera* and Olive *Olea europaea* L. Leaf Powders and Extracts on Quality and Oxidation Stability of Chicken Burgers. Antioxidants 2022, 11, 496. <https://doi.org/10.3390/antiox11030496>
- Lee, S-II., Kim, J.W., Lee, Y.K., Yang, and Kim, S.D. 2011. "Anti-obesity Effect of *Monascus pilosus* Mycelial Extract in High Fat Diet-induced Obese Rat". Journal Applied Biomolecular Chemistry; 54, 197-205
- Lozano, I., Remmelt Van der Werf,, William Bietiger, Elodie Seyfritz, Claude Peronet, Michel Pinget, Nathalie Jeandidier, Elisa Maillard, Eric Marchioni, Séverine Sigrist, and Stéphanie Dal. High-fructose and high-fat diet-induced disorders in rats: impact on diabetes risk, hepatic and vascular complications. Nutrition & Metabolism (2016) 13:15. DOI 10.1186/s12986-016-0074-1
- Othman, Z.A.; Zakaria, Z.; Suleiman, J.B.; Ghazali,W.S.W.; Mohamed, M. Anti-Atherogenic Effects of Orlistat on Obesity-Induced Vascular Oxidative Stress Rat Model. Antioxidants 2021, 10, 251. <https://doi.org/10.3390/antiox10020251>



- Kim, Y.-J., & Kim, H. S. (2019). Screening Moringa species focused on the development of locally available sustainable nutritional supplements. *Nutrition Research and Practice*, 13(6), 529–534. <https://doi.org/10.4162/nrp.2019.13.6.529>.
- Alhabeeb M, K., and H. Fawzy G. 2023. Comparing the Effect of Moringa Aqueous Extract and Selenium Nanoparticles Against Complications of Type 2 Diabetes Mellitus. *Pakistan Journal of Biological Sciences*. <https://doi.org/10.3923/pjbs.2023.249.265>.
- Zaheer A., Nazir S., Sidiqque N., Qamar F., Hussain A., and Ahmed M., Effect of moringa oleifera leaves on bisphenol-A induced histological changes of hepatocytes in albino rats, *Pakistan Postgraduate Medical Journal*. (2020) 30, no. 01, 17–21, <https://doi.org/10.51642/ppmj.v30i01.255>.



Optimization Software:  
[www.balesio.com](http://www.balesio.com)

## DOKUMENTASI

### 1. Ekstraksi



Daun Moringa



Akar Moringa



Ekstraksi Maserasi



Penyaringan dengan corong bunchner



Evaporasi



Hasil Ekstrak

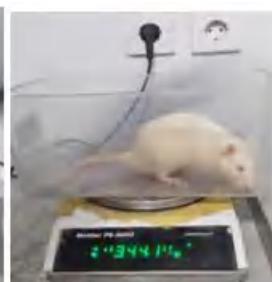


Optimization Software:  
[www.balesio.com](http://www.balesio.com)

## 2. Uji In vivo pada Tikus



Aklimasi



Penimbangan



Induksi HFD+HF



Pengambilan Darah



Pengambilan Organ

## 3. Beberapa Pengujian



Antioksidan



Uji kadar trigliserida dan kolesterol total serum



Optimization Software:  
[www.balesio.com](http://www.balesio.com)

## Lampiran 1 ; Surat Persetujuan Etik Penelitian

KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN  
UNIVERSITAS HASANUDDIN FAKULTAS KEDOKTERAN  
KOMITE ETIK PENELITIAN KESEHATAN  
RSPTN UNIVERSITAS HASANUDDIN  
RSUP Dr. WAHIDIN SUDIROHUSODO MAKASSAR  
Sekretariat : Lantai 2 Gedung Laboratorium Terpadu  
JL.PERINTIS KEMERDEKAAN KAMPUS TAMALANREA KM.10 MAKASSAR 90245.  
Contact Person: dr. Agussalim Bukhari.,MMed,PhD, SpGK TELP. 081241850858, 0411 5780103, Fax : 0411-581431



Keputusan Protokol Amandemen  
No.98/UN4.6.4.5.31/PP36/2024

Nomor Protokol : UH23110863

Judul Protokol : Potensi Anti Obesitas Akar Moringa oleifera Lam. Pada Tikus Obesitas Yang Diinduksi Diet Tinggi Lemak						
Nama Peneliti	: Surahmat, S.Si					
Institusi	: S2 Biomedik FKUH					
Review Protokol Amandemen Ya <input checked="" type="checkbox"/> Tidak <input type="checkbox"/>	Tanggal review sebelumnya 11 Desember 2023					
Tanggal Fullboard	-					
Keputusan	<input checked="" type="checkbox"/> Disetujui <input type="checkbox"/> Disetujui dengan Modifikasi amandemen dan informed consent <input type="checkbox"/> Dihentikan, sambil menunggu informasi lanjut (3) <input type="checkbox"/> Butuh informasi lanjut, tetap berjalan dengan protokol sebelumnya (4) <input type="checkbox"/> Ditolak, bisa lanjut dengan persetujuan sebelumnya (5)					
Tempat Penelitian :	Lab Hewan Fakultas Kedokteran Universitas Hasanuddin Makassar					
No. Versi Protokol	2					
No. Versi Informed Consent						
No.	Nama Reviewer	Keputusan				
		1	2	3	4	5
1		✓				

Makassar, 21 Februari 2024

Ketua

Prof. dr. Muh Nasrum Massi, PhD,SpMK(K)  
NIP 196709101996031001

Sekretaris

dr.Firdaus Hamid, PhD,SpMK  
NIP 197712312002121002



Optimization Software:  
[www.balesio.com](http://www.balesio.com)