

DAFTAR PUSTAKA

- Abdul Rahman H, Saari N, Abas F, Ismail A, Mumtaz MW and Hamid AA. (2017). Anti-obesity and antioxidant activities of selected medicinal plants and phytochemical profiling of bioactive compounds. *International Journal of Food Properties*, 20(11), 2616–2629. <https://doi.org/10.1080/10942912.2016.1247098>
- Abdulateef SM, Majid AA, Al-Bayer MA, Shawkat SS, Tatar A, Mohammed TT, Abdulateef FM, and Al-Ani MQ. (2021). Effect of aromatase inhibitors on sex differentiation and embryonic development in chicks. *Veterinary Medicine and Science*, 7(6), 2362–2373. <https://doi.org/10.1002/vms3.623>
- Adi AC, Susanti Y, Rachmawati H, Ishaura ER, Farapti F, Salisa W, Rasyidi MF, and Sutthiwong N. (2023). Effects of fermented and non-fermented garlic as an anti-diabetic on blood glucose levels of wistar rat. *Journal of Public Health in Africa*, 14(S2), 63–69. <https://doi.org/10.4081/jphia.2023.2541>
- Aguila MB, Pinheiro ADR, Parente LB, and Mandarim LCA. (2003). Dietary effect of different high-fat diet on rat liver stereology. *Liver International: Official Journal of the International Association for the Study of the Liver*, 23(5): 363-370. DOI: <https://www.doi.org/10.1034/j.1478-3231.2003.00858.x>
- Agustina E, Andiarna F, and Hidayati I. (2020). Uji Aktivitas Antioksidan Ekstrak Bawang Hitam (Black Garlic) Dengan Variasi Lama Pemanasan. *Al-Kauniyah: Jurnal Biologi*, 13(1), 39–50. <https://doi.org/10.15408/kauniyah.v13i1.12114>
- Ahmed T and Wang CK (2021). Black garlic and its bioactive compounds on human health diseases: A review. *Molecules*, 26, 2508(16): 1-38. DOI: <https://www.doi.org/10.3390/molecules26165028>
- Ahmed SK and Mohammed RA. (2025). Obesity: Prevalence, causes, consequences, management, preventive strategies and future research directions. *Metabolism Open*, 27(April), 100375. <https://doi.org/10.1016/j.metop.2025.100375>
- Akl MG, Fawzy E, Deif M, Farouk A, and Elshorbagy AK. (2017). Perturbed adipose tissue hydrogen peroxide metabolism in centrally obese men: Association with insulin resistance. *Association with Insulin Resistance: PLoS ONE UNITED STATES*, 12(5), 1–16. <https://doi.org/10.1371/journal.pone.0177268>
- Alscher RG, Erturk N, and Heath LS. (2002). Role of superoxide dismutases (SODs) in controlling oxidative stress in plants. *Journal of Experimental Botany*, 26(4), 292–302.
- Amalia D, Rahmi NN, Hidayati N, Oktaviana R, Fransisca, Z., Supriatno, B., & Anggraeni, S. (2022). Pengaruh Volume Substrat Terhadap Kerja Enzim Katalase Menggunakan Respirometer Ganong Sebagai Rekonstruksi Desain Kegiatan Praktikum Siswa. *Best Journal Biology Education Science & Technology*, 5(2), 02–17. <https://doi.org/2654-4652>
- Amor S, Gonzalez HD, Martin CB, Inarejos GAM, Almodovar P, Prodanov M, Garcia VAL, and Garcia MG (2019). Beneficial effects of an aged black garlic extract in the metabolic and vascular alterations induced by a high fat/sucrose

- diet in male rats. *Nutrients*, 11, 153(1): 1-18. DOI: <https://www.doi.org/10.3390/nu11010153>
- Amos DL, Robinson T, Massie MB, Cook C, Hoffsted A, Crain C, and Santanam, N. (2017). Catalase overexpression modulates metabolic parameters in a new 'stress-less' leptin-deficient mouse model. *Biochimica et Biophysica Acta - Molecular Basis of Disease*, 1863(9), 2293–2306. <https://doi.org/10.1016/j.bbadis.2017.06.016>
- Amudi T, Pandelaki K, dan Palar S. (2021). Hubungan antara hs-CRP, Adiponektin, Fetuin A terhadap Resistensi Insulin pada Pria Dewasa Muda dengan Obesitas Sentral. *E-CliniC*, 9(1), 231–237. <https://doi.org/10.35790/ecl.v9i1.32476>
- Anaeigoudari A, Safari H, and Khazdair MR. (2021). Effects of *Nigella sativa*, *Camellia sinensis*, and *Allium sativum* as Food Additives on Metabolic Disorders, a Literature Review. *Frontiers in Pharmacology*, 12(November), 1–15. <https://doi.org/10.3389/fphar.2021.762182>
- Ansary J, Forbes-Hernández TY, Gil E, Cianciosi D, Zhang J, Elexpuru-Zabaleta M, Simal-Gandara J, Giampieri F, and Battino M. (2020). Potential health benefit of garlic based on human intervention studies: A brief overview. In *Antioxidants* (Vol. 9, Issue 7). <https://doi.org/10.3390/antiox9070619>
- Arreola R, Quintero-Fabian S, Lopez-Roa R, Flores-Gutierrez E, Reyes-Grajeda J, Carrera-Quintanar L, and Ortuno-Sahagun D. (2015). Immunomodulation and anti-inflammatory effects of garlic compounds. *Journal of Immunology Research*, 2015, 1–13. <http://www.proquest.com/>
- Ashar YK. (2023). Serum malondialdehyde in obese and non-obese patients. *Jurnal Kesehatan Tambusai*, 4(4): 7053-7057. DOI: <https://www.doi.org/10.31004/jkt.v4i4.22473>
- Atazadegan MA, Bagherniya M, Askari G, Tasbandi A, and Sahebkar A. (2021). The effects of medicinal plants and bioactive natural compounds on homocysteine. *Molecules*, 26(11), 1–25. <https://doi.org/10.3390/molecules26113081>
- Audu IS, Simon TU, Ogbene GI, Stephen SH, and Nwannadi IA. (2018). Analytical Comparison between Microhematocrit and Automated Methods for Packed Cell Volume (PCV) Determination. *Int J Hematol Blo Dis*, 1(1), 1–4. <https://doi.org/10.1111/j.1365>
- Ayoka AO, Ademoye AK, Imafidon CE, Ojo EO, and Oladele AA. (2016). Aqueous extract of *allium sativum* (linn.) bulbs ameliorated pituitary-testicular injury and dysfunction in wistar rats with pb-induced reproductive disturbances. *Open Access Macedonian Journal of Medical Sciences*, 4(2), 200–212. <https://doi.org/10.3889/oamjms.2016.039>
- Aziz S, Adliani N, and Sukrasno (2020). Molecular docking of oryzanol derivative compounds to enzymes 3-hydroxy-3-methyl-glutaryl-coenzyme A (HMG-CoA) reduktase. *Journal of Science and Applicative Technology*, 4: 43-48. Available at: <https://journal.itera.ac.id/index.php/jsat/%0AReceived>
- Bansal AB and Cassagnol M. (2024). Inhibitor HMG-CoA Reduktase. *StatPearls Publishing Klinik Cleveland, Ohio*.
- Baskaran G, Salvamani S, Ahmad SA, Shaharuddin NA, Pattiram PD, and Shukor MY. (2015). HMG-CoA reductase inhibitory activity and phytocomponent

- investigation of *Basella alba* leaf extract as a treatment for hypercholesterolemia. *Drug Design, Development and Therapy*, 9, 509–517. <https://doi.org/10.2147/DDDT.S75056>
- Bassino E, Gasparri F, and Munaron L. (2020). Protective Role of Nutritional Plants Containing Flavonoids in Hair Follicle Disruption: A Review. *International Journal of Molecular Sciences*, 21, 1–17. <https://doi.org/10.3390/ijms21020523>
- Bautista M, Esquivel-soto J, Esquivel-chirino C, Durante-montiel I, and Valadez-vega C. (2011). Inflammation, Oxidative Stress, and Obesity. *International Journal of Molecular Sciences*, 6, 3117–3132. <https://doi.org/10.3390/ijms12053117>
- Blanco A, Putih G, Kathleen K, Fisiologi D, and Hawaii U. (2017). Medical Biochemistry. *University of Kansas Medical Center, Kansas*, 325–365. <https://doi.org/10.1016/B978-0-12-803550-4.00015-X>
- Bradley JM, Organ CL, and Lefer DJ. (2016). Garlic-derived organic polysulfides and myocardial protection. *Journal of Nutrition*, 146(2), 403S–409S. <https://doi.org/10.3945/jn.114.208066>
- Braud L, Battault S, Meyer G, Nascimento A, Gaillard S, Sousa GD, Rahmani R, Riva C, Armand M, Maixent J, Braud L, Battault S, Meyer G, Nascimento A, and Gaillard S. (2022). Antioxidant properties of tea blunt ROS-dependent lipogenesis: beneficial effect on hepatic steatosis in a high fat-high sucrose diet NAFLD obese rat model to cite this version: 01425507. *The Journal of Nutritional Biochemistry*, 40, 95–104. <https://doi.org/10.1016/j.jnutbio.2016.10.012>
- Cahyaningrum A. (2015). Leptin sebagai indikator obesitas, Sandubaya Mataram. *Jurnal Kesehatan Prima*, I(1), 1364–1371.
- Chae J, Lee E, Oh SM, Ryu HW, Kim S, and Nam JO (2023). Aged black garlic (*Allium sativum* L.) and aged black elephant garlic (*Allium ampeloprasum* L.) alleviate obesity and attenuate obesity induced muscle atrophy in diet induced obese C57BL/6 mice. *Biomedicine and Pharmacotherapy*, 163: 114810. DOI: <https://www.doi.org/10.1016/j.biopha.2023.114810>
- Chang WT, Shiao DK, Cheng MC, Tseng CY, Chen CS, Wu MF, and Hsu CL (2017). Black garlic ameliorates obesity induced by a high-fat diet in rats. *Journal of Food and Nutrition Research*, 5(10): 736741. DOI: <https://www.doi.org/10.12691/jfmr-5-10-3>
- Chang WL, Liu PY, Yeh SL, and Lee HJ. (2022). Effects of Dried Onion Powder and Quercetin on Obesity-Associated Hepatic Manifestation and Retinopathy. *International Journal of Molecular Sciences*, 23(19). <https://doi.org/10.3390/ijms231911091>
- Cheng H, Chang W, Lin J, Cheng M, Huang S, Chen S, Wong Y, and Hsu C. (2023). An Innovative Mei-Gin Formula Exerts Anti-Adipogenic and Anti-Obesity Effects in 3T3-L1 Adipocyte and High-Fat Diet-Induced Obese Rats. *Foods* MDPI, 12(945), 1–15. <https://doi.org/https://doi.org/10.3390/foods12050945>
- Choi IS, Cha HS, and Lee YS (2014). Physicochemical and antioxidant properties of black garlic. *Molecules*, 19(10): 16811–16823. DOI: <https://www.doi.org/10.3390/molecules191016811>

- Choudhary PR, Jani RD, and Sharma MS. (2018). Effect of Raw Crushed Garlic (*Allium sativum* L.) on Components of Metabolic Syndrome. *Journal of Dietary Supplements*, 15(4), 499–506. <https://doi.org/10.1080/19390211.2017.1358233>
- Colozza, D. (2020). Analisis Lanskap Kelebihan Berat Badan Dan Obesitas di Indonesia. 01 Desember 2022, 1–134. <https://www.unicef.org/indonesia/id/laporan/analisis-lanskap-kelebihan-berat-badan-dan-obesitas-di-indonesia>
- Cox MC, Low J, Lee J, Walshe J, Denduluri N, Berman A, Permenter MG, Petros WP, Price DK, Figg WD, Sparreboom A, and Swain SM. (2006). Influence of garlic (*Allium sativum*) on the pharmacokinetics of docetaxel. *Clinical Cancer Research*, 12(15), 4636–4640. <https://doi.org/10.1158/1078-0432.CCR-06-0388>
- Dampati PS, and Veronica E (2020). The Potential of black garlic extract as a sunscreen against ultraviolet ray exposure. *KELUWIH: Journal of Health and Medicine*, 2(1): 23-31. DOI: <https://www.doi.org/10.24123/kesdok.v2i1.3020>
- Day WO. (2023). Word Obesity Day: panduan hari obesitas sedunia. *Menteri Kesehatan Republik Indonesia*.
- De ligny W, Smits RM, Mackenzie-Proctor R, Jordan V, Fleischer K, Debruin JP, and Showell MG. (2022). Antioxidants for male subfertility. *Cochrane Database of Systematic Reviews*, 2022(5). <https://doi.org/10.1002/14651858.CD007411.pub5>
- Deponte M. (2013). Biochimica et Biophysica Acta Glutathione catalysis and the reaction mechanisms of glutathione-dependent enzymes. *BBA - General Subjects*, 1830(5), 3217–3266. <https://doi.org/10.1016/j.bbagen.2012.09.018>
- Dorrigiv M, Zareiyan A, and Hosseinzadeh H. (2021). Onion (*Allium cepa*) and its main constituents as antidotes or protective agents against natural or chemical toxicities: A comprehensive review. *Iranian Journal of Pharmaceutical Research*, 20(1), 3–26. <https://doi.org/10.22037/ijpr.2020.112773.13940>
- Dutta RK, Lee JN, Maharjan Y, Park C, Choe SK, Ho YS, and Park R. (2021). Catalase deficiency facilitates the shuttling of free fatty acid to brown adipose tissue through lipolysis mediated by ROS during sustained fasting. *Cell and Bioscience*, 11(1), 1–14. <https://doi.org/10.1186/s13578-021-00710-5>
- Eun SB, Yong SC, Duk YW, Ha SL, and Jin HP. (2014). Changes in S -allyl cysteine contents and physicochemical properties of black garlic during heat treatment. *LWT - Food Science and Technology*, 55, 397–402. <https://doi.org/http://dx.doi.org/10.1016/j.lwt.2013.05.006>
- Fajrani AM, Sulchan M, and Muis SF (2021). Effect of black garlic on visceral fat, oxidative stress and insulin resistance in nonalcoholic fatty liver disease rats. *Journal Of Nutrition and Food Science*, 51(7): 1084-1095. DOI: <https://www.doi.org/10.1108/NFS-11-2020-0439>
- Fatima N, Baqri SSR, Alsulimani A, Fagoonee S, Slama P, Kesari KK, Roychoudhury S, and Haque S. (2021). Phytochemicals from indian ethnomedicines: Promising prospects for the management of oxidative stress

- and cancer. *Antioxidants*, 10(10), 1–28. <https://doi.org/10.3390/antiox10101606>
- Faturochman HY, Muharram LH, Sativa PS, Widyananda BI, and Komalasari E. (2023). Formulasi Minuman Fungsional Ekstrak Bawang Hitam dengan Penambahan Lemon dan Madu Menggunakan Response Surface Methodology. *AgriTECH*, 43(1), 94. <https://doi.org/10.22146/agritech.70928>
- Fu-Runquist JA, Montgomery C, Miziorko HM, and Kim JJP, “Functional insights into human HMG-CoA lyase from structures of acyl-CoA-containing ternary complexes,” *J. Biol. Chem.*, vol. 285, no. 34, pp. 26341–26349, 2010, doi: 10.1074/jbc.M110.139931.
- Gaggini M, Morelli M, Buzzigoli E, Defronzo RA, Bugianesi E, and Gastaldelli A. (2013). Non-Alcoholic Fatty Liver Disease (NAFLD) and Its Connection with Insulin Resistance, Dyslipidemia, Atherosclerosis and Coronary Heart Disease. *Nutrients*, 5(1), 1544–1560. <https://doi.org/10.3390/nu5051544>
- Gesto DS, Pereira CMS, Cerqueira NMFS, and Sousa SE. (2020). An atomic-level perspective of HMG-CoA-reductase: The target enzyme to treat hypercholesterolemia. *Molecules*, 25(17). <https://doi.org/10.3390/molecules25173891>
- Ghodke P, Khandagale K, Thangasamy A, Kulkarni A, Narwade N, Shirsat D, Randive P, Roylawar P, Singh I, Gawande SJ, and Mahajan V. (2021). Comparative transcriptome analyses in contrasting onion (*Allium cepa* L.) genotypes for drought stress. *Вестник Северо-Восточного Федерального Университета Имени М К Аммосова Серия "Медицинские Науки"*, 3(24). <https://doi.org/10.25587/svfu.2021.24.3.001>
- Gotera W, Nugraha IBA, and Sugitha KSL. (2023). Manfaat Diet Ketogenik pada Tata Laksana Obesitas. *Cermin Dunia Kedokteran*, 50(8), 451–458. <https://doi.org/10.55175/cdk.v50i8.651>
- Gunawan RI, Kosasih A, Lilyasari O, Joesoef AH, and Kaligis RWM. (2007). Correlation Between Circulating Leptin Level with Left Ventricle Mass in Normotensive Men. *Kardiologi Indonesia*, 28(5), 343–353.
- Ha AW, and Kim WK (2017). Antioxidant mechanism of black garlic extract involving nuclear factor erythroid 2-like factor 2 pathway. *Nutrition Research and Practice*, 11(3): 206–213. DOI: <https://www.doi.org/10.4162/nrp.2017.11.3.206>
- Ha AW, Ying T, and Kim WK (2015). The effects of black garlic (*Allium satvium*) extracts on lipid metabolism in rats fed a high fat diet. *Nutrition Research and Practice*, 9(1): 30–36. DOI: <https://www.doi.org/10.4162/nrp.2015.9.1.30>
- Hafidz KA, Puspitasari N, Yanuar A, Artha Y, and Mun A. (2017). HMG-CoA Reductase Inhibitory Activity of Gnetum gnemon Seed Extract and HMG-CoA Reductase Inhibitory Activity of Gnetum gnemon Seed Extract and Identification of Potential Inhibitors for Lowering Cholesterol Level. *Journal of Young Pharmacists*, 9(4), 559. <https://doi.org/10.5530/jyp.2017>
- Halim R and Suzan R (2020). Correlation of fat mass and visceral fat with serum leptin levels in overweight and obese adolescents. *Jambi Medical Journal of Medicine and Health*, 8(1): 102–110. DOI: <https://www.doi.org/10.22437/jmj.v8i1.9477>

- Han J, Thamilarasan SK, Natarajan S, Park JI, Chung MY, and Nou IS. (2016). De novo assembly and transcriptome analysis of bulb onion (*Allium cepa* L.) during cold acclimation using contrasting genotypes. *PLoS ONE*, 11(9), 1–19. <https://doi.org/10.1371/journal.pone.0161987>
- Hannan A, Rahman MA, Sohag AAM, Uddin MJ, Dash R, Sikder MH, Rahman MS, Timalisina B, Munni YA, Sarker PP, Alam M, Mohibbullah M, Haque MN, Jahan I, Hossain MT, Afrin T, Rahman MM, Tahjib-Ul-Arif M, Mitra S, and Kim B. (2021). Black Cumin (*Nigella sativa* L.): A Comprehensive Review on Phytochemistry, Health Benefits, Molecular Pharmacology, and Safety. *Nutrients*, 13, 1784.
- Hasanah N, Tsamrotul Fu I, Putra Jaya F, Zulfahrin LU, Werawati A, Studi Farmasi, P., Widya Dharma Husada, Stik., & Studi Farmasi Klinik dan Komunitas, P. (2023). Potensi Tanaman Lokal Indonesia Penurun Kolesterol. *Senantias*, 4(1), 365–375.
- Hasim H, Hasanah Q, Andrianto D, and Nur Faridah D. (2018). Aktivitas Antioksidan Dan Antihiperkolesterolemia in Vitro Dari Campuran Ekstrak Angkak Dan Bekatul. *Jurnal Teknologi Dan Industri Pangan*, 29(2), 145–154. <https://doi.org/10.6066/jtip.2018.29.2.145>
- Hasrianda EF dan Setiarto RHB. (2022). Potensi Rekayasa Genetik Bawang Putih terhadap Kandungan Senyawa Komponen Bioaktif. *Pusat Riset Biologi, Badan Riset Dan Inovasi Nasional (BRIN)*, 31(2), 167–190. erwinfajar@gmail.com
- Hastuty YD. (2016). Perbedaan kadar kolesterol orang yang obesitas dengan orang yang non obesitas. *Jurnal Kedokteran Dan Kesehatan Malikussaleh*, 47–56. yulinadwihastuty@gmail.com
- Herdyastuti N, Sanjaya IGM, dan Kusumawati N. (2022). Bawang Hitam Serbuk Sebagai Alternatif Herbal untuk Penurunan Kolesterol pada Pengolahan Makanan. *Prosiding Seminar Nasional Kimia*, 1(November), 48–55. <https://proceeding.unesa.ac.id/index.php/psnk/article/download/83/68>
- Huang C, Mcallister MJ, Slusher AL, Webb HE, Mock JT, and Acevedo EO (2015). Obesity related oxidative stress: the impact of physical activity and diet manipulation. Review Article. *Sports Medicine Open*: 1: 32. DOI: <https://www.doi.org/10.1186/s40798-015-0031-y>
- Huang Y, Chen H, Liu Q, Hu J, Hu D, Huang Z, Xu Z, and Wan R (2023). Obesity difference on association blood malondialdehyde level and diastolic hypertension in the elderly population: A cross-sectional analysis. *European Journal of Medical Research*, 28(1): 44. DOI: <https://www.doi.org/10.1186/s40001-022-00983-7>
- Huang L, Liu Z, Wang J, Fu J, Jia Y, Ji L, and Wang T. (2023). Bioactivity and health effects of garlic essential oil: A review. *Food Science and Nutrition*, 11(6), 2450–2470. <https://doi.org/10.1002/fsn3.3253>
- Hudaya AN, Jafar N, Thaha R, Hadju V, Hidayanti H, dan Salam A. (2019). Pengaruh Rebusan Kayu Manis Terhadap Perubahan Kadar Trigliserida Pada Prediabetes di Kota Makassar. *JGMI: Journal of Indonesian Community Nutrition*, 8(2), 63–70.
- Imam NU, Idoko AS, Osibemhe M, Lawal N, and Zaharaddeen AS. (2022). Obesity and Insulin Resistance Components of Metabolic Syndrome Induced

- by High-fructose Diet in Wistar Rats could be attenuated by Spices-Supplemented Diets. *Journal of Applied Sciences and Environmental Management*, 26(5), 893–901. <https://doi.org/10.4314/jasem.v26i5.17>
- Indra MR. (2006). Dasar Genetik Obesitas Viseral. *Fakultas Kedokteran Universitas Brawijaya Malang*, 4.
- Indraswari NMWS, Setyowati DI, dan Hamzah Z. (2022). Efektivitas Ekstrak Bawang Putih dan Bawang Hitam dalam Menghambat Pertumbuhan *Candida albicans*. *Pustaka Kesehatan*, 10(2), 114. <https://doi.org/10.19184/pk.v10i2.14625>
- Indriputri C dan Maulana R. (2019). Pengaruh Pemberian Diet Tinggi Lemak Terhadap Profil Lipid dan Gula Darah Puasa Serum Tikus Putih (*Rattus Norvegicus*) Galur Wistar. *Higiene*, 8(3), 144. <https://doi.org/25415301>
- Isenovic DER and Obradovic DM. (2022). Reactive Oxygen Species (ROS) in Pathophysiological Conditions. *Exploration Of Medicine*, 3, 393–413. <https://doi.org/https://doi.org/10.37349/emed.2022.00102>
- Ismay J, Sugandi S, Rachmadi D, Hardjowijoto S, and Mustafa A. (2020). The effect of exogenous superoxide dismutase (SOD) on caspase-3 activation and apoptosis induction in PC-3 prostate cancer cells. *Research and Reports in Urology*, 12, 503–508. <https://doi.org/10.2147/RRU.S271203>
- Isna MK, Yasinta N, Aliyah AN, dan Dian EE. (2021). Kajian Efektivitas Ekstrak Black Garlic (*Allium Sativum* Linn.) Sebagai Gel Pada Ulkus Diabetik. *National Conference PKM Center Sebelas Maret University*, 177–182. <https://103.23.224.239/pkmcenter/article/view/51349>
- Istifarwati AR. (2017). Pengukuran Aktivitas Enzim Katalase Dalam Serum Dengan Interferensi Bilirubin, Lemak, Dan Hemoglobin Dengan Metode Spektrofotometri. *JAK-STABA*, 01(233), 1–8. istihafidzah@yahoo.com
- Istiqomah A, Ali Z, and Saleh I. (2022). Effectiveness of Garlic Extract (*Allium sativum*) to Reduce Level of Malondialdehyde Serum and Improve Quality of Life in Patients with Chronic Hemodialysis: A Randomized Double-Blind Placebo-Controlled Trial. *Jurnal Penyakit Dalam Indonesia*, 9(4). <https://doi.org/10.7454/jpdi.v9i4.1022>
- Jahan MS, Haque MI, Gautam M, and Bhuiyan MER (2024). Comparative analysis of high-fat diets: Effects of mutton, beef, and vegetable fats on body weight, biochemical profiles, and liver histology in mice. *Journal Of Heliyon*, 10(20), e39349: 1-12. DOI: <https://www.doi.org/10.1016/j.heliyon.2024.e39349>
- Januarti IB, Latifah F, dan Fatmawati NF. (2021). Efek Ekstrak Bawang Putih Tunggal (*Allium Sativum* Var. Solo) Terhadap Sel Leydig Dan Sel Sertoli Tikus. *Jurnal Farmasi Sains Dan Praktis Unimma*, 7(1), 1–6. <https://doi.org/2579-4558>
- Javed M, Ahmed W, Khan A, and Rabbani I. (2023). Comparison of Efficacy of Fermented Garlic and Orlistat (Lipase Inhibitor) in Obesity Management Using an Experimental Rodent Model. *Foods*, 12(21). <https://doi.org/10.3390/foods12213905>
- Jeong YY, Ryu JH, Shin J, Kang MJ, and Kang JR. (2016). Comparison of Antioxidant and Anti-Inflammatory Effects between Fresh and Aged Black

- Garlic Extracts. *Molecules*, 1–15.
<https://doi.org/10.3390/molecules21040430>
- Jiang SY, Li H, Tang JJ, Wang J, Luo J, Liu B, Wang JK, Shi XJ, Cui HW, Tang J, Yang F, Qi W, Qiu WW, and Song BL. (2018). Discovery of a potent HMG-CoA reductase degrader that eliminates statin-induced reductase accumulation and lowers cholesterol. *Nature Communications*, 9(1).
<https://doi.org/10.1038/s41467-018-07590-3>
- Jo Y, Lee PCW, Sguigna PV, and DeBose-Boyd RA. (2011). Sterol-induced degradation of HMG CoA reductase depends on interplay of two Insigs and two ubiquitin ligases, gp78 and Trc8. *Proceedings of the National Academy of Sciences of the United States of America*, 108(51), 20503–20508.
<https://doi.org/10.1073/pnas.1112831108>
- Jovie IF, Alioes Y, and Irrahmah M (2022). The Relationship between the degree of obesity and malondialdehyde levels in medical students of the faculty of medicine, Andalas University. *Indonesian Journal of Health Sciences*, 2(3): 135–141. DOI: <https://www.doi.org/10.25077/jikesi.v2i3.346>
- Jung KA, Song TC, Han D, Kim IH, Kim YE, and Lee CH. (2005). Cardiovascular protective properties of kiwifruit extract in Vitro. *Biological and Pharmaceutical Bulletin*, 28(9), 1782–1785.
<https://doi.org/10.1248/bpb.28.1782>
- Juniantari NKD dan Susanti NMP. (2023). Pengolahan dan Pengembangan Bawang Putih (*Allium sativum* L.) Menjadi Bawang Hitam sebagai Agen Antiaterosklerosis. *Prosiding Workshop Dan Seminar Nasional Farmasi*, 2, 428–438. <https://doi.org/10.24843/wsnf.2022.v02.p34>
- Kang M, Lee SJ, Sung NJ, and Shin J. (2013). The Effect of Extract Powder from Fresh and Black Garlic on Main Components in Serum and Organs of Streptozotocin-Induced Diabetic Rats. *Journal of Life Science*, 23(3), 432–442. <https://doi.org/http://dx.doi.org/10.5352/JLS.2013.23.3.432>
- Kaur R, Sood A, Kanotra M, Arora S, Subramaniyan V, Bhatia S, Al-Harrasi A, Aleya L, and Behl T. (2021). Pertinence of nutriments for a stalwart body. *Environmental Science and Pollution Research*, 28(39), 54531–54550.
<https://doi.org/10.1007/s11356-021-16060-1>
- Keltz J, Zapantis A, Jindal SK, Lieman HJ, Santoro N, and Polotsky AJ. (2010). Overweight Men: Clinical pregnancy after ART is decreased in IVF but not in ICSI cycles. *Journal of Assisted Reproduction and Genetics*, 27(9–10), 539–544. <https://doi.org/10.1007/s10815-010-9439-y>
- Khoo YSK and Aziz Z. (2009). Garlic supplementation and serum cholesterol: A meta-analysis. *Journal of Clinical Pharmacy and Therapeutics*, 34(2), 133–145. <https://doi.org/10.1111/j.1365-2710.2008.00998.x>
- Kiania F, Marefati N, Boskabady M, Ghasemi SZ, and Boskabady MH. (2021). Pharmacological properties of allium cepa, preclinical and clinical evidence; a review. *Iranian Journal of Pharmaceutical Research*, 20(2), 107–134.
<https://doi.org/10.22037/ijpr.2020.112781.13946>
- Kim HJ and Kim M (2023). Diallyl disulfide alleviates hypercholesterolemia induced by a western diet by suppressing endoplasmic reticulum stress in apolipoprotein E-deficient mice. *BMC Complementary Medicine and*

- Therapies, 23(1): 141. DOI: <https://www.doi.org/10.1186/s12906-023-03920-1>
- Kim MR, Kim JW, Park JB, Hong YK, Ku SK, and Choi JS (2017). Anti-obesity effects of yellow catfish protein hydrolysate on mice fed a 45% kcal high-fat diet. *International Journal of Molecular Medicine*, 40(3): 784–800. <https://www.doi.org/10.3892/ijmm.2017.3063>
- Kimura S, Tung YC, Pan MH, Su NW, Lai YJ, and Cheng KC (2017). Black garlic: A critical review of its production, bioactivity, and application. *Journal of Food and Drug Analysis*, 25(1): 62-70. DOI: <https://www.doi.org/10.1016/j.jfda.2016.11.003>
- Klasic A, Malenica M, Kostadinovic J, Kocic G, and Ninic A. (2023). Malondialdehyde As an Independent Predictor of Body Mass Index in Adolescent Girls. *Med Biochem*, 42(2), 224–231. <https://doi.org/10.5937/jomb0-39044>
- Kusriani RH, Kurnia D, and Umara SQ (2022). Effects of garlic (*allium sativum* l) and black garlic extract on malondialdehyde (MDA) levels in rat's blood. *Galenika Pharmaceutical Journal*, 8(3): 168-181. DOI: <https://www.doi.org/10.70410/jfg.v8i3.199>
- Kwak CS, Kim M, Park S, and Kim I. G. (2021). Antioxidant Activity of Sprouts Extracts Is Correlated with Their Anti-Obesity and Anti-Inflammatory Effects in High-Fat Diet-Fed Mice. *Evidence-Based Complementary and Alternative Medicine*, 2021, 1–13. <https://doi.org/101155>
- Laffin LJ, Bruemmer D, Garcia M, Brennan DM, McErlean E, Jacoby DS, Michos ED, Ridker PM, Wang TY, Watson KE, Hutchinson HG, and Nissen SE. (2023). Comparative Effects of Low-Dose Rosuvastatin, Placebo, and Dietary Supplements on Lipids and Inflammatory Biomarkers. *Journal of the American College of Cardiology*, 81(1), 1–12. <https://doi.org/10.1016/j.jacc.2022.10.013>
- Laily SR. (2017). Relationship Between Characteristic and Hypertension with Incidence of Ischemic Stroke. *CC BY-SA FKM Unair*, 5(1), 48–59. <https://doi.org/10.20473/jbe.v5i1>
- Lee YM, Gweon OC, Seo YJ, Im J, Kang MJ, Kim MJ, and Kim JI (2009). Antioxidant effect of garlic and aged black garlic in animal model of type 2 diabetes mellitus. *Nutrition Research and Practice*, 3(2): 156-161. DOI: <https://www.doi.org/10.4162/nrp.2009.3.2.156>
- Lee DH, Lim SR, Han JJ, Lee SW, Ra CS, and Kim JD. (2014). Effects of dietary garlic powder on growth, feed utilization and whole-body composition changes in fingerling sterlet sturgeon, *acipenser ruthenus*. *Asian-Australasian Journal of Animal Sciences*, 27(9), 1303–1310. <https://doi.org/10.5713/ajas.2014.14087>
- Lei M, Xu M, Zhang Z, Zhang M, and Gao Y (2014). The analysis of saccharide in black garlic and its antioxidant activity. *Advance Journal of Food Science and Technology*, 6(6): 755-760. DOI: <https://www.doi.org/10.19026/ajfst.6.106>
- Lestari GAPW, and Santika IWM (2023). Anti-cholesterol potential of garlic (*Allium sativum*): Systematic Review. *Proceedings of the National Pharmacy*

- Workshop and Symposium, 2: 44–60. DOI: <https://www.doi.org/10.24843/wsnf.2022.v02.p04>
- Li B, Li J, Akbari A, Baziyar P, and Hu S. (2023). Evaluation of Expression of Cytochrome P450 Aromatase and Inflammatory, Oxidative, and Apoptotic Markers in Testicular Tissue of Obese Rats (Pre)Treated with Garlic Powder. *Evidence-Based Complementary and Alternative Medicine*, 2023. <https://doi.org/10.1155/2023/4858274>
- Lin X, and Li H (2021). Obesity: Epidemiology, Pathophysiology, and Therapeutics. Article Review. *Frontiers in Endocrinology*, 12: 706978. DOI: <https://www.doi.org/10.3389/fendo.2021.706978>
- Lu X, Li N, Qiao X, Qiu Z, and Liu P. (2017). Composition analysis and antioxidant properties of black garlic extract. *Journal of Food and Drug Analysis*, 25(2), 340–349. <https://doi.org/10.1016/j.jfda.2016.05.011>
- Lubis R, Silawati V, dan Rosmilawati. (2023). Pengaruh Pemberian Ekstrak Bawang Putih (*Allium Sativum*) Terhadap Kadar Kolesterol Tota Pada Remaja di SMK Mutiara Insani Kabupaten Bogor. *MALAHAYATI NURSING JOURNAL*, 5(11), 4064–4076.
- Maharani C dan Puspasari A. (2019). Peran variasi gen fto pada obesitas. *JMJ Bagian Biokimia, Fakultas Kedokteran Dan Ilmu Kesehatan, Universitas Jambi*, 7(2), 161–166. citramaharani.dr@gmail.com
- Mahdavi-Roshan M, Mirmiran P, Arjmand M, and Nasrollahzadeh J. (2017). Effects of garlic on brachial endothelial function and capacity of plasma to mediate cholesterol efflux in patients with coronary artery disease. *Anatolian Journal of Cardiology*, 18(2), 116–121. <https://doi.org/10.14744/AnatolJCardiol.2017.7669>
- Maigoda TC, Sulaeman A, Setiawan B, dan Wibawan IWT. (2016). Persentase Lemak Pada Organ Hati Tikus Jantan. *Gizi Pangan IPB*, 11(2), 99–106. tonnycmaigoda@yahoo.com
- Manalu RT, Meheda IO, and Octaviani C. (2021). Inhibition of HMG-CoA Reductase Activity from Active Compounds of Ginger (*Zingiber officinale*): In-Silico Study. *Jurnal Farmasi Etam (JFE)*, 1(1), 32–38. <https://doi.org/10.52841/jfe.v1i1.177>
- Mao C, Yuan J, Lv Y, Gao X, Yin Z, Kraus VB, and Luo J. (2019). Associations between superoxide dismutase, malondialdehyde and all-cause mortality in older adults: a community- based cohort study. *BMC Geriatrics*, 19(104), 1–9. <https://doi.org/https://doi.org/10.1186/s12877-019-1109-z>
- McMurray F, Patten DA, and Harper ME. (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>
- Mechchate H, Allam AE, Omari NE, Hachlafi NE, Shariati MA, Wilairatana P, Mubarak MS, and Bouyahya A. (2022). Vegetables and Their Bioactive Compounds as Anti-Aging Drugs. *Molecules*, 27(7). <https://doi.org/10.3390/molecules27072316>
- Midah Z, Fajriansyah F, Makmun A, dan Rasfahyana R. (2021). Hubungan Obesitas dan Stress Oksidatif. *UMI Medical Journal*, 6(1), 62–69. <https://doi.org/10.33096/umj.v6i1.140>

- Moosavian SP, Arab A, Paknahad Z, and Moradi S. (2020). The effects of garlic supplementation on oxidative stress markers: A systematic review and meta-analysis of randomized controlled trials. *Complementary Therapies in Medicine*, 50(10), 1016. <https://doi.org/102385>
- Morawati S, Dewi L, Angica PR, Adelin P, and Ashan H (2024). Beneficial effects of black garlic on plasma atherogenic index values in obese patients. *Scientific Journal*, 3(3): 174-184. DOI: <https://www.doi.org/10.56260/sciena.v3i3.145>
- Mozzicafreddo MC, Eleuteri AM, and Angeletti M. (2010) "Rapid reverse phase-HPLC assay of HMG-CoA reductase activity," *J. Lipid Res.*, vol. 51, no. 8, pp. 2460–2463, 2010, doi: 10.1194/jlr. D006155.
- Mu'nisa. (2023). Antioksidan Pada Tanaman Dan Peranannya terhadap Penyakit Degeneratif. *Brilian Internasional Surabaya*, 5–12. website: www.brilianinternasional.com
- Mulianto N. (2020). Malondialdehid sebagai Penanda Stres Oksidatif pada Berbagai Penyakit Kulit. *Cermin Dunia Kedokteran*, 47(1), 39–44.
- Mushab M, Hairrudin H, dan Abrori C. (2020). Perbandingan Peningkatan Kadar Malondialdehid (MDA) Serum setelah Olahraga Pagi dan Malam Hari pada Orang Tidak Terlatih. *Jurnal Kesehatan Andalas*, 9(2), 211. <https://doi.org/10.25077/jka.v9i2.1312>
- Naeini F, Namkhah Z, Ostadrahimi A, Tutunchi H, and Hosseinzadeh-Attar MJ. (2021). A Comprehensive Systematic Review of the Effects of Naringenin, a Citrus-Derived Flavonoid, on Risk Factors for Nonalcoholic Fatty Liver Disease. *Advances in Nutrition*, 12(2), 413–428. <https://doi.org/10.1093/advances/nmaa106>
- Najman K, Sadowska A, Buczak K, Leontowicz H, and Leontowicz M. (2022). Effect of Heat-Treated Garlic (*Allium sativum* L.) on Growth Parameters, Plasma Lipid Profile and Histological Changes in the Ileum of Atherogenic Rats. *Nutrients*, 14(2). <https://doi.org/10.3390/nu14020336>
- Nasr AY, and Saleh HAM (2014). Aged garlic extract protects against oxidative stress and renal changes in cisplatin treated adult male rats. *Research. Journal Of Experimental and Clinical Cancer Cell*, 14(1): 1-12. DOI: <https://www.doi.org/10.1186/s12935-014-0092-x>
- Nasution SD (2023). The role of leptin in metabolism. *Journal Pandu Husada*, 4(2): 35-40. Available at: <https://jurnal.umsu.ac.id/index.php/JPH/article/view/16449>
- Ni'mah I, Hapsari RAF, dan Wulandari E. (2017). Efek Ekstrak Bawang Putih (*Allium sativum* L.) Terhadap Kadar Malondialdehid Hepar Tikus. *Medika Islamika Jurnal Kedokteran, Kesehatan, Dan Keislaman*, 14(1), 19.
- Normaidah N dan Nurmansyah D. (2021). Studi In Silico Senyawa *Hylocereus polyrhizus* dan *Allium sativum* terhadap Enzim HMG-CoA Reduktase. *Jurnal Pharmascience*, 8(2), 40. <https://doi.org/10.20527/jps.v8i2.11639>
- Nurhayati S, Kisananto T, and Syaifudin, M. (2011). Superoksida Dismutase (SOD) : Apa Dan Bagaimana Peranannya Dalam Radioterapi. *IPTEK Ilmiah Populer*, 67–74.
- Nurmawati L, Mohammad S, Fatimah-Muis S, Purnomo HD, Kis D, Martha A, and Vega, K. (2021). The Effect of Single Clove Black Garlic on the

- Hemostasis Status and Lipid Profile in Male Sprague Dawley Rats with Non-Alcoholic Fatty Liver Disease. *Potravinarstvo Slovak Journal of Food Sciences*, 15(November 2020), 387–395. <https://doi.org/https://doi.org/10.5219/1516>
- Nurwati S, Mulyani RB, Ulfah SM, Retawati A, Rahmiati R, Mutmainah M, dan Hendrayati SL. (2023). Pelatihan Pembuatan Fermentasi Bawang Putih Lokal (Black Garlic) sebagai Upaya Meningkatkan Imunitas pada Kelompok Pengajian Dharma Wanita Universitas Palangka Raya. *Jurnal Abdidas*, 4(1), 114–120. <https://doi.org/10.31004/abdidas.v4i1.765>
- Ogbuewu IP, Unamba-Oparah IC, Odoemenam VU, Etuk IF, and Okoli IC. (2011). The potentiality of medicinal plants as the source of new contraceptive principles in males. *North American Journal of Medical Sciences*, 3(6), 255–263. <https://doi.org/10.4297/najms.2011.3250>
- Oktari K, Azizah Z, Chandra B, and Asra R. (2020). A Review: Antioxidant and Immunomodulator Effects of Black Garlic. *EAS Journal of Pharmacy and Pharmacology*, 2(6), 193–198. <https://doi.org/10.36349/easjpp.2020.v02i06.001>
- Oktavelia W and Kusuma SAF. (2022). Therapy for Dyslipidemia: Plant Inhibitors of HMG-CoA Reductase. *Indonesian Journal of Biological Pharmacy*, 2(3), 159–170. <https://jurnal.unpad.ac.id/ijbp>
- Omole JO, and Ighodaro OM (2013). Comparative studies of the effects of egg yolk, oats, apple, and wheat bran on serum lipid profile of wistar rats. *ISRN Nutrition*, 2013: 1-4. DOI: <https://www.doi.org/10.5402/2013/730479>
- Oudjedi A dan Said K. (2020). Associations between obesity, asthma and physical activity in children and adolescents. *Apunts Sports Medicine*, 55(205), 39–48. www.apunts.org REVIEW
- Pandia ES, Mawardi AL, and Sarjani TM. (2020). Traditional Medicine Training Making Based on Black Garlic Powder (Black Garlic) In Tanjung Seumantoh Village Sub District Karang Baru Aceh Tamiang. *Global Science Society: Jurnal Ilmiah Pengabdian Kepada Masyarakat*, 2(2), 2685–2497.
- Panic A, Stanimirovic J, Sudar-Milovanovic E, and Isenovic ER. (2022). Oxidative stress in obesity and insulin resistance. *Exploration of Medicine, Boston University School of Medicine, USA*, 3(1), 58–70. <https://doi.org/10.37349/emed.2022.00074>
- Panuganti KK, Nguyen M, and Kshirsagar RK (2023). Obesity. National Library of Medicine. Statpearls, Agustus. Available at: <https://www.ncbi.nlm.nih.gov/books/NBK459357/>
- Parham S, Kharazi AZ, Bakhsheshi-Rad HR, Nur H, Ismail AF, Sharif S, Ramakrishna S, and Berto F. (2020). Antioxidant, antimicrobial and antiviral properties of herbal materials. *Antioxidants*, 9(12), 1–36. <https://doi.org/10.3390/antiox9121309>
- Pebam M, Sushma MV, Sankaranarayanan SA, Thanekar AM, Koyande N, and Rengan AK. (2022). Antiviral perspectives of economically important Indian medicinal plants and spices. *Proceedings of the Indian National Science Academy*, 0123456789. <https://doi.org/10.1007/s43538-022-00099-w>

- Perez-Torres I, Castrejon-Teellez V, Soto ME, Rubio-Ruiz ME, Manzano-Pech L, and Guarner-Lans V. (2021). Oxidative Stress, Plant Natural Antioxidants, and Obesity. *International Journal of Molecular Sciences*, 22(1786), 1–26.
- Poirier P, Giles TD, Bray GA, Hong Y, Stern JS, Pi-Sunyer FX, and Eckel RH. (2020). Obesity and cardiovascular disease. *AHA Summary Statement Downloaded*, 66(2), 89–91. <https://doi.org/10.1161/01.atv.0000216787.85457.f3>
- Pourreza S, Azar PS, Sanaie S, Noshadi N, Jalali S, Niazkar HR, karimi A, and Vajdi M. (2022). Therapeutic Effects and Mechanisms of Action of Garlic (*Allium sativum*) on Nonalcoholic Fatty Liver Disease: A Comprehensive Systematic Literature Review. *Evidence-Based Complementary and Alternative Medicine*, 2022, 1–15. <https://doi.org/10.1155/2022/6960211>
- Pramitha DAI and Yani NNAK. (2020). Chimica et Natura Acta Perbedaan Kadar Flavonoid Total dari Black Garlic Tunggal dan. *Chimica et Natura Acta*, 8(2), 84–88. <https://doi.org/https://doi.org/10.24198/cna.v8.n2.27274>
- Puisac et al. (2010). Differential HMG-CoA lyase expression in human tissues provides clues about 3-hydroxy-3-methylglutaric aciduria. *Inherit. Metab. Dis.*, vol. 33, no. 4, pp. 405–410, 2010, doi: 10.1007/s10545-010-9097-3.
- Pulungan HM, Purwaningsih I, Maryani S, dan Sukardi. (2015). Pelatihan Pembuatan Makanan dan Minuman Fungsional Bawang Hitam. *Universitas Brawijaya*, 1–13.
- Purnamasari A, Rahayu Lestari S, and Gofur A. (2020). Pengaruh Ekstrak Bawang Putih Tunggal (*Allium sativum* L.) terhadap Kadar Malondialdehid (MDA) Hepar Mencit (*Mus musculus*) Diet Tinggi Lemak. *Ilmu Hayati*, 4(1), 1–9. <https://doi.org/2549-4686>
- Purwiyanti S, Yuniati Y, dan Martin Y. (2021). Alat Fermentasi Bawang Putih Hitam (Black Garlic) Untuk Meningkatkan Kualitas Dan Produksi Bagi Industri Rumah Tangga di Bandar Lampung. *Sakai Sambayan Jurnal Pengabdian Kepada Masyarakat*, 5(2), 101. <https://doi.org/10.23960/jss.v5i2.291>
- Rahman I dan Utami D. (2014). Hubungan Obesitas Dengan Kadar Kolesterol Pada Mahasiswa Kedokteran. *Jurnal Medika Malahayati*, 1(4), 185–191.
- Rahmawati A. (2014). Mekanisme Terjadinya Inflamasi Dan Stres Oksidatif Pada Obesitas. *El-Hayah*, 5(1), 1. <https://doi.org/10.18860/elha.v5i1.3034>
- Ramatina, Amalia L, dan Ekayanti I. (2014). Pengaruh Suplemen Antioksidan. *Jurnal Gizi Dan Pangan IPB*, 9(1), 35–42. <https://doi.org/19781059>
- Reguero M, Gomez de Cedron M, Sierra-Ramirez A, Fernandez-Marcos PJ, Reglero G, Quintela JC, and Ramirez de Molina A. (2022). Pomegranate Extract Augments Energy Expenditure Counteracting the Metabolic Stress Associated with High-Fat-Diet-Induced Obesity. *International Journal of Molecular Sciences*, 23(18), 1–17. <https://doi.org/10.3390/ijms231810460>
- Ribeiro M, Alvarenga L, Cardozo LFMF, Chermut TR, Sequeira J, de Souza Gouveia Moreira L, Teixeira KTR, Shiels PG, Stenvinkel P, and Mafra D. (2021). From the distinctive smell to therapeutic effects: Garlic for cardiovascular, hepatic, gut, diabetes and chronic kidney disease. *Clinical Nutrition*, 40(7), 4807–4819. <https://doi.org/10.1016/j.clnu.2021.03.005>

- Ried K. (2016). Garlic lowers blood pressure in hypertensive individuals, regulates serum cholesterol, and stimulates immunity: An updated meta-analysis and review. *Journal of Nutrition*, 146(2), 389S-396S. <https://doi.org/10.3945/jn.114.202192>
- Rindler PM, Plafker SM, Szveda LI, and Kinter M. (2013). High dietary fat selectively increases catalase expression within cardiac mitochondria. *Journal of Biological Chemistry*, 288(3), 1979–1990. <https://doi.org/10.1074/jbc.M112.412890>
- Rombola L, Scuteri D, Marilisa S, Watanabe C, Morrone LA, Bagetta G, and Corasaniti MT. (2020). Pharmacokinetic interactions between herbal medicines and drugs: Their mechanisms and clinical relevance. *Life*, 10(7), 1–28. <https://doi.org/10.3390/life10070106>
- Romsiah, Putri PE, dan Erjon. (2020). Perbandingan Aktivitas Antioksidan Ekstrak Bawang Putih Dan Bawang Putih Tunggal Bentuk Segar Dan Fermentasi Dengan Metode DPPH. *Jurnal Ilmiah Bukti Farmasi*, V(1), 45–50.
- Ruperez AI, Gil A, and Aguilera CM. (2014). Genetics of oxidative stress in obesity. *International Journal of Molecular Sciences*, 15(2), 3118–3144. <https://doi.org/10.3390/ijms15023118>
- Sailah, I. (2021). Perubahan Sifat Fisikokimia Selama Pengolahan Bawang Putih Tunggal Menjadi Bawang Hitam Menggunakan Rice Cooker. *Jurnal Teknologi Industri Pertanian*, 31(2014), 88–97. <https://doi.org/10.24961/j.tek.ind.pert.2021.31.1.88>
- Salsabila Q and Busman H (2021). Anti-inflammatory activity of black garlic (*Allium sativum* L.). *Jurnal Ilmiah Kesehatan Sandi Husada*, 10(1): 41-47. DOI: <https://www.doi.org/10.35816/jiskh.v10i1.502>
- Saputra AJ, dan Setyawan AB. (2020). Pengaruh pemberian black garlic terhadap perubahan kolesterol pada pasien diabetes mellitus tipe II di Puskesmas Segiri Samarinda. *Borneo Student Research*, 1(3), 1799–1804. <https://journals.umkt.ac.id/index.php/bsr/article/view/948>
- Saravanan G dan Ponnuragan P. (2010). *Potensi perbaikan S-allyl cysteine terhadap stres oksidatif pada tikus diabetes yang diinduksi STZ*.
- Sari NK dan Pramono A. (2015). Hubungan Indeks Massa Tubuh Dengan Kadar Leptin Dan Adiponektin. *Journal of Nutrition College*, 4(2), 428–434. <http://ejournal-s1.undip.ac.id/index.php/jnc>
- Sembiring N and Iskandar Y (2019). A Review of component and pharmacology activities of black garlic. *Traditional Medicine Journal*, 24(3): 178-183. DOI: <https://www.doi.org/10.22146/mot.45277>
- Setiawan AA, Purnomo FA, Karlowee V, and Wijayahadi N (2021). The effect of black garlic (*Allium sativum* Linn) on cardiac and aortic histopathology in experimental studies in obesity rats. *Journal of Biomedicine and Translational Research*, 7(2): 62-68. DOI: <https://www.doi.org/10.14710/jbtr.v7i2.11686>
- Setiyono A, Hendarto H, Prasetyo B, dan Maramis MM. (2015). Pengaruh Tingkat Stres dan Kadar Kortisol dengan Jumlah Folikel Dominan pada Penderita Infertilitas yang Menjalani Fertilisasi In vitro. *Obstetri & Ginekologi*, 23(3), 128–132. awiksetiyono@yahoo.com

- Shaito A, Thuan DTB, Phu HT, Nguyen THD, Hasan, H, Halabi S, Abdelhady S, Nasrallah GK, Eid AH, and Pintus G. (2020). Herbal Medicine for Cardiovascular Diseases: Efficacy, Mechanisms, and Safety. *Frontiers in Pharmacology*, 11(April), 1–32. <https://doi.org/10.3389/fphar.2020.00422>
- Sharebiani H, Keramat S, Chavoshan A, Fazeli B, and Stanek A (2023). The influence of antioxidants on oxidative stress induced vascular aging in obesity. *Journal Antioxidants*, 12(6): 1-19. DOI: <https://www.doi.org/10.3390/antiox12061295>
- Shrem G, Brudner Y, Atzmon Y, Michaeli M, Ellenbogen A, and Shalom-Paz E. (2019). The influence of obesity, smoking, and serum follicular stimulating hormone in azoospermic patients on testicular sperm extraction-intra cytoplasmic sperm injection outcomes. *Medicine (United States)*, 98(4), 24–28. <https://doi.org/10.1097/MD.00000000000014048>
- Shukry M, Alotaibi SS, Albogami SM, Fathallah N, Farrag F, Dawood MAO, and Gewaily MS. (2021). Garlic alleviates the injurious impact of cyclosporine-a in male rats through modulation of fibrogenic and steroidogenic genes. *Animals*, 11(1), 1–16. <https://doi.org/10.3390/ani11010064>
- Si L, Lin R, Jia Y, Jian W, Yu Q, and Wang M (2019). Lactobacillus bulgaricus improves antioxidant capacity of black garlic in the prevention of gestational diabetes mellitus: a randomized control trial. *Bioscience Reports Portland Press*, 39: 1-19. Available at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC6689107/pdf/bsr-39-bsr20182254.pdf>
- Siregar FA dan Makmur T. (2020). Metabolisme lipid dalam tubuh. *Jurnal Inovasi Kesehatan Masyarakat*, 1(2), 60–66. <http://ejournal.delihusada.ac.id/index.php/JIKM>
- Situmorang N dan Zulham. (2020). Malondialdehyde (mda). *Keperawatan Dan Fisioterapi*, 2(2), 117. <https://doi.org/10.35451/jkf.v2i2.338>
- Solichah A dan Herdyastuti N. (2021). Pengaruh Lama Pemanasan Proses Fermentasi Terhadap Kadar Fenolik Total Dan Aktivitas Antioksidan Bawang Hitam. *Unesa Journal of Chemistry*, 10(3), 280–287. <https://doi.org/10.26740/ujc.v10n3.p280-287>
- Steller JG, Alberts JR, and Ronca AE. (2018). Oxidative stress as cause, consequence, or biomarker of altered female reproduction and development in the space environment. *International Journal of Molecular Sciences*, 19(12), 1–26. <https://doi.org/10.3390/ijms19123729>
- Stepien AE, Trojnik J, and Tabarkiewicz J. (2024). Anti-Cancer and Anti-Inflammatory Properties of Black Garlic. *International Journal of Molecular Sciences*, 25(3), 1–15. <https://doi.org/10.3390/ijms25031801>
- Subarjati A and Nuryanto N (2015). The relationship between body mass index and leptin and adiponectin levels. *Journal of Nutrition College*, 4(4): 428-434. DOI: <https://www.doi.org/10.14710/jnc.v4i4.10121>
- Subarjati A dan Nuryanto N. (2015). Hubungan Indeks Massa Tubuh Dengan Kadar Leptin Dan Adiponektin. *Journal of Nutrition College*, 4(4), 428–434. <https://doi.org/10.14710/jnc.v4i4.10121>
- Sukmawati S and Asgap ARP (2017). Test of the effects of bean sprout juice on cholesterol levels of male hyperlipidemic rats (*rattus norvegicus*). *Jurnal*

- Ilmiah As-Syifaa, 9(2): 188-194. DOI: <https://www.doi.org/10.33096/jifa.v9i2.301>
- Sukrianto, Harianto LI, Rizqiya F, Muzadid AFH, and Akbar J (2022). Black garlic products and consumption for community immunity. Seminar Nasional Pengabdian Masyarakat LPPM UMJ, Jakarta, pp. 1-9. Available at: <https://jurnal.umj.ac.id/index.php/semnaskat/article/view/14354/7495>
- Sumadewi KT, Karmaya NM, dan Adiatmika IPG. (2016). Korelasi Antara Kadar Leptin dengan IMT, Lingkar Pinggang dan RLPP pada Orang Dewasa Obesitas Usia 19-25 Tahun di Universitas Warmadewa. *WMJ (Warmadewa Medical Journal)*, 1(2), 71–81. <https://doi.org/10.22225/wmj.1.2.30.71-82>
- Sumertayasa INH, Lestari AAW, dan Herawati S. (2020). Gambaran trigliserida, kolesterol total, LDL, dan HDL pada pasien Diabetes Mellitus tipe 2 dengan hipertensi di Rumah Sakit Daerah Mangusada, Badung tahun 2018-2019. *Intisari Sains Medis*, 11(3), 1198–1205. <https://doi.org/10.15562/ism.v11i3.727>
- Sun YE, Wang W, and Qin J. (2018). Anti-hyperlipidemia of garlic by reducing the level of total cholesterol and low-density lipoprotein. *Medicine (United States)*, 97(18), 1–8. <https://doi.org/10.1097/MD.00000000000010255>
- Susantiningasih T. (2015). Obesitas dan Stres Oksidatif. *Juke Unila*, 5(9), 89–93. tiwuksusantiningasih@gmail.com
- Susanto D, Lisdiana, Cristijanti W, dan Iswari RS. (2021). Pengaruh Pemberian Ekstrak Black Garlic Terhadap Kadar Alanine Aminotransferase (ALT) Dan Aspartate Aminotransferase (AST) Tikus Yang Dipapar Asap Rokok. *FMIPA Universitas Negeri Semarang*, 9(2), 274–279. dwisusanto12@students.unnes.ac.id
- Szewczyk-golec K, Rajewski P, Gackowski M, Mila-kierzenkowska C, Weso R, Sutkowoy P, Paw M, and Wo A. (2017). Melatonin Supplementation Lowers Oxidative Stress and Regulates Adipokines in Obese Patients on a Calorie-Restricted Diet. *Hindawi Oxidative Medicine and Cellular Longevity*, 2017. <https://doi.org/8494107>
- Taghavi SA, Van-Wely M, Jahanfar S, and Bazarganipour F. (2021). Pharmacological and non-pharmacological strategies for obese women with subfertility. *Cochrane Database of Systematic Reviews*, 2021(3), 1–74. <https://doi.org/10.1002/14651858.CD012650.pub2>
- Tazkia RR, Amalia Y, dan Damayanti DS. (2018). Efek Ekstrak Airdaun Sirsak (Annona Muricata) Terhadap Kadar Sod Dan Mda Hepar Tikus Wistar Induksi Diet Tinggi Lemak Dan Tinggi Fruktosa. *Faculty of Medicine, University of Islam Malang*, 1–8. dinisridamayanti@unisma.ac.id
- Thomson M, Al-Qattan KK, Bordia T, and Ali M. (2006). Including garlic in the diet may help lower blood glucose, cholesterol, and triglycerides. *Journal of Nutrition*, 136(3). <https://doi.org/10.1093/jn/136.3.800s>
- Tien T, Ardiansyah NR, Sabandar CW, Kardin L, and Aritrina P. (2023). Inhibition of HMG-CoA Reductase Activity by Kersen Leaves (Muntingia calabura L.) to Prevent Hypercholesterolemia. *Jurnal Farmasi Galenika (Galenika Journal of Pharmacy) (e-Journal)*, 9(1), 102–113. <https://doi.org/10.22487/j24428744.2023.v9.i1.16086>

- Toar J, Telew A, dan Lumenta G. (2023). Perbedaan Tiga Kategori Aktivitas Fisik pada Status Obesitas dan Non Obesitas. *Higeia Journal of Public Health Research and Development*, 7(3), 458–467. <http://journal.unnes.ac.id/sju/index.php/higeia>
- Tran G, Dam S, and Le NT. (2018). Amelioration of Single Clove Black Garlic Aqueous Extract on Dyslipidemia and Hepatitis in Chronic Carbon Tetrachloride Intoxicated Swiss Albino Mice. *International Journal of Hepatology*, 2018, 1–9. <https://doi.org/10.1155/2018/9383950>
- Tsalissavrina I, Wahono D, dan Handayani D. (2006). Pengaruh Pemberian Diet Tinggi Karbohidrat Dibandingkan Diet Tinggi Lemak Terhadap Kadar Trigliserida Dan HDL Darah Pada Rattus novergicus galur wistar. *Jurnal Kedokteran Brawijaya*, XXII(March), 80–89. <https://doi.org/10.21776/ub.jkb.2006.022.02.5>
- Ujiani S. (2014). Gambaran Kadar Low Density Lipoprotein (LDL) Cholesterol Dan Creatine Kinase-Myocardial Band (CK-MB) Pada Pasien Penyakit Jantung Koroner (PJK) The Description of The Levels of Low-Density Lipoprotein (LDL) Cholesterol with Creatine Kinase-Myoca. *Jurusan Analisis Kesehatan, Politeknik Kesehatan Kemenkes Tanjungkarang*, 3(1), 310–315. sriujiani123@yahoo.com
- Upadhyay RK. (2017). Nutritional and Therapeutic Potential of Allium Vegetables. *Journal of Nutritional Therapeutics*, 6, 18–37. <https://doi.org/1929-5634/17>
- Valls RM, Companys J, Calderon-Perez L, Salamanca P, Pla-Paga L, Sandoval-Ramirez BA, Bueno A, Puzo J, Crescenti A, Del Bas JM, Caimari A, Salamanca A, Espinel AE, Pedret A, Arola L, and Sola R. (2022). Effects of an Optimized Aged Garlic Extract on Cardiovascular Disease Risk Factors in Moderate Hypercholesterolemic Subjects: A Randomized, Crossover, Double-Blind, Sustained and Controlled Study. *Nutrients*, 14(3), 1–18. <https://doi.org/10.3390/nu14030405>
- Van Hieu T, Guntoro B, Qui NH, Quyen NTK, and Al Hafiz FA. (2022). The application of ascorbic acid as a therapeutic feed additive to boost immunity and antioxidant activity of poultry in heat stress environment. *Veterinary World*, 15(3), 685–693. <https://doi.org/10.14202/vetworld.2022.685-693>
- Villano D, Marhuenda J, Arcusa R, Moreno-Rojas JM, Cerda B, Pereira-Caro G, and Zafrilla P. (2023). Effect of Black Garlic Consumption on Endothelial Function and Lipid Profile: A Before-and-After Study in Hypercholesterolemic and Non-Hypercholesterolemic Subjects. *Nutrients*, 15(14), 1–13. <https://doi.org/10.3390/nu15143138>
- Wahyu Munandar, & Aminuddin. (2023). Sosialisasi Pengaruh Stres Oksidatif Terhadap Penderita Obesitas Usia Remaja di Desa Balangtanaya Kab. Takalar. *Abdi Samulang*, 2(1), 29–36. <https://doi.org/10.61477/abdisamulang.v2i1.14>
- Wargasetia TL. (216 C.E.). Memahami Kaitan Obesitas Dan Kanker: Peluang Untuk Pencegahan. *Berkala Ilmiah Kedokteran Duta Wacana*, 1(3), 219. <https://doi.org/2460-9684>
- Widhiani NPV, Widiastuti IAE, and Zubaidi FF (2023). The difference in malondialdehyde (MDA) levels among normoweight, overweight, and obesity

- in Student of Medicine Program Faculty of Medicine, Mataram University. *Jurnal Biologi Tropis*, 23(3): 595-599. DOI: <https://www.doi.org/10.29303/jbt.v23i3.5429>
- Widiana IGR, Kandarini Y, dan Suwitra K. (2008). Hubungan Antara Kadar Leptin Dan Adiponektin Plasma Pada Pasien Dengan Dialisis Rutin I. *Penyakit Dalam Universitas Makasar*, 9, 119–128. e-mail: rakawidiana@yahoo.com
- Wiliyanarti PF dan Wahyullah MG. (2021). Pengaruh Ekstrak Bawang Hitam Terhadap Penurunan Kadar Glukosa Darah Pada Mencit. *The Journal of Muhammadiyah Medical Laboratory Technologist*, 4(1), 49. <https://doi.org/10.30651/jmlt.v4i1.7269>
- William (2020). Efek Leptin Berlebih Terhadap Fertilitas Laki-Laki. *Kedokteran, Departemen Biologi*, 10(2), 87–95.
- Winarsi H, Wijayanti SPM, dan Purwanto A. (2012). Aktivitas Enzim Superoksida Dismutase, Katalase, dan Glutation Peroksidase Wanita Penderita Sindrom Metabolik. *Majalah Kedokteran Bandung*, 44(1), 7–12. <https://doi.org/10.15395/mkb.v44n1.75>
- Wu CC, Sheen LY, Chen HW, Tsai SJ, and Lii CK. (2021). Effects of organosulfur compounds from garlic oil on the antioxidation system in rat liver and red blood cells. In *Food and Chemical Toxicology* (Vol. 39, Issue 6, pp. 563–569). [https://doi.org/10.1016/S0278-6915\(00\)00171-X](https://doi.org/10.1016/S0278-6915(00)00171-X)
- Xu C, Mathews AE, Rodrigues C, Eudy BJ, Rowe CA, O'Donoghue A, and Percival SS (2018). Aged garlic extract supplementation modifies inflammation and immunity of adults with obesity: A randomized, double blind, placebo controlled clinical trial. *Clinical Nutrition ESPEN*, 24: 148-155. DOI: <https://www.doi.org/10.1016/j.clnesp.2017.11.010>
- Yang Y, Yang F, Huang M, Wu H, Yang D, Zhang X, Yang L, Dhen G, Li S, Wang Q, Liu S, Liu Y, Lei Y, Lei Z, and Guo J. (2019). Fatty liver and alteration of the gut microbiome induced by diallyl disulfide. *International Journal of Molecular Medicine*, 44(5), 1908–1920. <https://doi.org/10.3892/ijmm.2019.4350>
- Yanti Y, Ermawati E, dan Anas E. (2016). Perbedaan Kadar Superoksida Dismutase pada Remaja dengan Dismenore Primer dan Tanpa Dismenore Primer. *Jurnal Kesehatan Andalas*, 5(1), 120–124. <https://doi.org/10.25077/jka.v5i1.454>
- Yimer EM, Tuem KB, Karim A, Ur-Rehman N, and Anwar F. (2019). *Nigella sativa* L. (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses. *Evidence-Based Complementary and Alternative Medicine*, 2019, 1–16. <https://doi.org/10.1155/2019/1528635>
- Younus H. (2018). Therapeutic potentials of superoxide dismutase. . *International Journal of Health Sciences*, 12(3), 88–93. <http://www.ncbi.nlm.nih.gov/pubmed/29896077> <http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC5969776>
- Yu Z, Wang N, Hu G, and Ma M (2019). Comparison of long-term effects of egg yolk consumption under normal and high fat diet on lipid metabolism and fatty acids profile in mice. *Food Science and Biotechnology*, 28(4): 1195-1206. DOI: <https://www.doi.org/10.1007/s10068-018-00545-w>

- Yu L, Zhao R, Wang C, Zhang C, Chu C, Zhao J, Zhang H, Zhai Q, Chen W, Zhang H, and Tian F. (2022). Effects of garlic supplementation on non-alcoholic fatty liver disease: A systematic review and meta-analysis of randomized controlled trials. *Journal of Functional Foods*, 99(October), 105294. <https://doi.org/10.1016/j.jff.2022.105294>
- Yudhayanti PE, Permana IDGM, and Nocianitri KA. (2020). Stability of Black Garlic Extract on Various pH and Temperature. *Media Ilmiah Teknologi Pangan (Scientific Journal of Food Technology)*, 7(1), 17. <https://doi.org/10.24843/mitp.2020.v07.i01.p03>
- Yuli T, Pangestu I, dan Setyawan AB. (2020). Pengaruh Pemberian Black Garlic terhadap Perubahan Kadar Gula Darah pada Pasien Diabetes Mellitus Tipe II di Wilayah Kerja Puskesmas Segiri Samarinda. *Borneo Student Research*, 1(3), 2229–2232. yulipangestu44@gmail.com
- Yuliadewi NSLG dan Arimbawa, I. M. (2020). Gambaran profil lipid dan dislipidemia pada remaja dengan obesitas di kota Denpasar, Bali, Indonesia. *Intisari Sains Medis*, 11(2), 629–633. <https://doi.org/10.15562/ism.v11i2.636>
- Yulistianingsih A, Novi A, dan Firdaus T. (2023). Hubungan Asupan Antioksidan Dengan Kejadian Sindrom Metabolik Remaja Obesitas Masa Adaptasi. *Jurnal Ners Research & Learning in Nursing Science*, 7(1), 412–419. <http://journal.universitaspahlawan.ac.id/index.php/ners>
- Yuniarifa C, Djam'an Q, dan Purnasari PW. (2021). Perbedaan Efektivitas Simvastatin, Ekstrak Bawang Putih (*Allium Sativum*), Ekstrak Buah Naga Merah (*Hylocereus Polyrhizus*) Dan Kombinasinya Terhadap Kadar Ldl Dan Kolesterol Total (Studi Eksperimental Pada Tikus Jantan Dislipidemia). *Syifa' MEDIKA: Jurnal Kedokteran Dan Kesehatan*, 11(2), 72. <https://doi.org/10.32502/sm.v11i2.2408>
- Yuvashree M, Ganesh RN, and Viswanathan P. (2020). Potential application of nanoemulsified garlic oil blend in mitigating the progression of type 2 diabetes-mediated nephropathy in Wistar rats. *3 Biotech*, 10(6), 1–15. <https://doi.org/10.1007/s13205-020-02262-w>
- Zaetun S, Kusuma Dewi LB, dan Rai Wiyadna IB. (2019). Profil Kadar Mda (Malondialdehyde) Sebagai Penanda Kerusakan Seluler Akibat Radikal Bebas Pada Tikus Yang Diberikan Air Beroksigen. *Jurnal Analis Medika Biosains (JAMBS)*, 5(2), 79. <https://doi.org/10.32807/jambs.v5i2.109>
- Zhao XX, Lin FJ, Li H, Li HB, Wu DT, Geng F, Ma W, Wang Y, Miao BH, and Gan RY (2021). Recent Advances in bioactive compounds, health functions, and safety concerns of onion (*Allium cepa* L.). *Frontiers in Nutrition*, 8: 669805. DOI: <https://www.doi.org/10.3389/fnut.2021.669805>
- Zhou Y, Li H, and Xia N. (2021). The Interplay Between Adipose Tissue and Vasculature: Role of Oxidative Stress in Obesity. *Frontiers in Cardiovascular Medicine*, 8(March), 1–14. <https://doi.org/10.3389/fcvm.2021.650214>