

DAFTAR PUSTAKA

- Alcaide, B., Cantalejo, Y. M., Castells, and Sierra, M. A., 1996, C₄,C_{4'}-Bis- $\hat{\alpha}$ -lactam to Fused Bis- γ -lactam Rearrangement, *J. Org. Chem.*, 61, 9156 – 9163.
- Alves, A. J. S., Alves, N. G., Laranjo, M., Gomes, C. S. B., Gonçalves, A. C., Ana Ribeiro, A. B. S., Botelho, M. F., and Melo, T. M. V. D. P., 2022, Insights into the anticancer activity of chiral alkylidene- β -lactams and alkylidene- γ -lactams: Synthesis and biological investigation, *Bioorg. Med. Chem.*, 63, 1 – 11.
- Apriyani, F., 2015, Studi Penambatan Molekul Senyawa-Senyawa Amidasi Etil Para Metokisinamat pada *Peroxisome Proliferator-Activated Receptor-Gamma* (PPAR γ), *Skripsi*, Program Studi Farmasi, Fakultas Kedokteran dan Ilmu Kesehatan, UIN Syarif Hidayatullah, Jakarta.
- Arnida, Sahi, E. R., dan Sutomo, 2017, Aktivitas Antiplasmodium *In Vitro* dan Identifikasi Golongan Senyawa dari Ekstrak Etanol Batang Manuran (*coptosapelta tomentosa* Valetton ex K.Heyne) Asal Kalimantan Selatan, *Jurnal Ilmiah Ibnu Sina*, 2(2), 270 - 278.
- Arya, N., Jagdale, A. Y., Patil, T. A., Yeramwar, S. S., Holikatti, S. S., Dwivedi, J., Shishoo, C. J., and Jain, K. S., 2014, The Chemistry and Biological Potential of Azetidin-2-ones, *Eur. J. Med. Chem.*, 74, 1 – 74.
- Ayuningrum, M., 2021, Studi In Silico Potensi Antivirus Senyawa Limonoid Tanaman Mimba (*Azadirachta indica* A. Juss.) terhadap Reseptor Rdrp SARS-CoV-2 (7BV2), *Skripsi*, Program Studi Farmasi, Fakultas Kedokteran dan Ilmu Kesehatan, Program Studi Farmasi, Universitas Islam Negeri Maulana Malik Ibrahim, Malang.
- Bartolo, I., Santos, B. S., Fontinha, D., Machado, M., Francisco, D., Sepodes, B., Rocha, J., Filipe, H. M., Pinto, R., Figueira, M. E., Barroso, H., Nascimento, T., Matos, A. P. A., Alves, A. J. S., Alves, N. G., Simoes, C. J. V., Prudencio, M., Melo, T. M. V. D. P., and Taveira, N., 2021, Spiro- β -lactam BSS-730A Displays Potent Activity against HIV and *Plasmodium*, *ACS Infect. Dis.*, 7, 421 – 434.
- Bubala, H., Cahyadi, T. A., dan Ernawati, R., 2019, Tingkat Pencemaran Logam Berat Di Pesisir Pantai Akibat Penambangan Bijih Nikel, *Prosiding Nasional Rekayasa Teknologi Industri dan Informasi XIV Tahun 201*, November 2019, Yogyakarta.
- Eagon, S., Hammillb, J. T., Bach, J., Everson, N., Sisley, T. A., Walls, M. J., Durham, S., Pillai, D. R., Falade, M. O., Rice, A. L., Kimball, J. J., Lazaro, H., DiBernardo, C., dan Guy, R. P., 2020, Antimalarial activity of tetrahydro- β -carboline targeting the ATP binding pocket of the *Plasmodium falciparum* heat shock 90 protein, *Bioorg. Med. Chem.*, 30, 1 – 6.

- Fernandes, T. B., Segretti, M. C. F., Polli, M. C., and Filho, R. P., 2016, Analysis of the Applicability and Use of Lipinski's Rule for Central Nervous System Drugs, *Lett. Drug. Des. Discov.*, 13, 1 – 8.
- Fikry, M. A., 2014, Studi Penambatan Molekul Senyawa – Senyawa Flavonoid dari Buah Mengkudu (*Morinda citrifolia* L) pada Peroxisome Proliferator-Activated Reseptor-Gamma (*PPAR γ*), *Skripsi*, Program Studi Farmasi, Fakultas Kedokteran dan Ilmu Kesehatan, UIN Syarif Hidayatullah, Jakarta.
- Fitriany, J., and Sabiq, A., 2018, Malaria, *Jurnal Averrous*, 2(4).
- Fernandes, T. B., Segretti, M. C. F., Polli, M. C., and Filho, R. P. 2016. Analysis of the Applicability and Use of Lipinski's Rule for Central Nervous System Drugs. *Lett. Drug Des. Discov.*, 13, 1 – 8.
- Fessenden, R.J. and Fessenden, J.S., 1999, *Kimia Organik*, diterjemahkan oleh Pudjaatmakan, A. H., Edisi Ketiga, Jilid 2, 417-418, 454-455, Penerbit Erlangga, Jakarta.
- Fuller, P. H., and Chemler, S. R., 2007, Copper(II) Carboxylate-Promoted Intramolecular Carboamination of Alkenes for the Synthesis of Polycyclic Lactams, *Org. Lett.*, 26, 6547 – 6580.
- Ghosh, U., Bhattacharyya, R., and Keche, A., 2010, Mild and efficient syntheses of diverse isoindolinones from ortho-phthaldehydic acid methylthiomethyl ester, *Tetrahedron*, 66, 2148 – 2155.
- Hafid, A. F., Puliansari, N., Lestari, N. S., Tumewu, L., Rahman, A., Widyawaruyanti, A. 2016, Skrining Aktivitas Antimalaria Beberapa Tanaman Indonesia Hasil Eksplorasi Dari Hutan Raya Cangar, Batu- Malang, Jawa Timur, *Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia*, 1, 6 – 11.
- Hardjono, S., 2013, Sintesis Dan Uji Aktivitas Antikanker Senyawa 1-(2-Klorobenzoiloksi)Urea Dan 1-(4-Klorobenzoiloksi)Urea, *Berkala Ilmiah Kimia Farmasi*, 2, 1-6.
- Hong, W. D., Leung, S. C., Amporndani, K., Davies, J., Priestley, R. S., Nixon, G. L., Berry, N. G., Hasnain, S. S., Antonyuk, S., Ward, S. A., Biagini, G. A., and O'Neil, P. M., 2018, Potent Antimalarial 2-Pyrazolyl Quinolone bc₁ (Qi) Inhibitors with Improved Drug-like Properties, *Medical Chem. Lett.*, 9, 1205 – 1210.
- Huang, L., Lin, J. S., Tan, B., and Liu, X. Y., 2015, Alkene Trifluoromethylation-Initiated Remote α -Azidation of Carbonyl Compounds toward Trifluoromethyl γ -Lactam and Spirobenzofuranone-Lactam, *Catal.*, 5, 2826 – 2831.
- Huard, K., Bagley, S. W., Klotz, E. M., Preville, C., Southers, J. A., Smith, J. A. C., Edmonds, D. J., Lucas, J. C., Dunn, M. F., Allason, N. M., Blaney, E. L., Irizarry, N. G., Kohrt, J. T., Griffith, D. A., and Dow, R. L., 2012, Synthesis of Spiropiperidine Lactam Acetyl-CoA Carboxylase Inhibitors, *JOC*, 77, 10050 – 10057.

- Jarrahpour, A., Jowkar, Z., Haghijoo, Z., Heiran, R., Rad, J. A., Sinou, V., Latour, C., Brunel, J. M., and Ozdemir, N., 2022, Synthesis, in-vitro Biological Evaluation, and Molecular Docking Study of Novel spiro- β -lactam-isatin Hybrids, *Research Square*, 31, 1026 - 1034.
- Kerru, N., Singh, P., Koorbanally, N., Raj, R., and Kumar, V., 2017, Recent advances (2015-2016) in anticancer hybrids, *Eur. J. Med. Chem.*, 142, 179 - 212.
- Lawinsca, M. Y., Raharjo, M., dan Nurjazuli, 2021, Faktor Risiko yang Mempengaruhi Kejadian Malaria Di Indonesia: Review Literatur 2016-2020, *Jurnal Kesehatan Lingkungan*, 1, 16 - 28.
- Lee, J., Kim, T. I., Le, H. G., Yoo, W. G., Kang, J. M., Ahn, S. K., Myint, M. K., Lin, K. Kim, T. S., and Na, B. K., 2020, Genetic Diversity of *Plasmodium vivax* and *Plasmodium falciparum* lactate Dehydrogenase in Myanmar Isolates, *Malar. J.*, 19, 1 - 15.
- Lestari, A., Eryanti, Y., dan Zamri, A., 2016, Sintesis dan Uji Toksisitas Dua Senyawa Analog Kurkumin Simetris dari Sikloheksanon dengan Turunan Metoksibenzaldehida, *J. Kim. FMIPA Univ. Riau*, 6, 500 - 508.
- Liu, H., Yang, X., Cao, S., Yu, F., Long, S., Chen, J., Zhang, M., Parkin, S., and Yang, Z., 2020 Steric Effect Determines the Formation of Lactam-Lactam Dimers or Amide C=O \cdots NH (Lactam) Chain Motifs in N-Phenyl-2-hydroxynicotinanilides, *Cryst. Growth Des.*, 20, 4346 - 4357.
- Malaura, N. D., and Azzahra, S. t., 2019, Analisa Docking Cyanidin 3,5-di-(6-malonylglucoside) terhadap Reseptor Plasmodium falciparum Enoyl Acyl Carrier Protein Reductase (PfENR) sebagai Anti Malaria, *Jurnal EduMatSains*, 4, 99 - 110.
- Manohar, S., Rajesh, U. C., Khan, S. I., Tekwani, T. L., and Rawat, D. S., 2012, Novel 4-Aminoquinoline-Pyrimidine Based Hybrids with Improved in Vitro and in Vivo Antimalarial Activity, *Med. Chem. Lett.*, 3, 555 - 559.
- Maurya, R., Soni, A., Anand, D., Ravi, M., Raju, K. S. R., Taneja, I., Naikade, N. K., Puri, S. K., Wahajuddin, Konijiya, S., and Yadav, P. P., 2013, *Med. Chem. Lett.*, 4, 165 - 169.
- Meyers, M. J., Tortorella, M. D., Xu, J., Qin, L., He, Z., Lang, X., Zeng, W., Xu, W., Qin, L., Prinsen, M. J., Sverdrup, F. M., Eickhoff, C. S., Griggs, D. W., Oliva, J., Ruminski, P. G., Jacobsen, E. J., Campbell, M. A., Wood, D. C., Goldberg, D. E., Liu, X., Lu, Y., Lu, X. Tu, Z., Lu, X., Ding, K., and Chen, X., 2014, Evaluation of Aminohydantoin as a Novel Class of Antimalarial Agents, *Med. Chem. Lett.*, 5, 89 - 93.
- McMurry, J., 2012, *Organic Chemistry Ninth Edition, Organic Chemistry Ninth Edition*. Boston Cengage Learning, Australia.
- Morde, V., Shaikh, M., Pissurlenkar, R., & Coutinho, E. (2009), Molecular Modelling Studies, Synthesis, and Biological Evaluation of Plasmodium

- falciparum Enoyl-Acyl Carrier Protein reductase (PfENR) inhibitors, *Mol Divers*, 13, 501-517.
- Muller, G. W., Chen, R., Huang, S. Y., Corral, L. G., Wong, L. M., Patterson, R. T., Chen, Y., Kaplan, G., and Stritling, D. I., 1999, Amino-Substituted Thalidomide Analogs: Potent Inhibitors Of TNF- α Production, *Bioorg. Med. Chem.*, 9, 1625 – 1630.
- Nadhifah, A., 2021, Analog Kurkumin Dari 3-Metoksibenzaldehida Sebagai Senyawa Antimalaria: Kajian Penambatan Molekul, Sintesis dan Uji Aktivitasnya, *Skripsi*, Program Studi Kimia Departemen Kimia Fakultas Matematika Dan Ilmu Pengetahuan Alam Universitas Gadjah Mada, Yogyakarta.
- Nasrahwati, 2021, Uji In Vitro Aktivitas Antibakteri Ekstrak Daun Majapahit (*Crescentia cujete L.*) dalam Menghambat Pertumbuhan *Salmonella typhi*, *Skripsi*, Jurusan Biologi pada Fakultas Sains dan Teknologi, UIN Alauddin Makassar, Makassar.
- Othman, R. B., Affani, R., Tranchant, M. J., Antoniotti, S., Dalla, V., and Dunach, E., 2010, N-Acyliminium Ion Chemistry: Highly Efficient and Versatile Carbon– Carbon Bond Formation by Nucleophilic Substitution of Hydroxy Groups Catalyzed by Sn(NTf₂)₄, *Angew. Chem. Int. Ed.*, 49, 776 – 780.
- Pamudi, B. F., Penapisan *In Silico* Antimalaria terhadap Target *Plasmodium falciparum* Enoyl Acyl Carrier Protein Reductase (PfENR), 2011, *Skripsi*, Program Studi Farmasi Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Indonesia, Depok.
- Rena, S. R., Nurhidayah, dan Rustan, 2022, Analisis *Molecular Docking* Senyawa *Garcinia mangostana L* Sebagai Kandidat Anti SARS-CoV-2, *Jurnal Fisika Unand*, 1, 82 – 88.
- Rochani, A. K., Singh, M., and Tatu, U., 2014, Heat-shock Protein 90 as an Antimalarial Target, *Drug. Discov. Ser.*, 37, 379-391
- Salsabila, A., Gunawan, C. A., dan Irawiraman, H., 2021, Profil Hematologi Pasien Malaria Rawat Inap di RSUD Panglima Sebaya Kabupaten Paser Periode Januari 2015-Maret 2018, *J. Sains Kes*, 3, 551 – 557.
- Shang, X. F., Natschke, S. L. M., Liu, Y. Q., Guo, X., Xu, X. S., Goto, M., Li, J. C., Yang, G. Z., and Lee, K. H., 2018, Biologically active quinoline and quinazoline alkaloids part I, *Med Res Rev*, 38, 775 – 828.
- Shi, L., Hu, L., Wang, J., Cao, X., and Gu, H., 2012, Highly Efficient Synthesis of N-Substituted Isoindolinones and Phthalazinones Using Pt Nanowires as Catalysts, *Org. Lett.*, 7, 1876 – 1879.
- Sikoraiova, J., Marchalin, S., Daich, A., and Decroix, B., 2002, Acid-mediated intramolecular cationic cyclization using an oxygen atom as internal

- nucleophile: synthesis of substituted oxazolo-, oxazino- and oxazepinoisoindolinones, *Tetrahedron Lett.*, 43, 4747 – 4751.
- Singh, P., Singh, P., Kumar, M., Gut, J., Rosenthal, P. J., Kumar, K., Kumar, V., Mahajan, M. P., and Bisetty, K., 2012, Synthesis, docking and in vitro antimalarial evaluation of bifunctional, *Bioorg. Med. Chem. Lett.*, 22, 57 – 61.
- Smith, P. W., Zuccotto, F., Bates, R. H., Martinez, M. S. M., Read, K. D., Peet, C., and Epemolu, O., 2018, Pharmacokinetics of β -Lactam Antibiotics: Clues from the Past to Help Discover Long-Acting Oral Drugs in the Future, *ACS Infect. Dis.*, 4, 1439 – 1447.
- Southgate, R., 1994, The Synthesis of Natural β -Lactam Antibiotic, *Curr. Org. Synth.*, 6, 417 – 431.
- Sun, Y. N., Wang, C. L., Zhang, N., Wang, Z., Liu, Z. L., and Liu, J. L., 2014, Synthesis of tetrahydro-b-carbolines from phthalic anhydrides and tryptamine, *Chin. Chem. Lett.*, 1 – 4.
- Susanti, N. M. P., Laksmiani, N. P. L., Noviyanti, N. K. M., Arianti, K. M., dan Duantara, I. K., 2019, Molecular Docking Terpinen-4-OL sebagai Antiinflamasi pada Aterosklerosis secara *In Silico*, *J. Chem.*, 2, 221 – 228.
- Takahashi, I., Hirano, E., Kawakami, T., and Kitajima, H., 2019, Application of the Phthalimidine Synthesis with Use of 1,2,3-*H*-Benzotriazole and 2-Mercaptoethanol as Dual Synthetic Auxiliaries, *J. Commun.*, 11, 2343 – 2346.
- Vivaniyama, J., Chitnumsub, P., Kamchonwongpaisan, S., Vanichtanankul, J., Sirawaraporn, W., Taylor, P., Walkinshaw, M. D., and Yuthavong, Y., 2003, Insight into Antifolate Resistance from Malaria DHFR-TS Structures, *J. Struct. Biol.*, 5, 387 – 365.
- Wu, Y., Liu, N., Qi, M., Qiao, H., Lu, X., Ma, L., Zhou, Y., and Zhang, F. L., 2021, Monodentate Transient Directing Group Assisted Ruthenium (II)-Catalyzed Direct ortho-C–H Imidation of Benzaldehydes for Diverse Synthesis of Quinazoline and Fused Isoindolinone, *Org. Lett.*, 23, 3923 – 3927.
- Wulandari, E., Yuliani, D., Hayati, E. K., dan Muti'ah, R. 2018. Aktivitas Antimalaria Ekstrak Kasar Etanol dan Fraksi *n*-Heksana Rumpuk Bambu (*Lophatherum gracile*) secara in Vitro. *Alchemy J. Chem.* 6. 18–23.
- Yuthavong, Y., Yuviniyama, J., Chitnumsub, P., Vanichtanankul, J., Chusacultanachai, S., Tarnchompoo, B., Vilaivan, T., dan Kamchonwongpaisan, S., 2005, Malarial (*Plasmodium falciparum*) dihydrofolate reductase-thymidylate synthase: structural basis for antifolate resistance and development of effective inhibitors, *Parasitology*, 130, 249 – 259.
- Zhang, S., Shi, X., Li, J., Hou, Z., Song, Z., Su, X., Peng, D., Wang, F., Yu, Y., and Zhao, G., 2019, Nickel-Catalyzed Amidoalkylation Reaction of γ -Hydroxy

Lactams: An Access to 3-Substituted Isoindolinones, *ACS Omega*, 4, 19420
– 19436.