

DAFTAR PUSTAKA

- Abbas, N., Saba, T., Rehman, A., Mehmood, Z., Javaid, N., Tahir, M., et al., 2019. *Plasmodium* species aware based quantification of malaria parasitemia in light microscopy thin blood smear. *Microsc Res Tech.* 82(7): 1198-1214.
- Agarwal, A., Srivasta, K., Purb, S.K., Chauhana, P. M. S., 2005. Synthesis of 4-pyrido-6-aryl-2-substituted amino pyrimidines as a new class of antimalarial agents. *Bioorg. Med. Chem.* 13: 6226-6232.
- Amanatie., Jumina., Mustofa., M, Hanafi., Kadidae, L. O., I, Sahidin., 2017. Synthesis of 2-hidroxyxanthone from xanthone as a basic material for new antimalarial drugs. *Asian J. Pharm Res.* 10(12): 242-246.
- Azas, N., Rathelot, P., Djekou, S., Delmas, F., Gellis, A., Di Giorgio, C., et al., 2003. Antiparasitic activity of highly conjugated pyrimidine-2,4- dione derivatives. *Farmaco.* 58:1263-1270.
- Batista, R., De Jesus Silva Júnior, A. and De Oliveira, A. B. 2009. Plant-derived antimalarial agents: New leads and efficient phytomedicines. part II. non-alkaloidal natural products. *Molecules*, 14(8): . 3037–3072.
- Basilico, N., Pagani, E., Monti, D., Olliaro, P., Taramelli, D., 1998. A microtitre-based method for measuring the haem polymerization inhibitory activity (HPIA) of antimalarial drugs. *J. Antimicrob Chemother.* 42(1): 55–60.
- Biot, C., Nosten, F., Fraisse, L., Ter-Minassian, D., Khalife, J., Dive, D. 2011. The antimalarial ferroquine: From bench to clinic. *Parasite*, 18(3): 207–214.
- Blasco, B., Leroy, Di., Fidock, D. A., 2017. Antimalarial drug resistance: Linking *Plasmodium falciparum* parasite biology to the clinic. *Nat. Med.* 23(8): 917–928.
- Cameron, A., Read, J., Tranter, R., Winter, V. J., Sessions, R. B., Brady, L. L., et al., 2004. Identification and activity of a series of azole-based compounds with lactate dehydrogenase-directed anti-malarial activity. *J. Biol. Chem.* 279(30): 31429–31439.
- Carlson, J., Holmquist, G., Taylor, D. W., Perlmann, P. and Wahlgren, M., 1990. Antibodies to a histidine-rich protein (PfHRP1) disrupt spontaneously formed *Plasmodium falciparum* erythrocyte rosettes. *Natl Acad. Sci. Lett.* 87(7): 2511–2515.
- Cejas, J. P., Rosa, A.S., Perez, H.A., Alarcon, L., Menendez, C., Appignanesi, G.A., et al., 2018. Effect of Xanthone and 1-Hydroxy Xanthone on the Dipole Potential of Lipid Membranes. *J. Colloid Interface Sci.* 26: 24–31.
- Chianese, G., Yerbanga, S.R., Lucantoni, L., Habluetzel, A., Basilico, N., Taramelli, D., et al., 2010. Antiplasmodial triterpenoids from the fruits of Neem, *Azadirachta*

indica. *J.Nat Prod.* 73 : 1448-1452.

- Conroy, A. L., Datta, D., John, C. C., 2019. What causes severe malaria and its complications in children? Lessons learned over the past 15 years. *BMC Med.* 17 (1): 1-4.
- Contreras, C. E., Rivas, M. A., Domínguez, J., Charris, J., Palacios, M., Bianco, N. E., et al., 2004. Stage-specific activity of potential antimalarial compounds measured in vitro by flow cytometry in comparison to optical microscopy and hypoxanthine uptake. *Mems Inst Oswaldo Cruz.* 99(2): 179–184.
- Delarue-Cochin, S., Paunescu, E., Maes, L., Mouray, E., Sergheraert, C., Grellier, P., et al., 2008. Synthesis and antimalarial activity of new analogues of amodiaquine. *Eur. J. Med. Chem.* 43: 252-260.
- De Souza, G. E., Buone, R. V., De Souza J. O., Zanini, C. L., Cruz, F. C., Oliva, G., et al. 2019. Antiplasmodial profile of selected compounds from Malaria Box: In vitro evaluation, speed of action and drug combination studies. *Malaria Journal.* BioMed Central, 18(1): 1–13.
- Eggleston, K.K., Duffin, K.L., Goldberg, D.E., 1999. Identification and characterization of falcylisin, a metallopeptidase involved in hemoglobin catabolism within the malaria parasite Plasmodium falciparum. *The Journal of Biological Chemistry* 274 (45): 32411–32417.
- Fatmasari, N., 2019. Sintesis, uji aktifas antioksidan, dan anti kanker serta kajian penambatan molekul turunan hidroksixanton terhadap topoisomerase II. Tesis. Universitas Gadjah Mada, Yogyakarta.
- Fotie, J., Nkengfack, A.E., Rukunga, G., Tolo, F., Peter, M.G., Heydenreich, M., Fomum, Z.T., 2003. In-vivo antimalarial activity of some oxygenated xanthenes. *Annals of Tropical Medicine and Parasitology* 97 (7), 683–688.
- Franca, H.S., Rocha, L., Fernande, CP., Ruis, A.L.T. and Carvalho, J.E., 2013, Anti Proliferasi of Hexanic Extract and Phloroglucinols from *Hyperchum brasiliense*, *Brazilium J. Pharmacognosy*, 23: 844-847.
- Froelich, S.J. & Osheroff, N., 1995. Topoisomerase poisons: Harnessing the dark side of enzyme mechanism. *Biochem. J.* 270(37): 21429–21432.
- Fujioka, H. & Aikawa, M., 2004. Structure and life cycle. *Int. Immunol.* 80: 1–26.
- Goldring, J. P. D., Padayachee, T., Ismail, I., 1999. Plasmodium falciparum malaria: rosettes are disrupted by quinine, artemisinin, mefloquine, primaquine, pyrimethamine, chloroquine and proguanil. *Mem Inst Oswaldo Cruz.* 94(5): 667–674.
- Hawley, S. R., Bray, P. G., Mungthin, M., Atkinson, J. D., O'Neill, P. M., Ward, S. A.,

1998. Relationship between antimalarial drug activity, accumulation, and inhibition of heme polymerization in *Plasmodium falciparum* in vitro. *Antimicrob Agents Chemother.* 42(3): 682–686.
- Hughes, D., & Mehmet, H. 2003. Cell Proliferation & Apoptosis, BIOS Scientific Publishers Ltd, Oxford, 19- 20.
- Huy, N., Uyen, D., Maeda, A., Trang, D., Oida, T., Harada, S., et al., 2007. Simple Colorimetric Inhibition Assay of Heme Crystallization for High-Throughput Screening of Antimalarial Compounds. *Antimicrob. Agents Chemother.* 51(1): 350–353.
- Ignatushchenko, M. V., Winter, R.W., Bachinger, H.P., Hincrichs, D.J., Riscoe, M.K. (1997) ‘Xanthones as antimalarial agents; studies of a possible mode of action’. *FEBS Letters.* 409(1): 67–73.
- Jenett-Siems, K Mockenhaupt, F. et al., 1999. In vitro antiplasmodial activity of Central American medicinal plants. *Trop. Med. Intl. Health*, 4(9): 611–615.
- Kelly, J. X., Winter, R., Riscoe, M., Peyton, D.H., 2001. A spectroscopic investigation of the binding interactions between 4 , 5-dihydroxyxanthone and Heme. *J. Inorg. Biochem.* 86,: 617–625.
- Khan, T., Van Brummelen. A., Parkinson. C. J., Hoppe. H. C. 2012. ATP and luciferase assays to determine the rate of drug action in in vitro cultures of *Plasmodium falciparum*. *Malar J.* 11(369): 1-11.
- Kolla, V. K., Prasad, R., Sayyad, Z., Atul, Shah, A. Y., Allanki, A. D., et al., 2015. Independent amino acid residues in the S2 pocket of falcipain-3 determine its specificity for P2 residues in substrates. *Mol. Biochem. Parasitol.* 202(2): 11–22.
- Koolen, H. H. F., Menezes, L. S., Souza, M. P., Silva, F. M. A., Almeida, F. G. O., De Souza, A. Q. L., et al., 2013. Talaroxanthone, a novel xanthone dimer from the endophytic fungus *talaromyces* sp. associated with *duguetia stelechantha* (diels) R. E. Fries. *J. Braz. Chem. Soc.* 24(5): 880–883.
- Krishna, S., Uhlemann, A. C., Haynes, R. K., 2004. Artemisinin: Mechanisms of action and potential for resistance. *Drug Resist Updat*, 7(4–5):233–244.
- Kumar, S., 2007. Antimalarial drugs inhibiting hemozoin (β -hematin) formation: A mechanistic update. *Life Sciences.* 80(9): 813–828.
- Kumar, S., Bhardwaj, T. R., Prasad, D. N., Singh, R. K., 2018. Biomedicine & Pharmacotherapy Drug targets for resistant malaria: Historic to future perspectives. *Biomed Pharmacother.* 104: 8–27.
- Mace, K. E., Arguin, P. M., Tan, K. R., 2018. Malaria Surveillance. *MMWR.* 67(7): 28.
- Macedo, T. S., Villarreal, W., Couto, C. C., Moreira, D. R. M., Navarro, M., Machado, M., et al., 2017. Platinum(II)-chloroquine complexes are antimalarial agents

- against blood and liver stages by impairing mitochondrial function. *Metallomics*. 9(11): 1548–1561.
- Maier, A. G., Matuschewski, K., Zhang, M., Rug, M., 2019. Plasmodium falciparum. *Trends Parasitol.* 35(6): 481–482.
- Miert, S. V., Jonkers, T., Maes, L., Vietinck, A., Dommissie, R., Lemiere, G., et al., 2005. Synthesis , Cytotoxicity and Antiplasmodial Activity of Neocryptolepine Derivatives Synthesis , Cytotoxicity and Antiplasmodial Activity of Neocryptolepine Derivatives. *Acta hort.* 677(3): 91-97.
- Miladiyah, I., 2018. Uji sitotoksisitas kajian QSAR senyawa turunan xanton terhadap sel kanker WiDR dan Raji serta mekanisme aksi molecular docking. Disertasi. Universitas Gadjah Mada, Yogyakarta.
- Moreau, S., Perly, B., Chachaty, C., Colette, D., 1985. A nuclear magnetic resonance study of the interactions of antimalarial drugs with porphyrins. *BBA.* 840(1): 107–116.
- Moreira, D. R. M., De Sá, M. S., Macedo, T. S., Menezes, M. N., Reys, J. R. M., Santana, A. E. G., et al., 2015. Evaluation of naphthoquinones identified the acetylated isolapachol as a potent and selective antiplasmodium agent. *J Enzyme Inhib Med Chem.* 30(4): 615–621.
- Mosmann, T., 1983. Rapid Colorimetric assay for cellular growth and survival. Aplicacion to proliferation and cytotoxicity assays. *J. Immunol. Methods.* 65(1-2): 55-63.
- Munghtin, M., Bray, P.G., Ridley, R.G., Ward, S.A., 1998. Central role of hemoglobin degradation in mechanism of action of 4-aminoquinolines, quinoline mehanos, and phenantene methanols. *Antimicrob. Agent Chemother.* 42(11): 2973-2977.
- Mustofa & Sholikhah, E.N., 2007. *In vitro* dan *in vivo* antiplasmodial activity of fraction isolated from methalonic extract of Pasak Bumi. *Trad Med. J.* 11(40): 25-30.
- Nogueira, C. R. & Lopes, L. M. X., 2011. Antiplasmodial natural products. *Molecules.* 16:2146-2190.
- Nqoro, X., Tobeka, N., Aderibigbe, B. A., 2017. Quinoline-based hybrid compounds with antimalarial activity. *Molecules.* 22(12): 1-22.
- Oida, T., Kamei, K., Trang, D., et al., 2006. Simple Colorimetric Inhibition Assay of Heme Crystallization for High-Throughput Screening of Antimalarial Compounds. *Antimicrobial Agents and Chemotherapy,* 51(1): 350–353.
- Pandey, A. V., Bisht, H., Babbarwal, V. K., Srivastava, J., Pandey, K. C., Chauhan, V. S., 2001. Mechanism of malarial haem detoxification inhibition by chloroquine. *Biochem J.* 355(2): 333–338.

- Phillips, R., 2001. Revealing the new tractor factors. *Clin Microb Rev.* 29(14): 208–226.
- Poostchi, M., Silamut, K., Maude, R. J., Jaeger, S., Thoma, G., 2018. Image analysis and machine learning for detecting malaria. *Am. J. Trans. Res.* 194: 36–55.
- Ramalhete, C., Lopes, D., Mulhovo, S., Molnar, J., Rosario, V. E., Ferreira, M.J.U., 2010. New antimalarials with a triterpenic scaffold from *momordica balsamina*. *Bioorg. Med. Chem.* 18 : 5254-5260.
- Ridley, R.G., 2002. Medical need, scientific opportunity and the drive for antimalarial drugs. *Nature.* 415: 686-693.
- Rosenthal, P. J., 2003. Antimalarial drug discovery: old and new approaches. *The J Exp Biol.* 206(21): 3735–3744.
- Rush, M. A., Baniecki, M. L., Mazitschek, R., Cortese, J. F., Wiegand, R., Clardy, J., 2009. Colorimetric high-throughput screen for detection of heme crystallization inhibitors. *Antimicrob Agents Chemother.* 53(6): 2564–2568.
- Ryter, S. W. and Tyrrell, R. M., 2000. The heme synthesis and degradation pathways: Role in oxidant sensitivity Heme oxygenase has both pro- and antioxidant properties', *Free Radical Biology and Medicine.* 28(2): 289–309.
- Sharma, V., 2005. Therapeutic Drugs for targeting chloroquine resistance in Malaria. *Mini-Rev. Med. Chem.* 5(4): 337–351.
- Sholikhah, E. N., Wijayanti, M. A., Nurani, L. H., Mustofa., 2019. Aktivitas Antiplasmodium dan Sitotoksisitas Isolat Akar Pasak Bumi (*Eurycoma longifolia* Jack) secara In Vitro. *MF.* 14(2): 54-62
- Slater, A. and Cerami, A., 1992. Inhibition by chloroquine of a novel haem polymerase enzyme activity in malaria trophozoites. *Nature*, 355(6356), pp. 167–169.
- Slater, A., 1993. Chloroquine: mechanism of drug action and resistance in *Plasmodium falciparum*. *Pharmac. Ther.* 57: 203–235.
- Smilkstein, M., Sriwilaijaroen, N., Kelly, J. X., Wilairat, P., Riscoe, M., 2004. Simple and inexpensive fluorescence-based technique for high-throughput antimalarial drug screening. *Antimicrob Agents Chemother.* 48(5): 1803–6.
- Soni, S. & Gupta, S., 2009. In vitro antiplasmodial activity of *enicostemma littorale*. *Am J. Infect. Dis.* 5: 259-262.
- Steele, J. C. P., 2002. Two novel assays for the detection of haemin-binding properties of antimalarials evaluated with compounds isolated from medicinal plants. *J. Biol. Chem.* 50(1):25–31.
- Syarif, R. A., Mustofa., Ngatidjan., Wahyuningsih, M.S.H., 2018. Heme

- Polymerization Inhibition by *Tithonia diversifolia* (Hemsley) A.Gray Leaves Fractions as Antiplasmodial Agent and Its Cytotoxicity on Vero Cells. *Trad Med. J.* 23(3): 106-111.
- Trager, W. & Jensen, J., 1976. Human malaria parasites in Continuous culture. *Science.* 193: 673-675.
- Van Schalkwyk, D. A., Priebe, W. and Saliba, K. J. 2008. The inhibitory effect of 2-halo derivatives of D-glucose on glycolysis and on the proliferation of the human malaria parasite *Plasmodium falciparum*. *J Pharmacol Exp Ther.* 327(2): 511–517.
- Wahyono, L. dan Widyati, P. P., 2010. Uji aktivitas senyawa antiplasmodium dari fungi endofit tanaman *Artemisia annua* L. Testing of antiplasmodium activity substance from endophytic fungus of *Artemisia annua*’, *Majalah Farmasi Indonesia*, 21(214): 230–235.
- WHO., 2019. World Malaria Report 2019. [cited 2020 July 11]. Available from: URL:<https://www.who.int/malaria/publications/world-malaria-report-2019/en/>
- Wijayanti, M.A., 2008. Aktivitas In vivo, toksisitas akut dan mekanisme aksi in vitro senyawa turunan n-alkil dan N-benzil-1, 10-fenantrolin sebagai antiplasmodium. Disertasi. Universitas Gadjah Mada, Yogyakarta.
- Wood, B. R., Langford, S. J., Cooke, B. M., Glenister, F. K., Lim, J., McNaughton, D., 2003. Raman imaging of hemozoin within the food vacuole of *Plasmodium falciparum* trophozoites. *FEBS Lett.* 554(3): 247–252.
- Xu, L., Chen, J., Qi, H. and Shi, Y., 2012. Phytochemicals and Their Biological Activities of Plants in *Tagetes L.*’, *Chinese Herbal Medicines. Chin. Herb. Med.* 4(2): 103–117.
- Yam, X. Y. & Preiser, P. R., 2017. Host immune evasion strategies of malaria blood stage parasite. *Mol BioSyst.* 13(12): 2498–2508.
- Yuanita, E., 2017. QSAR, Docking molekul dan sintesis senyawa turunan hidroksixanton sebagai anti kanker dan antioksidan. Disertasi. Universitas Gadjah Mada, Yogyakarta.
- Zhu, S. Zhang, Q., Gudise, C., Meng, L., Wei, L., Smith, E., et al., 2007. Synthesis and evaluation of naphthyridine compounds as antimalarial agents. *Bioorg. Med.Chem. Lett.* 17: 6101-6106.