

DAFTAR PUSTAKA

- Abdillah, S., Tambunan, R.M., Farida, Y., Sandhiutami, N.M.D., and Dewi, R.M., 2015, Phytochemical screening and antimalarial activity of some plants traditionally used in Indonesia, *Asian Pacific J. Trop. Dis.*, 5, 454–457.
- Abdullahi, M., Uzairu, A., Shallangwa, G.A., Mamza, P.A., and Ibrahim, M.T., 2022, 2D-QSAR, 3D-QSAR, molecular docking and ADMET prediction studies of some novel 2-((1H-indol-3-yl)thio)-N-phenyl-acetamide derivatives as anti-influenza A virus, *Egypt. J. Basic Appl. Sci.*, 9, 510–532.
- Adamska, M., 2018, Differentiation and transdifferentiation of sponge cells, *Mar. Org. as Model Syst. Biol. Med.*, 65, 229–253.
- Ahmed, S.A., Happi, G.M., Soh, D., and Salau, S., 2022, Molecular docking, pharmacokinetics and molecular dynamics simulation studies of some bioactive compounds isolated from entandrophragma congoense for antiplasmodial activity, *Asian J. Chem. Sci.*, 12, 1–13.
- Alhadrami, H.A., Sayed, A.M., El-Gendy, A.O., Shamikh, Y.I., Gaber, Y., Bakeer, W., Sheirf, N.H., Attia, E.Z., Shaban, G.M., Khalifa, B.A., Ngwa, C.J., Pradel, G., Rateb, M.E., Hassan, H.M., Alkhalifah, D.H.M., Abdelmohsen, U.R., and Hozzein, W.N., 2021, A metabolomic approach to target antimalarial metabolites in the artemisia annua fungal endophytes, *Sci. Rep.*, 11, 1–11.
- Almeida, M.C., Resende, D.I.S.P., da Costa, P.M., Pinto, M.M.M., and Sousa, E., 2021, Tryptophan derived natural marine alkaloids and synthetic derivatives as promising antimicrobial agents, *Eur. J. Med. Chem.*, 209, 112945.
- Alvarado, S., Roberts, B.F., Wright, A.E., and Chakrabarti, D., 2013, The bis(Indolyl)imidazole alkaloid nortopsentin a exhibits antiplasmodial activity, *Antimicrob. Agents Chemother.*, 57, 2362–2364.
- Anderson, D.D., Quintero, C.M., and Stover, P.J., 2011, Identification of a de novo thymidylate biosynthesis pathway in mammalian mitochondria, *Proc. Natl. Acad. Sci.*, 108, 15163–15168.
- Anjum, K., Abbas, S.Q., Shah, S.A.A., Akhter, N., Batool, S., and Hassan, S.S.U., 2016, Marine sponges as a drug treasure, *Biomol. Ther. (Seoul)*, 24, 347.
- Araujo, M.O., Freire Pessoa, H.L., Lira, A.B., Castillo, Y.P., and de Sousa, D.P., 2019, Synthesis, antibacterial evaluation, and QSAR of caffeic acid derivatives, *J. Chem.*, 1, 3408315.
- Asaad, I., Lundquist, C.J., Erdmann, M. V, and Costello, M.J., 2019, An interactive atlas for marine biodiversity conservation in the coral triangle, *Copernicus Publ.*, 11, 163–174.
- Bakchi, B., Krishna, A.D., Sreecharan, E., Ganesh, V.B.J., Niharika, M., Maharshi, S., Puttagunta, S.B., Sigalapalli, D.K., Bhandare, R.R., and Shaik, A.B., 2022, An overview on applications of SwissADME web tool in the design and development of anticancer, antitubercular and antimicrobial agents: A medicinal chemist's perspective, *J. Mol. Struct.*, 1259, 132712.
- Banerjee, P., Eckert, A.O., Schrey, A.K., and Preissner, R., 2018, ProTox-II: A webserver for the prediction of toxicity of chemicals, *Nucleic Acids Res.*, 46,

257–263.

- Banerjee, P., Kemmler, E., Dunkel, M., and Preissner, R., 2024, ProTox 3.0: a webserver for the prediction of toxicity of chemicals, *Nucleic Acids Res.*, 52, 513–520.
- Berlinck, R.G.S., Braekman, J.C., Daloze, D., Bruno, I., Riccio, R., Ferri, S., Spampinato, S., and Speroni, E., 1993, Polycyclic guanidine alkaloids from the marine sponge *crambe crambe* and Ca⁺⁺ channel blocker activity of crambescidin 816, *J. Nat. Prod.*, 56, 1007–1015.
- Blunt, J.W., Copp, B.R., Keyzers, R.A., Munroa, M.H., and Prinsepd, M.R., 2016, Marine natural products, *Nat. Prod. Rep.*, 33, 382–431.
- Burgess, J.G., 2012, New and emerging analytical techniques for marine biotechnology, *Curr. Opin. Biotechnol.*, 23, 29–33.
- Byler, K.G., Wang, C., and Setzer, W.N., 2009, Quinoline alkaloids as intercalative topoisomerase inhibitors, *J. Mol. Model.* 2009 1512, 15, 1417–1426.
- Carroll, A.R., Copp, B.R., Davis, R.A., Keyzers, R.A., and Michele R, 2019, Marine natural products, *Nat. Prod. Rep.*, 36, 122–173.
- Chauhan, M., Saxena, A., and Saha, B., 2021, An insight in anti-malarial potential of indole scaffold: A review, *Eur. J. Med. Chem.*, 218, 113400.
- Cui, L., Mharakurwa, S., Ndiaye, D., Rathod, P.K., and Rosenthal, P.J., 2015, Antimalarial drug resistance: literature review and activities and findings of the ICEMR network, *Am. J. Trop. Med. Hyg.*, 93, 57–68.
- Dangi, P., Jain, R., Mamidala, R., Sharma, V., Agarwal, S., Bathula, C., Thirumalachary, M., Sen, S., and Singh, S., 2019, Natural product inspired novel indole based chiral scaffold kills human malaria parasites via ionic imbalance mediated cell death, *Sci. Rep.*, 9, 1–17.
- Danquah, B.A., Chirove, F., and Banasiak, J., 2019, Effective and ineffective treatment in a malaria model for humans in an endemic region, *Afrika Mat.*, 30, 1181–1204.
- Desoubzdanne, D., Marcourt, L., Raux, R., Chevalley, S., Dorin, D., Doerig, C., Valentin, A., Ausseil, F., and Debitus, C., 2008, Alisiaquinones and Alisiaquinol, dual inhibitors of *Plasmodium falciparum* enzyme targets from a new caledonian deep water sponge, *J. Nat. Prod.*, 71, 1189–1192.
- Devi, K., Chandra, A., Kumar, V., Othayoth, J., Rathi, B., and Goel, V.K., 2024, Identification of novel peptide inhibitors of *Plasmodium falciparum* dihydrofolate reductase (PfDHFR): molecular docking and MD simulation studies, *J. Biomol. Struct. Dyn.*, 1–11.
- Dondorp, A.M., Nosten, F., Yi, P., Das, D., Phyto, A.P., Tarning, J., Lwin, K.M., Ariey, F., Hanpithakpong, W., Lee, S.J., Ringwald, P., Silamut, K., Imwong, M., Chotivanich, K., Lim, P., Herdman, T., An, S.S., Yeung, S., Singhasivanon, P., et al., 2009, Artemisinin resistance in *Plasmodium falciparum* malaria, *N. Engl. J. Med.*, 361, 455–467.
- Faloye, K.O., Tripathi, M.K., Adesida, S.A., Oguntimehin, S.A., Oyetunde, Y.M., Adewole, A.H., Ogunlowo, I.I., Idowu, E.A., Olayemi, U.I., and Dosumu, O.D., 2024, Antimalarial potential, LC–MS secondary metabolite profiling and computational studies of *Zingiber officinale*, *J. Biomol. Struct. Dyn.*, 42,

2570–2585.

- Gamaleldin, N.M., Bahr, H.S., Mostafa, Y.A., McAllister, B.F., El Zawily, A., Ngwa, C.J., Pradel, G., Hassan, H.M., Abdelmohsen, U.R., Alkhalifah, D.H.M., and Hozzein, W.N., 2022, Metabolomic profiling, in vitro antimalarial investigation and in silico modeling of the marine actinobacterium strain Rhodococcus sp. UR111 associated with the soft coral Nephthea sp., *Antibiotics*, 11, 1631.
- Goey, A.K.L., Chau, C.H., Sissung, T.M., Cook, K.M., Venzon, D.J., Castro, A., Ransom, T.R., Henrich, C.J., McKee, T.C., McMahon, J.B., Grkovic, T., Cadelis, M.M., Copp, B.R., Gustafson, K.R., and Figg, W.D., 2016, Screening and biological effects of marine pyrroloiminoquinone alkaloids: potential inhibitors of the HIF-1 α /p300 interaction, *J. Nat. Prod.*, 79, 1267–1275.
- Guedes, I.A., Barreto, A.M.S., Marinho, D., Krempser, E., Kuenemann, M.A., Sperandio, O., Dardenne, L.E., and Miteva, M.A., 2021, New machine learning and physics-based scoring functions for drug discovery, *Sci. Rep.*, 11, 1–19.
- Guleria, V., Pal, T., Sharma, B., Chauhan, S., and Jaiswal, V., 2021, Pharmacokinetic and molecular docking studies to design antimalarial compounds targeting Actin I, *Int. J. Health Sci. (Qassim)*, 15, 4–15.
- Hikmawan, B.D., Wahyuono, S., and Setyowati, E.P., 2020, Marine sponge compounds with antiplasmodial properties: Focus on in vitro study against Plasmodium falciparum, *J. Appl. Pharm. Sci.*, 10, 142–157.
- Hooper, J.N.A. and Van Soest, R.W.M., 2002, Systema Porifera. A guide to the classification of sponges,. In, *In Systema Porifera: A guide to the classification of sponges*. Springer US, Boston, 1–7.
- Hu, Y., Chen, S., Yang, F., and Dong, S., 2021, Marine indole alkaloids— isolation, structure and bioactivities, *Mar. Drugs*, 19, 658.
- Huang, R.Y., Chen, W.T., Kurtan, T., Mandi, A., Ding, J., Li, J., Li, X.W., and Guo, Y.W., 2016, Bioactive isoquinolinequinone alkaloids from the South China Sea nudibranch Jorunna funebris and its sponge-prey Xestospongia sp., *Future Med. Chem.*, 8, 17–27.
- Imada, K., Sakai, E., Kato, H., Kawabata, T., Yoshinaga, S., Nehira, T., Terasawa, H., and Tsukamoto, S., 2013, Reticulatins A and B and hyrtioreticulin F from the marine sponge Hyrtios reticulatus, *Tetrahedron*, 69, 7051–7055.
- Ju, E., Latif, A., Kong, C.S., Seo, Y., Lee, Y.J., Dalal, S.R., Cassera, M.B., and Kingston, D.G.I., 2018, Antimalarial activity of the isolates from the marine sponge Hyrtios erectus against the chloroquine-resistant Dd2 strain of Plasmodium falciparum, *Zeitschrift fur Naturforsch. - Sect. C J. Biosci.*, 73, 397–400.
- Kavishe, R.A., Koenderink, J.B., and Alifrangis, M., 2017, Oxidative stress in malaria and artemisinin combination therapy: Pros and Cons, *FEBS J.*, 284, 2579–2591.
- Kemenkes, 2018, Profil kesehatan pemerintah provinsi Papua Barat.
- Kirsch, G., Köng, G.M., Wright, A.D., and Kaminsky, R., 2000, A new bioactive

- sesterterpene and antiplasmodial alkaloids from the marine sponge *Hyrtios cf. erecta*, *Trop. Parasitol.*, 63, 825–829.
- Kiziltas, H., Goren, A.C., Alwasel, S.H., and Gulcin, İ., 2022, Sahlep (*Dactylorhiza osmanica*): phytochemical analyses by LC-HRMS, molecular docking, antioxidant activity, and enzyme inhibition profiles, *Molecules*, 27, 1–21.
- Klenchin, V.A., Allingham, J.S., King, R., Tanaka, J., Marriott, G., and Rayment, I., 2003, Trisoxazole macrolide toxins mimic the binding of actin-capping proteins to actin, *Nat. Struct. Mol. Biol.*, 10, 1058–1063.
- Komlaga, G., Cojean, S., Dickson, R.A., Beniddir, M.A., Suyyagh-Albouz, S., Mensah, M.L.K., Agyare, C., Champy, P., and Loiseau, P.M., 2016, Antiplasmodial activity of selected medicinal plants used to treat malaria in Ghana, *Parasitol. Res.*, 115, 3185–3195.
- Kumar, S.C.M., 2017, Drug resistance in malaria. In *In Drug resistance in bacteria, fungi, malaria, and cancer*. Cham: Springer International Publishing, 429–447.
- Kurniawan, I., Fareza, M.S., and Iswanto, P., 2021, Comfa, molecular docking and molecular dynamics studies on cycloguanil analogues as potent antimalarial agents, *Indones. J. Chem.*, 21, 66–76.
- Laurent, D., Jullian, V., Parenty, A., Knibiehler, M., Dorin, D., Schmitt, S., Lozach, O., Lebouvier, N., Frostin, M., Alby, F., Maurel, S., Doerig, C., Meijer, L., and Sauvain, M., 2006, Antimalarial potential of xestoquinone, a protein kinase inhibitor isolated from a Vanuatu marine sponge *Xestospongia sp.*, *Bioorg. Med. Chem.*, 14, 4477–4482.
- Li, H., Sze, K.H., Lu, G., and Ballester, P.J., 2020, Machine-learning scoring functions for structure-based drug lead optimization, *Wiley Interdiscip. Rev. Comput. Mol. Sci.*, 10, 1–20.
- Li, Q., Li, Y., Wang, J., Palaeogeography, W.K.-, Palaeoclimatology, U., and 2015, U., 2015, Early Ordovician lithistid sponge–*Calathium* reefs on the Yangtze platform and their paleoceanographic implications, *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 425, 84–96.
- Lipinski, C.A., Lombardo, F., Dominy, B.W., and Feeney, P.J., 1997, Experimental and computational approaches to estimate solubility and permeability in drug discovery and development settings, *Adv. Drug Deliv. Rev.*, 23, 3–25.
- Madduppa, H., Schupp, P.J., Faisal, M.R., Sastria, M.Y., and Thoms, C., 2017, Persistent outbreaks of the “black disease” sponge *Terpios hoshinota* in Indonesian coral reefs, *Mar. Biodivers.*, 47, 149–151.
- Made, I., Swantara, D., Rita, W.S., and Hernindya, D.A., 2017, Identifikasi isolat antikanker spons *Hyrtios erecta*, *Indones. J. Cancer*, 10, 123–129.
- Mahfur, Wahyuono, S., Purwantini, I., and Setyowati, E.P., 2022, In vitro antiplasmodial activities of the fractions of *Hyrtios reticulatus* sponge extract, *J. Appl. Pharm. Sci.*, 12, 114–120.
- Maia, E.H.B., Assis, L.C., de Oliveira, T.A., da Silva, A.M., and Taranto, A.G., 2020, Structure-based virtual screening: from classical to artificial intelligence, *Front. Chem.*, 8, 343.

- Mani, L., Jullian, V., Mourkazel, B., Valentin, A., Dubois, J., Cresteil, T., Folcher, E., Hooper, J.N.A., Erpenbeck, D., Aalbersberg, W., and Debitus, C., 2012, New antiplasmodial bromotyrosine derivatives from *Suberea ianthelliformis* lendenfeld, 1888, *Chem. Biodivers.*, 9, 1436–1451.
- Mckenna, S.A., Allen, G.R., and Suryadi, S., 2002, *A marine rapid assessment of the Raja Ampat islands, Papua Province, Indonesia*, Conservation International, Center for Applied Biodiversity Science, Department of Conservation Biology, 1-193.
- Murthihapsari, M., Salam, S., Kurnia, D., Darwati, D., Kadarusman, K., Abdullah, F.F., Herlina, T., Husna, M.H., Awang, K., Shiono, Y., Azmi, M.N., and Supratman, U., 2021, A new antiplasmodial sterol from Indonesian marine sponge, *Xestospongia* sp, *Nat. Prod. Res.*, 35, 937–944.
- Nanda, W.E., Gurning, K., Swasono, R.T., and Haryadi, W., 2025, Bioactive compounds and antimalarial potential of sponge *Aaptos suberitoides*, *J. Appl. Pharm. Sci.*, 15, 252–261.
- Nishi, A.N., Chowdhury, S., Mondal, P., Akram, M.W., and Ullah, M.S., 2023, Efficacy of entomopathogen *Cordyceps tenuipes* (Peck) Kepler, B. Shrestha et Spatafora against spider mite *Tetranychus piercei* McGregor (Acari: Tetranychidae), *Taylor Fr.*, 49, 239–246.
- Ntie-Kang, F., Onguéné, P.A., Lifongo, L.L., Ndom, J.C., Sippl, W., and Mbaze, L.M.A., 2013, The potential of anti-malarial compounds derived from African medicinal plants, part II: A pharmacological evaluation of non-alkaloids and non-terpenoids, *Malar. J.*, 12, 449.
- Owoloye, A.J., Ligali, F.C., Enejoh, O.A., Musa, A.Z., Aina, O., Idowu, E.T., and Oyebola, K.M., 2022, Molecular docking, simulation and binding free energy analysis of small molecules as Pf HT1 inhibitors, *PLoS One*, 17, 1–18.
- Pal, K., Raza, M.K., Legac, J., Rahman, A., Manzoor, S., Bhattacharjee, S., Rosenthal, P.J., and Hoda, N., 2023, Identification, in-vitro anti-plasmodial assessment and docking studies of series of tetrahydrobenzothieno[2,3-d]pyrimidine-acetamide molecular hybrids as potential antimalarial agents, *Eur. J. Med. Chem.*, 248, 115055.
- Blunt, J.W., Copp, B.R., Keyzers, R.A., Munro, M.H., and Prinsep, M.R., 2016, Marine natural products, *Nat. Prod. Rep.*, 33, 382–431.
- Murthihapsari, M., Salam, S., Kurnia, D., Darwati, D., Kadarusman, K., Abdullah, F.F., Herlina, T., Husna, M.H., Awang, K., Shiono, Y., Azmi, M.N., and Supratman, U., 2021, A new antiplasmodial sterol from Indonesian marine sponge, *Xestospongia* sp, *Nat. Prod. Res.*, 35, 937–944.
- Parra, L.L., Bertonha, A.F., Severo, I.R., Aguiar, A.C., Souza, G.E., Oliva, G., Guido, R.V., Grazzia, N., Costa, T.R., Miguel, D.C., and Gadelha, F.R., 2018, Isolation, derivative synthesis, and structure–activity relationships of antiparasitic bromopyrrole alkaloids from the marine sponge *Tedania brasiliensis*, *J. Nat. Prod.*, 81, 188–202.
- Parshikov, I.A., Netrusov, A.I., and Sutherland, J.B., 2012, Microbial transformation of antimalarial terpenoids, *Biotechnol. Adv.*, 30, 1516–1523.
- Paul, V.J. and Puglisi, M.P., 2004, Chemical mediation of interactions among

- marine organisms, *Nat. Prod. Rep.*, 21, 189–209.
- Paul, V.J., Puglisi, M.P., and Ritson-Williams, R., 2006, Marine chemical ecology, *Nat. Prod. Rep.*, 23, 153–180.
- Pereira, R., Benedetti, R., Perez-Rodriguez, S., Nebbioso, A., Garcia-Rodriguez, J., Carafa, V., Stuhldreier, M., Conte, M., Rodriguez-Barrios, F., Stunnenberg, H.G., Gronemeyer, H., Altucci, L., and De Lera, A.R., 2012, Indole-derived psammaphin analogues as epigenetic modulators with multiple inhibitory activities, *J. Med. Chem.*, 55, 9467–9491.
- Pettit, G.R., Tan, R., and Cichacz, Z.A., 2005, Antineoplastic agents. 542. Isolation and structure of sesterstatin 6 from the Indian ocean sponge *Hyrtios erecta*, *J. Nat. Prod.*, 68, 1253–1255.
- Priyanca Devi, A., Ameta, K.L., Alshehri, S., Almalki, A.H., Haque, S., Sayyed, R.Z., Bhardwaj, T., and Somvanshi, P., 2023, Pharmacokinetics of some newly synthesized 1, 5- benzothiazepine scaffolds: A molecular docking and molecular dynamics simulation approach, *J. King Saud Univ. - Sci.*, 35, 102528.
- Qiu, Y., Deng, Z., Pei, Y., Fu, H., Li, J., Proksch, P., and Lin, W., 2004, Sesterterpenoids from the marine sponge *Hyrtios erectus*, *J. Nat. Prod.*, 67, 921–924.
- Ravichandran, S., Kathiresan, K., and Balaram, H., 2017, A study of malaria resistance and the urgent need to discover new antimalarials, *African J. Malar. Trop. Dis.*, 5, 328–332.
- Rodolfo, C.M., Leonardo, P. de A., Joao, R.B. de M.B., and Nelson, J.F. da S.M.F. da S., 2021, Molecular docking study involving bioactive natural compounds against SARS-CoV-2 proteins, *Nat. Resour. Hum. Heal.*, 2, 366–377.
- Salo-Ahen, O.M.H., Alanko, I., Bhadane, R., Alexandre, A.M., Honorato, R.V., Hossain, S., Juffer, A.H., Kabedev, A., Lahtela-Kakkonen, M., Larsen, A.S., Lescrinier, E., Marimuthu, P., Mirza, M.U., Mustafa, G., Nunes-Alves, A., Pantsar, T., Saadabadi, A., Singaravelu, K., and Vanmeert, M., 2021, Molecular dynamics simulations in drug discovery and pharmaceutical development, *Processes*, 9, 1–63.
- Senerovic, L., Opsenica, D., Moric, I., Aleksic, I., Spasić, M., and Vasiljevic, B., 2020, Quinolines and quinolones as antibacterial, antifungal, anti-virulence, antiviral and anti-parasitic agents, *Adv. Exp. Med. Biol.*, 1282, 37–69.
- Shady, N.H., El-Hossary, E.M., Fouad, M.A., Gulder, T.A.M., Kamel, M.S., and Abdelmohsen, U.R., 2017, Bioactive Natural Products of Marine Sponges from the Genus *Hyrtios*, *Mol. 2017, Vol. 22, Page 781*, 22, 781.
- Sugiyama, Y., Ito, Y., Suzuki, M., and Hirota, A., 2009, Indole derivatives from a marine sponge-derived yeast as DPPH radical scavengers, *J. Nat. Prod.*, 72, 2069–2071.
- Taglialatela-Scafati, O., Fattorusso, E., Romano, A., Scala, F., Barone, V., Cimino, P., Stendardo, E., Catalanotti, B., Persico, M., and Fattorusso, C., 2010, Insight into the mechanism of action of plakortins, simple 1,2-dioxane antimalarials, *Org. Biomol. Chem.*, 8, 846–856.
- Tajuddeen, N. and Van Heerden, F.R., 2019, Antiplasmodial natural products: An

- update, *Malar. J.*, 18, 1–62.
- Tanaka, N., Momose, R., Takahashi-Nakaguchi, A., Gonoi, T., Fromont, J., and Kobayashi, J., 2014, Hyrtimomines, indole alkaloids from Okinawan marine sponges Hyrtios spp., *Tetrahedron*, 70, 832–837.
- Tanaka, N., Momose, R., Takahashi, Y., Kubota, T., Takahashi-Nakaguchi, A., Gonoi, T., Fromont, J., and Kobayashi, J., 2013, Hyrtimomines D and E, bisindole alkaloids from a marine sponge Hyrtios sp., *Tetrahedron Lett.*, 54, 4038–4040.
- Tarazona, G., Santamaria, G., Cruz, P.G., Fernandez, R., Perez, M., Martinez-Leal, J.F., Rodriguez, J., Jiménez, C., and Cuevas, C., 2017, Cytotoxic Anomoian B and Aplyzanzine B, new Bromotyrosine alkaloids from Indonesian sponges, *ACS Omega*, 2, 3494–3501.
- Tasdemir, D., Topaloglu, B., Perozzo, R., Brun, R., O'Neill, R., Carballeira, N.M., Zhang, X., Tonge, P.J., Linden, A., and Rüedi, P., 2007, Marine natural products from the Turkish sponge *Agelas oroides* that inhibit the enoyl reductases from *Plasmodium falciparum*, *Mycobacterium tuberculosis* and *Escherichia coli*, *Bioorg. Med. Chem.*, 15, 6834–6845.
- Thawabteh, A., Juma, S., Bader, M., Karaman, D., Scrano, L., Bufo, S.A., and Karaman, R., 2019, The biological activity of natural alkaloids against herbivores, cancerous cells and pathogens, *Toxins (Basel)*, 11, 656.
- Thomas, T.R.A., Kavlekar, D.P., and LokaBharathi, P.A., 2010, Marine drugs from sponge-microbe association - A review, *Mar. Drugs*, 8, 1417–1468.
- Turschner, S. and Efferth, T., 2009, Drug resistance in Plasmodium: natural products in the fight against malaria, *Mini Rev. Med. Chem.*, 9, 206–214.
- Vyas, V.K., Shukla, T., and Sharma, M., 2023, Medicinal chemistry approaches for the discovery of Plasmodium falciparum dihydroorotate dehydrogenase inhibitors as antimalarial agents, *Taylor Fr.*, 15, 1295–1321.
- Waller, R.F., Keeling, P.J., Donald, R.G.K., Striepen, B., Handman, E., Lang-Unnasch, N., Cowman, A.F., Besra, G.S., Roos, D.S., and Mcfadden, G.I., 1998, Nuclear-encoded proteins target to the plastid in *Toxoplasma gondii* and *Plasmodium falciparum*, *Proc. Natl. Acad. Sci.*, 95, 12352–12357.
- Wang, J., Zhang, C.J., Chia, W.N., Loh, C.C.Y., Li, Z., Lee, Y.M., He, Y., Yuan, L.X., Lim, T.K., Liu, M., Liew, C.X., Lee, Y.Q., Zhang, J., Lu, N., Lim, C.T., Hua, Z.C., Liu, B., Shen, H.M., Tan, K.S.W., et al., 2015, Haem-activated promiscuous targeting of artemisinin in *Plasmodium falciparum*, *Nat. Commun.* 2015 61, 6, 1–11.
- White, N.J., 2010, Artemisinin resistance-the clock is ticking, *Lancet*, 376, 2051–2052.
- WHO, 2015, World Malaria Report, World Health Organization.
- WHO, 2019, World Malaria Report, World Health Organization, Geneva.
- Wongsrichanalai, C., Pickard, A.L., Wernsdorfer, W.H., and Meshnick, S.R., 2002, Epidemiology of drug-resistant malaria, *Lancet Infect. Dis.*, 2, 209–218.
- Yamanokuchi, R., Imada, K., Miyazaki, M., ... H.K.-B. & medicinal, and 2012, U., 2012, Hyrtioreticulins A–E, indole alkaloids inhibiting the ubiquitin-activating enzyme, from the marine sponge *Hyrtios reticulatus*, *Bioorg. Med.*

Chem., 20, 4437–4442.

Youssef, D.T.A., 2005, Hyrtioerectines A-C, cytotoxic alkaloids from the red sea sponge *Hyrtios erectus*, *J. Nat. Prod.*, 68, 1416–1419.

Zakiah, M., Syarif, R.A., Mustofa, M., Jumina, J., Fatmasari, N., and Sholikhah, E.N., 2021, In vitro antiplasmodial, heme polymerization, and cytotoxicity of hydroxyxanthone derivatives, *J. Trop. Med.*, 1, 8866681.

Zhao, J., Cao, Y., and Zhang, L., 2020, Exploring the computational methods for protein-ligand binding site prediction, *Comput. Struct. Biotechnol. J.*, 18, 417–426.

Zhu, Y., Zhao, J., Luo, L., Gao, Y., Bao, H., Li, P., and Zhang, H., 2021, Research progress of indole compounds with potential antidiabetic activity, *Eur. J. Med. Chem.*, 223, 113665.