

## DAFTAR PUSTAKA

- Abdel-Magid, A.F., Carson, K.G., Harris, B.D., Maryanoff, C.A., and Shah, R.D., 1996. Reductive Amination of Aldehydes and Ketones with Sodium Triacetoxyborohydride. Studies on Direct and Indirect Reductive Amination Procedures <sup>1</sup>. *The Journal of Organic Chemistry*, **61**: 3849–3862.
- Alahari, A., Trivelli, X., Guérardel, Y., Dover, L.G., Besra, G.S., Sacchettini, J.C., dkk., 2007. Thiacetazone, an Antitubercular Drug that Inhibits Cyclopropanation of Cell Wall Mycolic Acids in Mycobacteria. *PLoS ONE*, **2**: e1343.
- Alcala, L., Ruiz-Serrano, M.J., Perez-Fernandez Turegano, C., Garcia de Viedma, D., Diaz-Infantes, M., Marin-Arriaza, M., dkk., 2003. In Vitro Activities of Linezolid against Clinical Isolates of Mycobacterium tuberculosis That Are Susceptible or Resistant to First-Line Antituberculous Drugs. *Antimicrobial Agents and Chemotherapy*, **47**: 416–417.
- Alinezhad, H., Tajbakhsh, M., and Hamidi, N., 2010a. Reductive amination of aldehydes and ketones using sodium borohydride in the presence of silica chloride under solvent-free conditions. *Chinese Chemical Letters*, **21**: 47–50.
- Alinezhad, H., Tajbakhsh, M., and Mahdavi, N., 2010b. One-Pot Reductive Amination of Carbonyl Compounds Using Sodium Borohydride–Amberlyst 15. *Synthetic Communications*, **40**: 951–956.
- Ali-Vehmas, T., Louhi, M., and Sandholm, M., 1991. Automation of the resazurin reduction test using fluorometry of microtitration trays. *Zoonoses and Public Health*, **38**: 358–372.
- Almansour, A.I., Suresh Kumar, R., Arumugam, N., and Sriram, D., 2012. A solvent free, four-component synthesis and 1,3-dipolar cycloaddition of 4(H)-pyrans with nitrile oxides: Synthesis and discovery of antimycobacterial activity of enantiomerically pure 1,2,4-oxadiazoles. *European Journal of Medicinal Chemistry*, **53**: 416–423.
- Andries, K., 2005. A Diarylquinoline Drug Active on the ATP Synthase of Mycobacterium tuberculosis. *Science*, **307**: 223–227.
- Aranzamendi, E., Arrasate, S., Sotomayor, N., González-Díaz, H., and Lete, E., 2016. Chiral Brønsted Acid-Catalyzed Enantioselective  $\alpha$ -Amidoalkylation Reactions: A Joint Experimental and Predictive Study. *ChemistryOpen*, **5**: 540–549.
- Aubry, A., Pan, X.-S., Fisher, L.M., Jarlier, V., and Cambau, E., 2004. Mycobacterium tuberculosis DNA Gyrase: Interaction with Quinolones and Correlation with Antimycobacterial Drug Activity. *Antimicrobial Agents and Chemotherapy*, **48**: 1281–1288.

- Bakuła, Z., Napiórkowska, A., Bielecki, J., Augustynowicz-Kopeć, E., Zwolska, Z., and Jagielski, T., 2013. Mutations in the *embB* Gene and Their Association with Ethambutol Resistance in Multidrug-Resistant *Mycobacterium tuberculosis* Clinical Isolates from Poland. *BioMed Research International*, **2013**: 1–5.
- Bedia, K.-K., Elçin, O., Seda, U., Fatma, K., Nathaly, S., Sevim, R., dkk., 2006. Synthesis and characterization of novel hydrazide–hydrazones and the study of their structure–antituberculosis activity. *European Journal of Medicinal Chemistry*, **41**: 1253–1261.
- Belanger, A.E., Besra, G.S., Ford, M.E., Mikusová, K., Belisle, J.T., Brennan, P.J., dkk., 1996. The *embAB* genes of *Mycobacterium avium* encode an arabinosyl transferase involved in cell wall arabinan biosynthesis that is the target for the antimycobacterial drug ethambutol. *Proceedings of the National Academy of Sciences*, **93**: 11919–11924.
- Bhoi, M.N., Borad, M.A., Pithawala, E.A., and Patel, H.D., 2016. Novel benzothiazole containing 4H-pyrimido[2,1-b]benzothiazoles derivatives: One pot, solvent-free microwave assisted synthesis and their biological evaluation. *Arabian Journal of Chemistry*, .
- Brooks, G.F., Carroll, K.C., Butel, J.S., Morse, S.A., and Mietzner, T.A., 2015. *Jawetz, Melnick, & Adelberg's Medical Microbiology*, 25th ed. The McGraw-Hill Companies, California. USA.
- Brossier, F., Sougakoff, W., Bernard, C., Petrou, M., Adeyema, K., Pham, A., dkk., 2015. Molecular Analysis of the *embCAB* Locus and *embR* Gene Involved in Ethambutol Resistance in Clinical Isolates of *Mycobacterium tuberculosis* in France. *Antimicrobial Agents and Chemotherapy*, **59**: 4800–4808.
- Bruning, J.B., Murillo, A.C., Chacon, O., Barletta, R.G., and Sacchettini, J.C., 2011. Structure of the *Mycobacterium tuberculosis* D-Alanine:D-Alanine Ligase, a Target of the Antituberculosis Drug D-Cycloserine. *Antimicrobial Agents and Chemotherapy*, **55**: 291–301.
- Bueno, C., Villegas, M.L., Bertolotti, S.G., Previtali, C.M., Neumann, M.G., and Encinas, andM V., 2002. The Excited-State Interaction of Resazurin and Resorufin with Amines in Aqueous Solutions. Photophysics and Photochemical Reaction. *Photochemistry and photobiology*, **76**: 385–390.
- Campbell, E.A., Korzheva, N., Mustaev, A., Murakami, K., Nair, S., Goldfarb, A., dkk., 2001. Structural mechanism for rifampicin inhibition of bacterial RNA polymerase. *Cell*, **104**: 901–912.
- Chadwick, D. and Cardew, G. (Editor), 1998. *Genetics and Tuberculosis*, Novartis Foundation symposium. Wiley, Chichester ; New York.
- Chapman, T.M., Davies, I.G., Gu, B., Block, T.M., Scopes, D.I., Hay, P.A., dkk., 2005. Glyco-and Peptidomimetics from Three-Component Joullie- Ugi

- Coupling Show Selective Antiviral Activity. *Journal of the American Chemical Society*, **127**: 506–507.
- Chen, H.-Y.T., Wang, C., Wu, X., Jiang, X., Catlow, C.R.A., and Xiao, J., 2015. Iridicycle-Catalysed Imine Reduction: An Experimental and Computational Study of the Mechanism. *Chemistry - A European Journal*, **21**: 16564–16577.
- Cho, B.T. and Kang, S.K., 2005. Direct and indirect reductive amination of aldehydes and ketones with solid acid-activated sodium borohydride under solvent-free conditions. *Tetrahedron*, **61**: 5725–5734.
- Coban, A.Y., Birinci, A., Ekinci, B., and Durupinar, B., 2004. Drug susceptibility testing of Mycobacterium tuberculosis by the broth microdilution method with 7H9 broth. *Memórias do Instituto Oswaldo Cruz*, **99**: 111–113.
- Collins, L. and Franzblau, S.G., 1997. Microplate alamar blue assay versus BACTEC 460 system for high-throughput screening of compounds against Mycobacterium tuberculosis and Mycobacterium avium. *Antimicrobial agents and chemotherapy*, **41**: 1004–1009.
- Colombo, M. and Peretto, I., 2008. Chemistry strategies in early drug discovery: an overview of recent trends. *Drug Discovery Today*, **13**: 677–684.
- Colthup, N.B., Daly, L.H., and Wiberley, S.E., 1975. *Introduction to Infrared and Raman Spectroscopy*, 2nd ed. Academic Press Inc., USA.
- Conley, R.T., 1975. *Infrared Spectroscopy*, 2nd ed. Allyn and Bacon Inc., USA.
- da Cunha, E.F.F., Ramalho, T.C., de Alencastro, R.B., and Maia, E.R., 2007. Docking Simulations and QM/MM Studies between Isoniazid Prodrug, Catalase-Peroxidase (KatG) and S315T Mutant from *Mycobacterium tuberculosis*. *Computational and Mathematical Methods in Medicine*, **8**: 113–124.
- De Souza, R.O.M.A., da Penha, E.T., Milagre, H.M.S., Garden, S.J., Esteves, P.M., Eberlin, M.N., dkk., 2009. The Three-Component Biginelli Reaction: A Combined Experimental and Theoretical Mechanistic Investigation. *Chemistry - A European Journal*, **15**: 9799–9804.
- Di Perri, G., 2004. Which agents should we use for the treatment of multidrug-resistant Mycobacterium tuberculosis? *Journal of Antimicrobial Chemotherapy*, **54**: 593–602.
- Diacon, A.H., Pym, A., Grobusch, M., Patientia, R., Rustomjee, R., Page-Shipp, L., dkk., 2009. The diarylquinoline TMC207 for multidrug-resistant tuberculosis. *New England Journal of Medicine*, **360**: 2397–2405.
- Dömling, A., Achatz, S., and Beck, B., 2007. Novel anti-tuberculosis agents from MCR libraries. *Bioorganic & Medicinal Chemistry Letters*, **17**: 5483–5486.

- Dömling, A., Wang, W., and Wang, K., 2012. Chemistry and Biology Of Multicomponent Reactions. *Chemical Reviews*, **112**: 3083–3135.
- Drlica, K. and Zhao, X., 1997. DNA gyrase, topoisomerase IV, and the 4-quinolones. *Microbiology and molecular biology reviews*, **61**: 377–392.
- Fessenden, R.J. dan Fessenden, J.S., 1994. *Kimia Organik*, 3rd ed. Penerbit Erlangga, Jakarta. Indonesia.
- Fooladi, I., Ali, A., and Riazipour, M., 2009. A method to survey heat labile anti-tuberculosis drugs. *Jundishapur Journal of Microbiology*, **2**: 112–117.
- Forbes, M., Kuck, N.A., and Peets, E.A., 1962. Mode of action of ethambutol. *Journal of bacteriology*, **84**: 1099–1103.
- Fortun, J., 2005. Linezolid for the treatment of multidrug-resistant tuberculosis. *Journal of Antimicrobial Chemotherapy*, **56**: 180–185.
- Franzblau, S.G., Witzig, R.S., McLaughlin, J.C., Torres, P., Madico, G., Hernandez, A., dkk., 1998. Rapid, low-technology MIC determination with clinical Mycobacterium tuberculosis isolates by using the microplate Alamar Blue assay. *Journal of clinical microbiology*, **36**: 362–366.
- Freed, D.A. and Kozlowski, M.C., 2001. N-Acyl imine and enamide intermediates in the palladium-catalyzed amidocarbonylation reaction. *Tetrahedron Letters*, **42**: 3403–3406.
- Fu, L.M. and Shinnick, T.M., 2007. Genome-wide exploration of the drug action of capreomycin on Mycobacterium tuberculosis using Affymetrix oligonucleotide GeneChips. *Journal of Infection*, **54**: 277–284.
- García Martínez, A., Teso Vilar, E., García Fraile, A., and Martínez-Ruiz, P., 2001. Influence of the Bridgehead Substituent on the Stereoselective Leuckart Reaction of 2-Norbornanones- Skeletal Rearrangement versus Structural Retention. *European Journal of Organic Chemistry*, **2001**: 2805–2808.
- Gill, W.P., Harik, N.S., Whiddon, M.R., Liao, R.P., Mittler, J.E., and Sherman, D.R., 2009. A replication clock for Mycobacterium tuberculosis. *Nature Medicine*, **15**: 211–214.
- Gladwin, M. and Trattler, B., 2011. *Clinical Microbiology Made Ridiculously Simple*. MedMaster Inc, Miami. USA.
- Goldstein, B.P., 2014. Resistance to rifampicin: a review. *The Journal of Antibiotics*, **67**: 625–630.
- Gopal, P., Yee, M., Sarathy, J., Low, J.L., Sarathy, J.P., Kaya, F., dkk., 2016. Pyrazinamide Resistance Is Caused by Two Distinct Mechanisms: Prevention of Coenzyme A Depletion and Loss of Virulence Factor Synthesis. *ACS Infectious Diseases*, **2**: 616–626.
- Grange, J.M., 2012. Mycobacterium, dalam: *Medical Microbiology*. Churchill Livingstone Elsevier, Nottingham. USA, hal. 211–221.

- Gross, J.H., 2011. *Mass Spectrometry*. Springer Berlin Heidelberg, Berlin, Heidelberg.
- Grzegorzewicz, A.E., Kordulakova, J., Jones, V., Born, S.E.M., Belardinelli, J.M., Vaquie, A., dkk., 2012. A Common Mechanism of Inhibition of the Mycobacterium tuberculosis Mycolic Acid Biosynthetic Pathway by Isoxyl and Thiacetazone. *Journal of Biological Chemistry*, **287**: 38434–38441.
- Gunasekaran, P., Perumal, S., Yogeewari, P., and Sriram, D., 2011. A facile four-component sequential protocol in the expedient synthesis of novel 2-aryl-5-methyl-2,3-dihydro-1H-3-pyrazolones in water and their antitubercular evaluation. *European Journal of Medicinal Chemistry*, **46**: 4530–4536.
- Hartung, A., Seufert, F., Berges, C., Gessner, V., and Holzgrabe, U., 2012. One-Pot Ugi/Aza-Michael Synthesis of Highly Substituted 2,5-Diketopiperazines with Anti-Proliferative Properties. *Molecules*, **17**: 14685–14699.
- He, R., Zeng, L.-F., He, Y., Wu, L., Michelle Gunawan, A., and Zhang, Z.-Y., 2013. Organocatalytic multicomponent reaction for the acquisition of a selective inhibitor of mPTPB, a virulence factor of tuberculosis. *Chemical Communications*, **49**: 2064.
- Hebach, C. and Kazmaier, U., 2003. Via Ugi reactions to conformationally fixed cyclic peptides Dedicated to Professor Dr D. Seebach on the occasion of his 65th birthday. *Chemical Communications*, 596–597.
- Heydari, A., Arefi, A., and Esfandyari, M., 2007a. Direct reductive amination of aldehydes and selective reduction of  $\alpha,\beta$ -unsaturated carbonyl compounds by  $\text{NaBH}_4$  in the presence of guanidine hydrochloride in water. *Journal of Molecular Catalysis A: Chemical*, **274**: 169–172.
- Heydari, A., Khaksar, S., Akbari, J., Esfandyari, M., Pourayoubi, M., and Tajbakhsh, M., 2007b. Direct reductive amination and selective 1,2-reduction of  $\alpha,\beta$ -unsaturated aldehydes and ketones by  $\text{NaBH}_4$  using H3PW12O40 as catalyst. *Tetrahedron Letters*, **48**: 1135–1138.
- Hoffmann, E. de and Stroobant, V., 2012. *Mass Spectrometry: Principles and Applications*. John Wiley & Sons, Chichester.
- Hooper, D.C., 1999. Mode of Action of Fluoroquinolones. *Drugs*, **58**: 6–10.
- Hua, X., Guo, H., and Xie, B., 2011. One-pot Multi-component Synthesis of Amidoalkyl Naphthols with Potassium Hydrogen Sulfate as Catalyst under Solvent-free Condition. *International Journal of Chemistry*, .
- Jacobi von Wangelin, A., Neumann, H., Gördes, D., Klaus, S., Strübing, D., and Beller, M., 2003. Multicomponent Coupling Reactions for Organic Synthesis: Chemoselective Reactions with Amide–Aldehyde Mixtures. *Chemistry - A European Journal*, **9**: 4286–4294.
- Jadaun, G.P.S., Das, R., Upadhyay, P., Chauhan, D.S., Sharma, V.D., and Katoch, V.M., 2009. Role of embCAB gene mutations in ethambutol resistance in



- Mycobacterium tuberculosis isolates from India. *International Journal of Antimicrobial Agents*, **33**: 483–486.
- Jana, S. and Deb, J.K., 2006. Molecular understanding of aminoglycoside action and resistance. *Applied Microbiology and Biotechnology*, **70**: 140–150.
- Jena, L., Waghmare, P., Kashikar, S., Kumar, S., and Harinath, B.C., 2014. Computational approach to understanding the mechanism of action of isoniazid, an anti-TB drug. *International Journal of Mycobacteriology*, **3**: 276–282.
- Kabanda, M.M., Tran, V.T., Tran, Q.T., and Ebenso, E.E., 2014. A computational study of pyrazinamide: Tautomerism, acid–base properties, micro-solvation effects and acid hydrolysis mechanism. *Computational and Theoretical Chemistry*, **1046**: 30–41.
- Kalaria, P.N., Satasia, S.P., Avalani, J.R., and Raval, D.K., 2014. Ultrasound-assisted one-pot four-component synthesis of novel 2-amino-3-cyanopyridine derivatives bearing 5-imidazopyrazole scaffold and their biological broadcast. *European Journal of Medicinal Chemistry*, **83**: 655–664.
- Kemenkes, 2012. *Petunjuk Teknis Pemeriksaan Biakan, Identifikasi, dan Uji Kepekaan Mycobacterium Tuberculosis Pada Media Padat*. Kementerian Kesehatan RI Direktorat Jenderal Bina Upaya Kesehatan Direktorat Jenderal Pengendalian Penyakit and Penyehatan Lingkungan, Jakarta.
- Kemenkes, 2014. *Pedoman Nasional Pengendalian Tuberkulosis*. Kementrian Kesehatan RI, Jakarta.
- Kemp, W., 1986. *NMR in Chemistry: A Multinuclear Introduction*. MacMillan Education Ltd., Inggris.
- Khan, G.A., War, J.A., Kumar, A., Sheikh, I.A., Saxena, A., and Das, R., 2016. A facile synthesis of novel indole derivatives as potential antitubercular agents. *Journal of Taibah University for Science*, .
- Kim, D., Huang, Y., Wang, K., and Dömling, A., 2013. New macrocycles with potent antituberculosis activity accessed by one-pot multicomponent reactions. *Chemistry of Heterocyclic Compounds*, **49**: 849–859.
- Krasavin, M., Parchinsky, V., Kantin, G., Manicheva, O., Dogonadze, M., Vinogradova, T., dkk., 2017. New nitrofurans amenable by isocyanide multicomponent chemistry are active against multidrug-resistant and poly-resistant Mycobacterium tuberculosis. *Bioorganic & Medicinal Chemistry*, **25**: 1867–1874.
- Kumar, R.S., Rajesh, S.M., Perumal, S., Banerjee, D., Yogeeswari, P., and Sriram, D., 2010. Novel three-component domino reactions of ketones, isatin and amino acids: Synthesis and discovery of antimycobacterial activity of highly functionalised novel dispiropyrrolidines. *European Journal of Medicinal Chemistry*, **45**: 411–422.

- Kumar, S. and Jena, L., 2014. Understanding Rifampicin Resistance in Tuberculosis through a Computational Approach. *Genomics & Informatics*, **12**: 276.
- Lambert, P., 2005. Bacterial resistance to antibiotics: Modified target sites. *Advanced Drug Delivery Reviews*, **57**: 1471–1485.
- Lechartier, B. and Cole, S.T., 2015. Mode of Action of Clofazimine and Combination Therapy with Benzothiazinones against Mycobacterium tuberculosis. *Antimicrobial Agents and Chemotherapy*, **59**: 4457–4463.
- Lee, T.A., 1998. *A Beginner's Guide to Mass Spectral Interpretation*. Wiley, Chichester ; New York.
- Lei, M., Ma, L., and Hu, L., 2010. A convenient one-pot synthesis of formamide derivatives using thiamine hydrochloride as a novel catalyst. *Tetrahedron Letters*, **51**: 4186–4188.
- Levinson, W., 2006. *Review of Medical Microbiology and Immunology*, 9th ed. The McGraw-Hill Companies, California. USA.
- Lin, Y.-M., Zhou, Y., Flavin, M.T., Zhou, L.-M., Nie, W., and Chen, F.-C., 2002. Chalcones and flavonoids as anti-tuberculosis agents. *Bioorganic & medicinal chemistry*, **10**: 2795–2802.
- Magalhães, M.L. and Blanchard, J.S., 2009. Aminoglycosides: Mechanisms of Action and Resistance, dalam: Mayers, D.L. (Editor), *Antimicrobial Drug Resistance*. Humana Press, Totowa, NJ, hal. 171–181.
- Mallikarjuna Rao, V., Mahesh Kumar, P., Rambabu, D., Kapavarapu, R., Shobha Rani, S., Misra, P., dkk., 2013. Novel alkynyl substituted 3,4-dihydropyrimidin-2(1H)-one derivatives as potential inhibitors of chorismate mutase. *Bioorganic Chemistry*, **51**: 48–53.
- Manikannan, R., Muthusubramanian, S., Yogeewari, P., and Sriram, D., 2010. Selective one-pot multicomponent synthesis and anti-tubercular evaluation of 5-(aryl/cyclohexylsulfanyl)-2-alkoxy-4,6-diaryl nicotinonitriles. *Bioorganic & Medicinal Chemistry Letters*, **20**: 3352–3355.
- Marrakchi, H., Lanéelle, G., and Quémard, A., 2000. InhA, a target of the antituberculous drug isoniazid, is involved in a mycobacterial fatty acid elongation system, FAS-II. *Microbiology*, **146**: 289–296.
- Maus, C.E., Plikaytis, B.B., and Shinnick, T.M., 2005. Mutation of tlyA Confers Capreomycin Resistance in Mycobacterium tuberculosis. *Antimicrobial Agents and Chemotherapy*, **49**: 571–577.
- Mc Dermott, P.F., Walker, R.D., and White, D.G., 2003. Antimicrobials: modes of action and mechanisms of resistance. *International journal of toxicology*, **22**: 135–143.
- McMurry, J.E., 2004. *Organic Chemistry*, 6th ed. Brooks/Cole, USA.

- Mehta, H.B., Dixit, B.C., and Dixit, R.B., 2014. l-Proline catalyzed one-pot multi-component synthesis of 2-(1,3-diphenyl-1H-pyrazol-4-yl)quinazolin-4(3H)-one derivatives and their biological studies. *Chinese Chemical Letters*, **25**: 741–744.
- Moosavi-Zare, A.R., Zolfigol, M.A., and Daraei, M., 2014. Solvent-Free Condensation of Phenols with Aldehydes and Amides Using 3-Methyl-1-sulfonic Acid Imidazolium Chloride. *Synlett*, **25**: 1173–1177.
- Muthusaravanan, S., Perumal, S., Yogeewari, P., and Sriram, D., 2010. Facile three-component domino reactions in the regioselective synthesis and antimycobacterial evaluation of novel indolizines and pyrrolo[2,1-a]isoquinolines. *Tetrahedron Letters*, **51**: 6439–6443.
- Nami, N., Forouzani, M., Ghasemnejad-Bosra, H., and Khalilpour Tylami, O., 2015. One-pot reductive Amination of Carbonyl Compounds using NaBH<sub>4</sub> and Fe<sub>3</sub>O<sub>4</sub> Magnetic Nanoparticles. *Iranian Chemical Communication*, **3**: 232–243.
- Nopponpunth, V., Sirawaraporn, W., Greene, P.J., and Santi, D.V., 1999. Cloning and expression of Mycobacterium tuberculosis and Mycobacterium leprae dihydropteroate synthase in Escherichia coli. *Journal of bacteriology*, **181**: 6814–6821.
- Pang, Y., Lu, J., Wang, Y., Song, Y., Wang, S., and Zhao, Y., 2013. Study of the Rifampin Monoresistance Mechanism in Mycobacterium tuberculosis. *Antimicrobial Agents and Chemotherapy*, **57**: 893–900.
- Patil, S.B., Singh, P.R., Surpur, M.P., and Samant, S.D., 2007a. Ultrasound-promoted synthesis of 1-amidoalkyl-2-naphthols via a three-component condensation of 2-naphthol, ureas/amides, and aldehydes, catalyzed by sulfamic acid under ambient conditions. *Ultrasonics Sonochemistry*, **14**: 515–518.
- Patil, S.B., Singh, P.R., Surpur, M.P., and Samant, S.D., 2007b. Cation-Exchanged Resins: Efficient Heterogeneous Catalysts for Facile Synthesis of 1-Amidoalkyl-2-naphthols from One-Pot, Three-Component Condensations of Amides/Ureas, Aldehydes, and 2-Naphthol. *Synthetic Communications*, **37**: 1659–1664.
- Prosser, G.A. and de Carvalho, L.P.S., 2013. Metabolomics Reveal D -Alanine: D -Alanine Ligase As the Target of D -Cycloserine in *Mycobacterium tuberculosis*. *ACS Medicinal Chemistry Letters*, **4**: 1233–1237.
- Quan, Z.-J. and Wang, X.-C., 2016. An Efficient Amide-Aldehyde-Alkene Condensation: Synthesis for the N-Allyl Amides. *The Chemical Record*, **16**: 435–444.
- Quiroga, J., Diaz, Y., Bueno, J., Insuasty, B., Abonia, R., Ortiz, A., dkk., 2014. Microwave induced three-component synthesis and antimycobacterial activity of benzopyrazolo[3,4-b]quinolindiones. *European Journal of Medicinal Chemistry*, **74**: 216–224.



- Ram Reddy, T., Srinivasula Reddy, L., Rajeshwar Reddy, G., Nuthalapati, V.S., Lingappa, Y., Sandra, S., dkk., 2011. A Pd-mediated new strategy to functionalized 2-aminochromenes: Their in vitro evaluation as potential anti tuberculosis agents. *Bioorganic & Medicinal Chemistry Letters*, **21**: 6433–6439.
- Ramayati, N.P.A., Ariantari, N.P., and Dwija, I., 2013. Aktivitas Antituberkulosis Kombinasi Ekstrak nheksana Daun Kedondong Hutan dengan Rifampisin Terhadap Isolat Mycobacterium tuberculosis. *Strain MDR. Jurnal Farmasi Udayana*, **2**: 74–78.
- Raynaud, C., Lanéelle, M.-A., Senaratne, R.H., Draper, P., Lanéelle, G., and Daffé, M., 1999. Mechanisms of pyrazinamide resistance in mycobacteria: importance of lack of uptake in addition to lack of pyrazinamidase activity. *Microbiology*, **145**: 1359–1367.
- Rengarajan, J., Sasseti, C.M., Naroditskaya, V., Sloutsky, A., Bloom, B.R., and Rubin, E.J., 2004. The folate pathway is a target for resistance to the drug para-aminosalicylic acid (PAS) in mycobacteria: PAS resistance in mycobacteria and folate metabolism. *Molecular Microbiology*, **53**: 275–282.
- Rivera, D.G., Pando, O., and Coll, F., 2006. Synthesis of peptidomimetic-spirosterane hybrids via Ugi reaction: a versatile approach for the formation of peptide–steroid conjugates. *Tetrahedron*, **62**: 8327–8334.
- Rodriguez, J.C., Ruiz, M., Lopez, M., and Royo, G., 2002. In vitro activity of moxifloxacin, levofloxacin, gatifloxacin and linezolid against Mycobacterium tuberculosis. *International journal of antimicrobial agents*, **20**: 464–467.
- Rosenthal, K.S. and Tan, M.J., 2010. *Rapid Review Microbiology and Immunology*, 3rd ed. Mosby Elsevier, Philadelphia. USA.
- Rukminiati, Y., 2012. Uji Kepekaan Obat Anti Tuberkulosis Lini Kedua Menggunakan BACTEC Mycobacterium Growth Indicator Tubes (MGIT) 960. *Jurnal Kefarmasian Indonesia*, **2**: 43–47.
- Rustomjee, R., Diacon, A.H., Allen, J., Venter, A., Reddy, C., Patientia, R.F., dkk., 2008. Early Bactericidal Activity and Pharmacokinetics of the Diarylquinoline TMC207 in Treatment of Pulmonary Tuberculosis. *Antimicrobial Agents and Chemotherapy*, **52**: 2831–2835.
- Ryan, K.J. and Ray, C.G., 2010. *Sherrie Medical Microbiology*, 5th ed. The McGraw-Hill Companies, California. USA.
- Saberi, D., Akbari, J., Mahdudi, S., and Heydari, A., 2014. Reductive amination of aldehydes and ketones catalyzed by deep eutectic solvent using sodium borohydride as a reducing agent. *Journal of Molecular Liquids*, **196**: 208–210.

- Salve, P.S., Alegaon, S.G., and Sriram, D., 2017. Three-component, one-pot synthesis of anthranilamide Schiff bases bearing 4-aminoquinoline moiety as Mycobacterium tuberculosis gyrase inhibitors. *Bioorganic & Medicinal Chemistry Letters*, **27**: 1859–1866.
- Satti, L., Ikram, A., Coban, A.Y., and Martin, A., 2012. Rapid Direct Testing of Susceptibility of Mycobacterium tuberculosis to Isoniazid and Rifampin on Nutrient and Blood Agar in Resource-Starved Settings. *Journal of Clinical Microbiology*, **50**: 1659–1662.
- Sebahar, P.R. and Williams, R.M., 2000. The Asymmetric Total Synthesis of (+)- and (–)-Spirotryprostatin B. *Journal of the American Chemical Society*, **122**: 5666–5667.
- Sebahar, P.R., Osada, H., Usui, T., and Williams, R.M., 2002. Asymmetric, stereocontrolled total synthesis of (+) and (–)-spirotryprostatin B via a diastereoselective azomethine ylide [1, 3]-dipolar cycloaddition reaction. *Tetrahedron*, **58**: 6311–6322.
- Shaabani, A., Keshipour, S., Shaabani, S., and Mahyari, M., 2012. Zinc chloride catalyzed three-component Ugi reaction: synthesis of N-cyclohexyl-2-(2-hydroxyphenylamino)acetamide derivatives. *Tetrahedron Letters*, **53**: 1641–1644.
- Shaikh, K.A., Chaudhar, U.N., and Ningdale, V.B., 2014. Citric Acid Catalyzed Synthesis of Amidoalkyl Naphthols under Solvent-free Condition: An Eco-friendly Protocol. *Journal of Applied Chemistry*, **7**: 90–93.
- Shinabarger, D.L., Marotti, K.R., Murray, R.W., Lin, A.H., Melchior, E.P., Swaney, S.M., dkk., 1997. Mechanism of action of oxazolidinones: effects of linezolid and eperezolid on translation reactions. *Antimicrobial agents and chemotherapy*, **41**: 2132–2136.
- Shokrolahi, A., Zali, A., and Keshavarz, M.H., 2011. Reductive amination of aldehydes and ketones by NaBH<sub>4</sub> using carbon-based solid acid (CBSA) as catalyst. *Green Chemistry Letters and Reviews*, **4**: 195–203.
- Siswandono dan Soekardjo, B., 2000. *Kimia Medisinal*. Airlangga University Press, Surabaya.
- Sivakumar, P.M., Geetha babu, S.K., and Mukesh, D., 2007. QSAR Studies on Chalcones and Flavonoids as Anti-tuberculosis Agents Using Genetic Function Approximation (GFA) Method. *Chem. Pharm. Bull.*, **55**: 44–49.
- Slayden, R.A. and Barry, C.E., 2000. The genetics and biochemistry of isoniazid resistance in Mycobacterium tuberculosis. *Microbes and Infection*, **2**: 659–669.
- Somoskovi, A., Parsons, L.M., and Salfinger, M., 2001. The molecular basis of resistance to isoniazid, rifampin, and pyrazinamide in Mycobacterium tuberculosis. *Respiratory research*, **2**: 164.

- Sreevatsan, S., Stockbauer, K.E., Pan, X.I., Kreiswirth, B.N., Moghazeh, S.L., Jacobs, W.R., dkk., 1997. Ethambutol resistance in Mycobacterium tuberculosis: critical role of embB mutations. *Antimicrobial Agents and Chemotherapy*, **41**: 1677–1681.
- Suresh Kumar, G.V., Rajendra Prasad, Y., Mallikarjuna, B.P., and Chandrashekar, S.M., 2010. Synthesis and pharmacological evaluation of clubbed isopropylthiazole derived triazolothiadiazoles, triazolothiadiazines and mannich bases as potential antimicrobial and antitubercular agents. *European Journal of Medicinal Chemistry*, **45**: 5120–5129.
- Tahlan, K., Wilson, R., Kastrinsky, D.B., Arora, K., Nair, V., Fischer, E., dkk., 2012. SQ109 Targets MmpL3, a Membrane Transporter of Trehalose Monomycolate Involved in Mycolic Acid Donation to the Cell Wall Core of Mycobacterium tuberculosis. *Antimicrobial Agents and Chemotherapy*, **56**: 1797–1809.
- TBCTA, 2009. *International Standards for Tuberculosis Care (ISTC)*, 2nd ed. Tuberculosis Coalition for Technical Assistance, USA.
- Tripathi, R.P., Verma, S.S., Pandey, J., and Tiwari, V.K., 2008. Recent development on catalytic reductive amination and applications. *Current Organic Chemistry*, **12**: 1093–1115.
- Ugi, I., Dömling, A., and Hörl, W., 1994. Multicomponent reactions in organic chemistry. *Endeavour*, **18**: 115–122.
- Ugi, I., Werner, B., and Dömling, A., 2003. The chemistry of isocyanides, their multicomponent reactions and their libraries. *Molecules*, **8**: 53–66.
- Varma, R.S. and Dahiya, R., 1998. Sodium Borohydride on Wet Clay: Solvent-free Reductive Amination Carbonyl Compounds Using Microwaves. *Tetrahedron*, **54**: 6293–6298.
- Vester, B. and Douthwaite, S., 2001. Macrolide Resistance Conferred by Base Substitutions in 23S rRNA. *Antimicrobial Agents and Chemotherapy*, **45**: 1–12.
- Wang, F., Langley, R., Gulten, G., Dover, L.G., Besra, G.S., Jacobs, W.R., dkk., 2007. Mechanism of thioamide drug action against tuberculosis and leprosy. *The Journal of Experimental Medicine*, **204**: 73–78.
- Wang, L., Wang, H., Nemoto, Y., and Yamauchi, Y., 2010. Rapid and Efficient Synthesis of Platinum Nanodendrites with High Surface Area by Chemical Reduction with Formic Acid. *Chemistry of Materials*, **22**: 2835–2841.
- Wehrli, W., 1983. Rifampin: mechanisms of action and resistance. *Review of Infectious Diseases*, **5**: S407–S411.
- Whitfield, M.G., Soeters, H.M., Warren, R.M., York, T., Sampson, S.L., Streicher, E.M., dkk., 2015. A Global Perspective on Pyrazinamide Resistance: Systematic Review and Meta-Analysis. *PLOS ONE*, **10**: e0133869.

- WHO, 2010. *Treatment of Tuberculosis Guidelines*, 4th ed. WHO Press, Switzerland.
- WHO, 2017. *Global Tuberculosis Report 2017*. WHO Press, Switzerland.
- Wu, X., Wang, C., and Xiao, J., 2010. Asymmetric Transfer Hydrogenation in Water with Platinum Group Metal Catalysts. *Platinum Metals Review*, **54**: 3–19.
- Yendapally, R. and Lee, R.E., 2008. Design, synthesis, and evaluation of novel ethambutol analogues. *Bioorganic & Medicinal Chemistry Letters*, **18**: 1607–1611.
- Yu, J., Shi, F., and Gong, L.-Z., 2011. Brønsted-Acid-Catalyzed Asymmetric Multicomponent Reactions for the Facile Synthesis of Highly Enantioenriched Structurally Diverse Nitrogenous Heterocycles. *Accounts of Chemical Research*, **44**: 1156–1171.
- Zhang, Y., 2003. Mode of action of pyrazinamide: disruption of Mycobacterium tuberculosis membrane transport and energetics by pyrazinoic acid. *Journal of Antimicrobial Chemotherapy*, **52**: 790–795.
- Zhang, Y., Mitchison, D., Shi, W., and Zhang, W., 2014. Mechanisms of Pyrazinamide Action and Resistance. *Microbiology Spectrum*, **2**: .
- Zhu, J. and Bienaymé, H. (Editor), 2005. *Multicomponent Reactions*. Wiley-VCH, Weinheim.