

DAFTAR PUSTAKA

- Abosadiya, H.M., Hasbullah, S.A., Mackeen, M.M., Low, S.C., Ibrahim, N., Koketsu, M and Yamin, B.M., 2013, Synthesis, Characterization, X-ray Structure and Biological Activities of C-5-Bromo-2-Hydroxy-Phenylcalix[4]-2-Methyl Resorcinarene, *Molecules*, 9417, 13369–13384.
- Adhikari B.B., Kanemitsu, M., Kawakita, H., and Ohto, K., 2011, Synthesis and Application of a Highly Efficient Polyvinylcalix[4]arene Tetraacetic Acid Resin for Adsorptive Removal of Lead from Aqueous Solutions. *Chem. Eng. J.*, 172, 341–353.
- Adhikari, B.B., Gurung, M., Kawakita, H., and Ohto, K., 2012, Solid Phase Extraction, Preconcentration and Separation of Indium with Methylene Crosslinked Calix[4] - and Calix[6]arene Carboxylic Acid Resins, *Chem. Eng. Sci.*, 78, 144–154.
- American Academy of Dermatology, Inc. [US], <https://www.aad.org/media/stats/prevention-and-care/sunscreen-faqs>. diakses Februari 2018.
- Anslyn, E.V. dan Dougherty D.A., 2005, *Modern Physical Organic Chemistry*, University Science Book, California.
- Autier, P., 2009, Sunscreen Abuse for Intentional Sun Exposure, *British J. Dermatol.*, 161, 40
- Badarinath, A.V., Rao, K.M., Chetty, C.M.S., Ramkanth, S., Rajan, T.V.S., dan Gnanaprakash, K., 2010, A Review on *in vitro* Antioxidant Methods: Comparisons, Correlations and Considerations, *Int. J. Pharm. Technol. Res.*, 2 (2): 1276-1285
- Bailly, F., Maurin, C., Teissier, E., Vezin, H., Cotelle, P., 2004, Antioxidant Properties of 3-Hydroxycoumarin Derivatives, *Bioorg. Med. Chem.*, 12 (21): 5611-5618
- Bartsch, H., Nair, J., Owen, R.W., 2005, Exocyclic DNA Adducts as Oxidative Stress Markers in Colon Carcinogenesis: Potential Role of Lipid Peroxidation, Dietary Fat and Antioxidants, *Biol. Chem.* 383, (6), 915–921.
- Berg, K., Zhai, L., Chen, M., Kharazmi, A., Owen, T.C., 1994, The Use of a Water-Soluble Formazan Complex to Quantitate The Cell Number and Mitochondrial Function of Leishmania Major Promastigotes, *Parasitol. Res.*, 80:235-239
- Bernas, T. dan Dobrucki, J., 2002, Mitochondrial and non Mitochondrial Reduction of MTT: Interaction of MTT with TMRE, JC-1 and NAO Mitochondrial Fluorescent Probes, *Cytometry.*, 47(4):236-42.
- Bězivin, C., Devehat, Tomasi, S., Boustie J., 2003, Cytotoxic Activities of Some Lischen Extracts on Murine and Human Cancer Cell Lines, *Phytomedicine*, 10:499-503

- Bhattacharya, S., 2015, *Reactive Oxygen Species and Cellular Defense System* dalam V. Rani and U.C.S. Yadav (eds.), *Free Radicals in Human Health and Disease*, Springer India, 17-29
- Bohmer, V., 1995, Calixarenes, Macrocycles with (Almost) Unlimited Possibilities, *Angew. Chem. Int. Ed. Engl.*, 31, 713–745.
- Boyd, A.S., Naylor, M., Cameron, G.S., Pearse, A.D., Gaskell, S.A., and Neldner, K.H., 1995, The Effects of Chronic Sunscreen Use on the Histologic Changes of Dermatoheliosis, *J. Am. Acad. Dermatol.*, 33, 941-946.
- Britz-mckibbin, P. and Chen, D.D.Y., 1998, A Water-Soluble Tetraethylsulfonate Derivative of 2-Methylresorcinarene as an Additive for Capillary Electrophoresis, *Anal. Chem.*, 70, 907–912.
- Bruice P.Y., 2007, *Organic Chemistry*, Fifth edition, University of California, Santa Barbara, USA
- Budiana, I.G.M.N., 2015, Sintesis Seri Benzoat-Sinamat Kaliks[4]resorsinarena dan Benzoil-Sinamoil Kaliks[4]resorsinarena serta Uji Aktivasinya sebagai Tabir Surya dan Adsorben Cr(III), Pb(II) dan Cd(II), *Disertasi*, FMIPA, UGM, Yogyakarta
- Cañuelo A, Gilbert-López B, Pacheco-Liñán P, Martínez-Lara E, Siles E, Miranda-Vizuete A., 2012, Tyrosol, a Main Phenol Present in Extra Virgin Olive Oil, Increases Lifespan and Stress Resistance in *Caenorhabditis Elegans*, *Mech. Ageing Dev.*, 133(8):563-74.
- Carey, F.A., 2000, *Organic Chemistry*, Edisi 4, McGraw-Hill, Boston
- Chawla, H.M., Pant, N., Kumar, S., Mrig, S., Srivastava, B., Kumar, N., and Black, D.S., 2011, Synthesis and Evaluation of Novel Tetrapropoxycalix[4]arene Enones and Cinnamates for Protection from Ultraviolet Radiation, *J. Photochem. Photobiol. B Biol.*, 105, 25–33.
- Cherenok SO, Yushchenko OA, Tanchuk VY, dkk. 2012, Calix[4]arene- α -Hydroxyphosphonic Acids. Synthesis, Stereochemistry, and Inhibition of Glutathione S-transferase, *ARKIVOC*, 4, 278–298.
- Coleman WA, Baggetto LG, Lazar AN, Magnard S, Michaud MH. 2010, *Calixarene Derivatives as Anticancer Agent*, US Patent 2010/0056482 A1.
- Cram, D.J. dan Hammond, G.S., 1964, *Organic Chemistry*, International Student edition, second edition, McGraw-Hill Company Inc., Kogakusha Company Ltd., Tokyo.
- Da Silva, E., Bernard, C., Lazar, A., Coleman, A.W., 2004, Biopharmaceutical Applications of Calixarenes Biopharmaceutical Applications of Calixarenes, *J. Drug. Del. Sci. Tech.*, 14, 3–20.
- De Fátima, Â., Fernandes, S.A. and Sabino, A.A., 2009, Calixarenes as New Platforms for Drug Design Calixarenes as New Platforms for Drug Design, *Curr. Drug Discov. Technol.*, 6, 3, 1-20

- Deleersnyder, K., Mehdi, H., Horváth, I., Binnemans, K. dan Parac-Vogt, T. N., 2007, Lanthanide(III) Nitrobenzenesulfonates and *p*-toluenesulfonate Complexes of Lanthanide(III), Iron(III), and Copper(II) as Novel Catalyst for The Formation of Calix[4]resorcinarene, *Tetrahedron*, 63, 9063-9070
- Denmark, S.E., dan Beutner, G.L., 2008, Lewis Base Catalysis in Organic Synthesis, *Angew. Chem. Int. Ed.*, 47, 1560-1638
- De Oliveira P.F.D, Alves, J.M., Damasceno, J.L., Oliveira, R.A.M., Dias, H.J., Crotti, A.E.M., Tavares, D.C., 2015, Cytotoxicity Screening of Essential Oils in Cancer Cell Lines, *Rev. Bras. Farmacogn.* 25, 183–188.
- Dewi, N.R.K., Kuncoro, H., Rijai, L., 2015, Potensi Sitotoksik Ekstrak Air Daun Sirih Hitam (*Piper* sp.), *Jurnal Sains dan Kesehatan*, 1, 1, 11-15.
- Dings, R.P., Chen, X., Hellebrekers, D.M., van Eijk LI, Zhang, Y., Hoye, T.R., Griffioen, A.W., Mayo, K.H., 2006, Design of Nonpeptidic Topomimetics of Antiangiogenic Proteins with Antitumor Activities, *J. Natl. Cancer Inst.*, 98(13), 932-936
- DiPaola, R.S., 2002, To Arrest or not to G(2)-M Cell-cycle arrest : commentary re: A. K. Tyagi dkk., Silibinin strongly synergizes human prostate carcinoma DU145 cells to doxorubicin-induced growth inhibition, G(2)-M arrest, and apoptosis, *Clin. Cancer Res.*, 8, 3512-3519
- Dondi, D., Albini, A., and Serpone, N., 2006, Interactions Between Different Solar UVB/UVA Filters Contained in Commercial Sunscreens and Consequent Loss of UV Protection, *Photochem. Photobiol. Sci.*, 5, 835-843.
- Duale, N., Olsen, A., Christensen T., Butt. S., dan Brunborg, G., 2010, Octyl Methoxy Cinnamate Modulates Gene Expression and Prevents Cyclobutane Pyrimidine Dimer Formation but not Oxidative DNA Damage in UV-Exposed Human Cell Lines, *Toxic. Sci.*, 114, 272-279.
- Dutra, A., Elizangela, Goncalves, D.A., da Costa, O., Ines, M., dan Santoro, R., 2004, Determination of Sun Protection Factor (SPF) of Sunscreen by Ultraviolet Spectrophotometry, *Braz. J. Pharm. Sci.*, 40, 381-383
- Erdem, E., Öztürk, R., Aydın, Ç., Mammadov, R., and Söyleyici, S., 2014, Antioxidant and DPPH (1,1-diphenyl-2-picrylhydrazyl) Free Radical Scavenging Activities of Boniger Acid and Calix[4]arene Derivative, *Int. J. Second. Metab.*, 1, 1, 21–22.
- Farhoosh, R., Johnny, S., Asnaashari, M., Molaahmadibahraseman, N., and Sharif, A., 2016, Structure – Antioxidant Activity Relationships of *o*-hydroxyl , *o*-methoxy, and Alkyl Ester Derivatives of *p*-hydroxybenzoic Acid, *Food Chem.*, 194, 128–134.
- Fessenden R.J. dan Fessenden, J.S., 1992, *Kimia Organik*, Edisi ketiga, Jilid 1, Penerbit Erlangga
- Firdaus, M. and Anwar, C., 2008, Green Synthesis of C-4-Hydroxy-3-Methoxyphenylcalix[4]resorcinarene, and C-4-Methoxyphenylcalix[4]

- resorcinarene. *Proceeding of The International Seminar on Chemistry*, Jatinangor, 346–350.
- Freshney, R.I., 2010, *Culture of Animal Cells: A Manual of Basic Technique and Specialized Applications*, 6th edition, Willey-Blackwell, New Jersey
- Gibbs, J.B., 2000, Mechanism-Based Target Identification and Drug Discovery in Cancer Research, *Science*, 287, 1970
- Gonzalez, H., Tarras-wahlberg, N., Strömdahl, B., Juzeniene, A., Moan, J., Larkö, O., Rosen A., Wenberg, A.M., 2007, Potostability of Commercial Sunscreens upon Sun Exposure and Irradiation by Ultraviolet Lamps, *BMC Dermatol.*, 7, 1, 1–9.
- Gutsche, C.D., 1981, The Synthesis, Characterization, and Properties of Calixarenes from *p*-*tert*-butylphenol, *J. Am. Chem. Soc.*, 103, 3782–3791.
- Gutsche, C.D., 1989, *Calixarenes*, Monograph in Supramolecular Chemistry, Series Editor J. Frasser Stoddart, Royal Society of Chemistry, Cambridge.
- Gutsche, C.D., 2008, *Calixarenes*, Monograph in Supramolecular Chemistry, Royal Society of Chemistry, Cambridge.
- Hanahan, D., dan Weinberg, R.A., 2000, The Hallmarks of Cancer, *Cell*, 100, 57–70.
- Handayani, D.S., 2011, Sintesis Poli-5-Alilikaliks[4]arena dan Turunan Ester serta Asam Karboksilatnya sebagai Adsorben dan Antidotum Keracunan Logam Berat, *Disertasi*, FMIPA, UGM, Yogyakarta.
- Handayani, S.N., Swasono, T., and Mada, G., 2016a, Antioxidant Assay of C-2-Hydroxyphenylcalix[4]Resorcinarene using DPPH Method., *Int. J. ChemTech Res.*, 9, 2, 278–283.
- Handayani, S.N. dan Swasono, R.T., 2016b, Synthesis and Antioxidant Assay of C-2-Etoxyphenylcalix[4]Resorcinarene, *Int. J. PharmTech. Res.* 9, 103–109.
- Handayani, 2017, Sintesis Senyawa Tabir Surya dan Antioksidan Turunan Kaliks[4]resorsinarena Seri Benzoil dan Sinamoil dari Salisilaldehida, *Disertasi*, FMIPA, UGM, Yogyakarta
- Harizal, 2015, Sintesis C-4-alkoksifenilikaliks[4]pirogalolaril Benzoat-Sinamat Sebagai Senyawa Tabir Surya, *Tesis*, FMIPA, UGM, Yogyakarta
- Hasbullah, A. and Yamin, B.M., 2013, Synthesis, Structural and Antioxidant Properties of C- *p*-methoxyphenylcalix[4]resorcinarene, *Int. J. Adv. Sci. Eng. Inform. Technol.*, 3, 2, 36–39.
- Herzog, B., Wehrle, M., and Quass, K., 2009, Photostability of UV Absorber Systems in Sunscreens, *Photochem. Photobiol.*, 85, 869-878.
- Hoskins, C. and Curtis, A.D.M., 2015, Simple Calix[n]arenes and Calix[4]resorcinarenes as Drug Solubilizing Agents., *Nanomed. Res. J.*, 2 (3): 2-8

- Huang, D., Boxin, O.U., and Prior, R.L., 2005, The Chemistry behind Antioxidant Capacity Assays, *J. Agric. Food Chem.*, 53, 1841–1856.
- Hughes, D. dan Mehmet, H. 2003. *Cell proliferation and apoptosis*, BIOS Scientific Publishers Ltd. Oxford.
- Ikhtiyani, N., Etnawati, K., dan Widodo, Y., 1998, The Prevention of The Occurance of Ultraviolet B (UV B) Inducer Hypoxanthine Guanidine Phosphoribosyl Transferase (HGPRT) Mutant Cells by Several Commercial Sunscreens, an *in vitro* Study, *Berkala Ilmu Kedokteran*, Vol. 3, No. 2, FK UGM, Yogyakarta
- Jain, V.K., Pillai, S.G., Pandya, R.A., Agrawal, Y.K., and Shrivastav, P.S., 2005, Selective Extraction, Preconcentration and Transport Studies of Thorium(IV) using Octa-Functionalized Calix[4]resorcinarene-Hydroxamic Acid, *Anal. Sci.*, 21 (2), 129–135.
- Jain, V.K dan Mandalia, H.C., 2009, Liquid-liquid Extraction, Separation, Preconcentration and Spectrophotometric Determination of Vanadium(V) by Tetra Functionalized Calix[4]pyrrole Hydroxamic Acid, *Macroheterocycles*, 2(1), 23-29
- Joshi, R., Mishra, P., and Patni, V., 2016, Research Article Untapped Ornamental Vines of Convolvulaceae-Potential Source of Antioxidants., *Int. J. Pharm. Sci. Rev. Res.*, 36 (20): 120–123.
- Jumina, Sardjono, R.E., Paramitha, B., Hendaryani, I., Siswanta, D., Santosa, S.J., Anwar, C., Sastrohamidjojo, H., Ohto, K. dan Oshima, T., 2007, Adsorption Characteristics of Pb(II) and Cr(III) onto C-4-methoxyphenylcalix[4]resorcinarene in Batch and Fixed Bed Column Systems, *J. Chin. Chem. Soc.*, 54, 1167-1178
- Jun, M.H.Y., J., Fong, X., Wan, C.S., Yang, C.T., Ho., 2003, Comparison of Antioxidant Activities of Isoflavones Form Kudzu Root (*Puerarualabata* O), *J. Food Sci.*, 2003, 68:2117–2122.
- Juniarti, Osmeli, D., & Yuhernita. 2009. Kandungan Senyawa Kimia, Uji Toksisitas (*Brine shrimp lethality test*) dan Antioksidan (*1,1-diphenyl-2-pikrilhidrazil*) dari Ekstrak Daun Saga (*Abrus precatorius* L.), *Makara Sains*, 13(1), 50-54.
- Kehrer, J.P. dan Klotz, L., 2015, Free Radicals and Related Reactive Species as Mediators of Tissue Injury and Disease : Implication for Health, *Crit. Rev. Toxicol.*, 1-36
- Kellici, S., Acord, J., Vaughn, A., Power, N.P., Morgan, J., Heil, T., dkk., 2016, Calixarene Assisted Rapid Synthesis of Silver-Graphene Nanocomposites with Enhanced Antibacterial Activity, *ACS Appl. Mater. Interfaces*, 1-30
- Kesuma, E.P., Ohto, K., and Siswanta, D., 2016, Synthesis of C-4-Allyloxy-3-Methoxyphenylcalix[4]resorcinarene from Vanillin and Its Application as Adsorbent of Pb(II) Metal Cation, *Orient. J. Chem*, 32 (2): 769-775

- Knyazeva, I.R., Sokolova, V.I., Gruner, M., Habicher, W.D., Syakaev, V.V., Khrizanforova, V.V., Gabidullin, B. M., Gubaidullin, A. T., Budnikova, Y. H., Burilov, A., Pudovik, M. A., 2013, One-Step Synthesis of *rccc*- dan *rctt*-Diastereoisomers of Novel Calix[4]resorcinols based on a *para*-thiophosphorylated Derivative of Benzaldehyde, *Tetrahedron Lett.*, 54, 3538-3542
- Kohen R. dan Nyska A., 2002, Oxidation of Biological Systems: Oxidative Stress and Antioxidants, *Toxicol. Pathol.*, 30:620–630
- Kondyurin, A., Rautenberg, C., Steiner, G., Habicher, W. D., Salzer, R., 2001, Vibrational Spectra of Calix[4]resorcinarene Isomers, *J. Mol. Struct.*, 563-564, 503-511
- Kumar, M, T., Christy, A.M.V., Mangadu, A., Malaisamy, M., Sivaraj, C., Arjun, P., Raaman N. dan Balasubramanian K., 2012, Anticancer and Antioxidant Activity of Curcuma zedoaria and Curcuma amada rhizome Extracts, *J. Acad. Indus. Res.* 1(2): 91–96
- Kusumaningsih, T., Jumina, Siswanta, D., Mustofa, Ohto, K. dan Kawakita, H., 2012, Synthesis of poly-tetra-*p*-allylcalix[4]arene Tetra Acetic Acid Adsorbent for Cr(III) and Pb(II) Metal Ions, *Int. J. Tech.*, 2, 93-102
- Kusumaningsih, T., Jumina, Dwi Siswanta dan Mustofa, 2010, Synthesis of tetra-*p*-propenyltetraester-calix[4]arene and tetra-*p*-propenyl-tetracarboxylic-acidcalix[4]arene from *p-t*-butylphenol, *Indones. J. Chem*, 10, 122-126.
- Kürti, L., dan Czakó, B., 2005, *Strategic Applications of named Reactions in Organic Synthesis: Background and Detailed Mechanisms*, Elsevier Academic Press, Burlington.
- Li H., Zhong, Y., Wu, Wu, Zhang L., Lai, X., Zeng, X., 2017, Phenolic Antioxidants based on Calixarene: Synthesis, Structural Characterization, and Antioxidative Properties in Natural Rubber, *J. Appl. Polym. Sci.*, 45144.
- Liardet, S., Scaletta, C., Panizzon, R., Hohfeld, P., and Laurent-Applegate, L., 2001, Protection Against Pyrimidine Dimers, p53, and 8-hydroxy-2 β -Deoxyguanosine Expression in Ultraviolet-Irradiated Human Skin by Sunscreen : Difference between UVB + UVA and UVB alone Sunscreens, *J. Invest. Dermatol.*, 117(6), 1437-1441
- Linane, P. dan Shinkai, S., 1994, Calixarenes: Adaptable Hosts Par Excellence, *Chem. Ind.*, 811-814
- Lopez-Lázaro, M., 2007, Dual Role of Hydrogen Peroxide in Cancer : Possible Relevance to Cancer Chemoprevention and Therapy., *Cancer Lett.*, 252, 1–8.
- Mahajan, R.K., Kaur, I., Sharma, V., and Kumar, M., 2002, Sensor for Silver(I) Ion Based on Schiff-Base-*p*-tert- butylcalix[4]arene, *Sensors*, 2, 417–423.

- Malich, G., Markovic B. and Winder, C., 1997, The Sensitivity and Specificity of The MTS Tetrazolium Assay for Detecting The *In vitro* Cytotoxicity of 20 chemicals using human cell lines, *Toxicology.*, 124(3):179-92.
- Manaia, E.B., Kaminski, R.C.K., Marcos Antonio Correàl, M.A., Chiavaccil, L.A., 2013, Inorganic UV Filters, *Braz. J. Pharm. Sci.*, 49(2), 201-209
- Manda, G., Nechifor, M. T. and Neagu, T. M. 2009. Reactive Oxygen Species, Cancer, and Anti-Cancer Therapies, *Curr. Chem. Biol.* 3: 22-46.
- Mates J.M., 2000, Effects of Antioxidant Enzymes in The Molecular Control of Reactive Oxygen Species Toxicology, *Toxicology*, 153:83–104
- McCauley, J., Zivanovic, A., Skropeta, D., 2013, Bioassays for Anticancer Activities, *Methods Mol. Biol.*, 1055 191-205.
- Mc Mahon, G., O'Malley, S. dan Nolan, K., 2003, Important Calixarene Derivatives-their Synthesis and Applications, *Arkivoc*, vii, 23-31
- Meiyanto, E., Sismindari, Candra, L., dan Moordiani, 2003, Efek Antiproliferatif Ekstrak Etanol Daun dan Kulit batang Tanaman Cangkring (*Erythrina Fusca* Lour.) terhadap Sel HeLa, *Majalah Obat Tradisional*, 11 (41) : 1-11, 2007
- Merabet, D., Bouzaza, A., and Belkhiri, L., 2011, Adsorption of Pb (II) from Aqueous Solutions using Activated Carbon Developed from Apricot Stone, *Desalination*, 276, 148–153.
- Miao, S., Adams, R.D., Guo, DS, Zhang, QF, 2003, Structural Conformers of Symmetry Substituted Resorcin[4]arenes, *J. Mol. Struct.*, 659, 119-128
- Mo, J., Eggers, P.K., Yuan, Z., Raston, C.L., and Lim, L.Y., 2016, Paclitaxel-loaded Phosphonated Calixarene Nanovesicles as a Modular Drug Delivery platform., *Nat. Publ. Gr.* 1–12.
- Mokhtari, B. and Pourabdollah, K., 2011, Analytical Applications of Calixarenes from 2005 up-to-date., *J. Incl. Phenom. Macrocycl. Chem.*, 69: 1–55.
- Molyneux, P., 2004, The Use of Stable Free Radical Diphenilpicrylhydrazyl (DPPH) for Estimating Antioxidant Activity, *J. Sci. Technol.*, 26 (2), 211-219.
- Montasser, I., Shahgaldian, P., Perret, F., and Coleman, A.W., 2013, Solid Lipid Nanoparticle-Based Calix[n]arenes and Calix-Resorcinarenes as Building Blocks : Synthesis, Formulation and Characterization., *Int. J. Mol. Sci.*, 14, 21899-21942.
- Morozova, J., Syakaev, V., Shalaeva, Y., Ermakova, A., Nizameev, I., Kadirov, M., dkk., 2017, Unusual Nanosized Associates of Carboxy-calix[4]resorcinarene and Cetylpyridinium Chloride : The Macrocycle as a Glue for Surfactant Micelles., *Soft. Matter.*, 13, 10, 2004-2013.
- Mouni, L., Merabet, D., Bouzaza, A., Belkhiri, L., 2011, Adsorption of Pb(II) from aqueous solutions using activated carbon developed from Apricot stone, *Desalination*, 276, 148–153

- Murphy, G.M., 1999, Sunblocks ; Mechanism of Action, *Photoderm. Photoim. Photomed.*, 18, 1-3
- Nash, J.F. and Tanner, P.R., 2014, Relevance of UV Filter/Sunscreen Product Photostability to Human Safety, *Photoderm. Photoim. Photomed.*, 30: 88–95
- Ngurah, B.I.G.M. and Anwar, C., 2014a, Synthesis and Characterization of Octaethoxycalix[4]arene for Heavy Metal Cations Adsorbent, *Adv. Mater. Res.*, 143
- Ngurah, B.I.G.M., Jumina, Anwar, C., Mustofa, and Sahadewa., 2014b, Synthesis of Benzoyl C-Phenylcalix[4]resorcinyryl Octaacetate and Cinnamoyl C-Phenylcalix[4]arene for UV Absorbers, *Indones. J. Chem.*, 14(2), 160 - 167
- Ngurah, B.I.G.M. and Anwar, C., 2017, Synthesis and *in vitro* Evaluation of C-methylcalix[4]resorcinyryl octacinnamate and C-methylcalix[4] resorcinyryl octabenzoate as the Sunscreen, *Indones. J. Chem.*, 17 (1), 63 - 70.
- Nimse, S.B. dan Pal, D., 2015, Free Radicals, Natural Antioxidants, and their Reaction Mechanisms, *RSC Adv.*, 5, 27986–28006
- Nishimura, Y., Takemura, T., and Arai, S., 2007, Effective Fluorescent Sensing of Na⁺ Ion by Calix[4]arene bearing Pyrene and Perylene based on Energy Transfer, *ARKIVOC* (xiii): 259–268.
- Nishiyabu, R., Palacios, M.A., Dehaen, W., Anzenbacher, P., Green, B., Uni, S., and Green, B., 2006, Synthesis , Structure, Anion Binding, and Sensing by Calix[4]pyrrole Isomers, *J. Am. Chem. Soc.*, 128, 11496-11504.
- Ogata, Y., Takagi, K. and Takayanagi, Y., 1973, Photodecomposition of Alkyl Benzoates and S-Alkyl Thiobenzoates. Possibility of a Barton-type Transition State, *J.Chem. Soc. Perkin I*, 1244-1247.
- Ohto, K., Yamaga, H., Murakami, E., and Inoue, K., 1997, Specific Extraction Behavior of Amide Derivative of Calix[4]arene for Silver (I) and Gold (III) Ions from Highly Acidic Chloride Media, *Talanta*, 44, 1123–1130.
- Oliveira, C.B.S., Meurer, Y.S.R., Oliveira, M.G., Medeiros, W.M.T.Q., Silva, F.O.N., Brito, A.C.F., 2014, Comparative Study on the Antioxidant and Anti-Toxoplasma Activities of Vanillin and Its Resorcinarene Derivative, *Molecules*, 19, 5898–5912.
- Osterwalder, U., and Herzog, B., *Chemistry and Properties UV of Organic and Inorganic UV Filters*. In : Lim, H.W., and Draelos, Z.D., ed., 2009, *Clinical Guide to Sunscreens and Photoprotection*, Informa Healthcare USA, Inc., New York
- Park, M.T., dan Lee, S.J., 2003, Cell Cycle and Cancer , *J. Biol. Mol. Biol.*, 36(1), 60-65

- Patel MB, Modi NR, Raval JP, Menon SK, 2012, Calix[4]arene based 1,3,4-Oxadiazole and Thiadiazole Derivatives: Design, Synthesis, and Biological Evaluation, *Org. Biomol. Chem.*, 10 (9); 1785-94
- Patel, M.B., Valand, N.N., Modi, N.R., Joshi, K.V., Harikrishnan, U., Kumar, S.P., Jasraib, Y.T. and Menon, S.K., 2013, Effect of *p*-sulfonatocalix[4]-resorcinarene (PSC[4]R) on The Solubility and Bioavailability of a Poorly Watersoluble Drug Lamotrigine (LMN) and Computational Investigation, *RSC Adv.*, 3, 15971–15981.
- Perret, F., Lazar, A.N., and Coleman, A.W., 2006, Biochemistry of The *para*-sulfonatO–Calix[n]arenes, *Chem. Commun.* 2425–2438.
- Phan G, Semili N, Bouvier-Capely C, Landon G, Mekhloufi G, Huang N, Rebière F, Agarande M, Fattal E, 2013, Calixarene Cleansing Formulation for Uranium Skin Contamination, *Health Phys.*, 105(4):382-9.
- Pietraszkiewicz, O.; Koz bial, M., Pietraszkiewicz, M., 1998, ChargeTransfer Complexes InvolvingCalix[4]Resorcinarenes: Potential Candidates for Non-linear Optics, *Adv. Mater. Opt. Electron.*, 8, 277-284
- Prakash, A, 2001, Antioxidant Activity, *Heart of Giant Resource*, 19 (2), 1-4
- Pur, N.F., and Dilmaghani, K.A., 2014, Calixplatin: Novel Potential Anticancer Agent based on The Platinum Complex with Functionalized Calixarene, *J. Coord. Chem.*, 67, 3, 440–448.
- Pur, N.F. dan Dilmaghani, K.A., 2015, Calixtyrosol: A Novel Calixarene based Potent Radical Scavenger, *Iran. J. Pharm. Res.*, 14, 1181–1187.
- Qian Y, Qiu X, Zhu S., 2004, Lignin: A nature-inspired sun blocker for broad-spectrum sunscreens, *Green Chem.*, 17: 320-324
- Rego, Y.F., Cleiton, M., Daniel, L., Jeferson, G., De Carvalho, E., and Fernandes, S.A., 2016, Phthalazine-triones : Calix[4]arene-assisted Synthesis using Green Solvents and their Anticancer Activities against Human Cancer Cells, *Arab. J. Chem.*, 1-9
- Rosen, G.M., Pou, S., Ramos, C.L., Cohen, M.S. dan Britigan, B.E., 1995, Free Radicals and Phagocytic Cells, *FASEB J.*, 9, 2, 200-209.
- Sardjono, R.E., Jumina, Nurwahidin, Taufik, W.A., Sastrohamidjojo, H. dan Santosa, S.J., 2008, Adsorption Characteristics of Pb(II) onto C-4-Hydroxy-3-methoxyphenilcalix[4]resorcinarene in Batch and Fixed Bed Column Systems, *Proceeding of the International Seminar on Chemistry*, Jatinangor, ISBN 978-979-18962-0-7, 419-425
- Sardjono, R.E., 2006, Sintesis dan Penggunaan Tetramer Siklis Seri Kaliksresorsinarena, Alkoksi Kaliksarena dan Alkenil Kaliksarena untuk Adsorpsi Kation Logam Berat, *Disertasi*, FMIPA UGM, Yogyakarta

- Sayekti, E.; Siswanta, D.; Mustofa; Jumina, 2016, Synthesis and Antioxidant Properties of C-4-allyloxyphenylcalix[4]resorcinarene, *Int. J. ChemTech. Res.*; 9 (8); 594-569
- Sayuti, K.; Yenrina, R., 2015, Antioksidan Alami dan Sintetik; Andalas University Press: Padang,.
- Schwartz, G.K. and Shah, M.A, 2005, Targeting the Cell Cycle: A New Approach to Cancer Therapy, *J. Clin. Oncol.*, 23 (36), 9408-9421
- Shah, M.D, dan Agrawal, Y.K., 2012, Calixarene: A New Architecture in The Analytical and Pharmaceutical Technology, *J. Sci. Ind. Res.*, 71, 21-26
- Simić, A., Manojlović D., Šegan D., dan Todorović M., 2007, Electrochemical Behavior and Antioxidant and Prooxidant Activity of Natural Phenolics, *Molecules* , 12, 2327-2340
- Spagnul, A., Bouvier-capely, C., Phan, G., Landon, G., Tessier, C., Suhard, D., Rebière F., Michelle Agarande, M., Fattal E., 2011, Ex vivo Decrease in Uranium Diffusion through Intact and Excoriated Pig Ear Skin by a Calixarene Nanoemulsion, *Eur. J. Pharm. Biopharm.* ,79, 258–267.
- Sudipta, G., Gastidar, Bharath, P., dan Arindam R., 2011, Rayleigh Like Scattering From Silica-Titania Core-Shells Particles and their Application in Protection Against Harmfull Ultraviolet Ray, *Bull. Mater. Sci.*, 34, 199-120.
- Suffness, M., Pezzuto, J.M., 1990, *Assays related to cancer drug discovery*. In: Hostettmann, K. (Ed.), *Methods in Plant Biochemistry: Assays for Bioactivity.*, Academic Press, London, 71–133.
- Sunarni, T. 2005. Aktivitas Antioksidan Penangkap Radikal Bebas Beberapa Kecambah Dari Biji Tanaman Familia Papilionaceae, *Jurnal Farmasi Indonesia* 2 (2), 2001, 53-61.
- Suresh DB, Jamatsing DR, Pravin SK and Ratnamala SB Db, S., 2016, Modern Chemistry & Applications Synthesis, Characterization and Antioxidant Activity of Carvacrol Containing Novel Thiadiazole and Oxadiazole Moieties, *Mod. Chem. Appl.* ,4, 4–7.
- Sykes, P., 1989, *Penuntun Mekanisme Reaksi Kimia Organik*, edisi keenam, PT. Gramedia, Jakarta.
- Tashakkorian, H., Lakouraj, M.M., and Rouhi, M., 2015, p -Sulfonic Acid Calix[4]arene as an Efficient Catalyst for One-Pot Synthesis of Pharmaceutically Significant Coumarin Derivatives under Solvent-Free Condition, *Int. J. Med. Chem.*, 2015, 1-8.
- Timmerman, P., Verboom, W. and Reinhourdt, D.N., 1996, Resorcinarene, *Tetrahedron*, 52, 8, 2663-2704.
- Tiwari AK., 2004, Antioxidants: New- Generation Therapeutic base for Treatment of Polygenic Disorders, *Curr Sci.*, 86:1092–1102.

- Toyokuni, S., Tanaka, T., Kawaguchi, W., Ryan, N., Fang, L., Ozeki, M., 2009, Effects of the Phenolic Contents of Mauritian Endemic Plant Extracts on Promoter Activities of Antioxidant Enzymes Effects of the Phenolic Contents of Mauritian Endemic Plant Extracts on Promoter Activities of Antioxidant Enzymes, *Free Radic. Res.*, 1215–1224.
- Utomo, S.B., Jumina, Siswanta, D. dan Mustofa, 2012, Kinetics and Equilibrium Model of Pb(II) and Cd(II) Adsorption onto Tetrakis-thiomethyl-C-4-methoxyphenylcalix[4]resorcinarene, *Indones. J. Chem.*, 1, 49-56
- Van Praag, M.C.G., Roza, L., Boom, B.W., Out-Luijting, C., Henegouwen, J.B.A.B., Vermeera, B.J., and Mommaas, A.M., 1993, Determination of The Photoprotective Efficacy of A Topical Sunscreen Against UVB-Induced DNA Damage in Human Epidermis, *J. Photochem. Photobiol. B ; Biol.*, 19, 129-134
- Vauzour D., Corona G., Spencer JP., 2010, Caffeic Acid, Tyrosol and *p*-Coumaric Acid are Potent Inhibitors of 5-S-cysteinyl-dopamine Induced Neurotoxicity, *Arch. Biochem. Biophys.*, 501(1):106-11
- Vovk, A.I., Shivanyuk, A.M., Bugas, R. V., Muzychka, O. V., and Melnyk, A.K., 2009, Antioxidant and Antiradical Activities of Resorcinarene Tetranitroxides, *Bioorg. Med. Chem. Lett.*, 19, 1314–1317.
- Wahyuningsih, T.D., Raharjo, T.J., Tahir, I., 2002, Synthesis of 3,4-dimethoxy Isoamil Cinnamic as The Sunscreen Compound from Clove Oil and Fusel Oil, *Indones. J. Chem.*, 2 (1), 55-63.
- Wahyuningsih, M.S.H., Syarif, R.A., Suharmi, S., Murini, T., Saputra, F., Suryo W.A., 2013, Selectivity of Purified Extract from The Leaves of *Tithonia diversifolia* (Hemsley) A. Gray against Hela Cells, *Trad. Med. J.*, 18 (1), 22-28.
- Walters, C., Keeney, A., Wigal, C.T., Johnston, C.R., dan Cornelius, R.D., 1997, Spectroscopy Analysis and Modelling of Sunscreens, *J. Chem. Educ.*, 74, 1, 101.
- Waris, G. and Ahsan, H. 2006. Review: Reactive Oxygen Species: Role in The Development of Cancer and Various Chronic Conditions. *J. Carcinog.* 5: 1-8.
- Werdhasari, A., 2014, Peran Antioksidan Bagi Kesehatan, *Jurnal Biotek Medisiana Indonesia*, 3, 2, 59-68
- Willett WC, and Macmahon B (1984) Diet and Cancer-an Overview, *N. Engl. J. Med.*, 310:697–703
- Wolfe KL, Liu RH. 2007. Cellular Antioxidant Activity (CAA) Assay for Assessing Antioxidants, Foods and Dietary Supplements, *J. Agric. Food Chem.*, 55: 8896-8907.
- Wong, C., dan Currie, J., Teaching with CaChe Molecular Modelling in Chemistry, Pacific University Forest Grove, *Oregon*, 29, 36.

- World Health Organization (WHO), 2003, Sun Protection A Primary Teaching Resource, The Cancer Council Victoria, France.
- Wulandari, R. and Siswanta, D., 2016, C-3,4-Dimethoxyphenylcalix[4]-resorcinarene Triphenylphosphonium Chloride Adsorbent for Hexavalent Chromium Removal, *Int. J. Chemtech. Res.* ,9, 11, 16-23.
- Wyllie AH. 2010. Apoptosis, Cell Death, and Cell Proliferation, 3rd., Roche Applied Science.
- Yamin, B.M., M Abosadiya, H., Aisah Hasbullah, S., and Jumina, J., 2014, Structural, Antioxidant and Antivarial Studies of C-3-nitrophenyl CALIX[4]resorcinarene, *Int. J. Adv. Sci. Eng. Inf. Technol.*, 4, 125.
- Yousaf, A., Hamid, S.A., and Bunnori, N.M., 2015, Applications of Calixarenes in Cancer Chemotherapy : Facts and Perspectives, *Drug. Des. Devel. Ther.* 9, 2831–2838.
- Yuanita, E., 2017, QSAR, Docking Molekul dan Sintesis Senyawa Turunan Hidroksixanton sebagai Antikanker dan Antioksidan, *Disertasi*, FMIPA, UGM, Yogyakarta
- Zhang, H.Y., Sun, Y.M., and Wang, X.L., 2002, Electronic Effects on O-H proton Dissociation Energies of Phenolic Cation Radicals: A DFT study, *J. Org. Chem.* ,67, 2709–2712.
- Zhivotovsky, B. and Orrenius, S., 2011, Cell Calcium Calcium and Cell Death Mechanisms : A Perspective from The Cell Death Community, *Cell Calcium* , 50, 211–221.