

## DAFTAR PUSTAKA

- Alam, M. D., Bristi. N. J., dan Rafiquzzaman, M. D., 2013, Review in Vivo and in Vitro Methods Evaluation of Antioxidant Activity, *Studi Pharm. J.*, **21**, 143-152.
- Aoyama, Y., Tanaka, Y., dan Sugahara, S., 1989, Molecular Recognition, 5 Molecular Recognition of Sugars via Hydrogen-bonding Interaction with a Synthetic Polyhidroxy Macrocyclic, *J. Am. Chem. Soc.*, **111**, 5397-5404.
- Andreotti, G. D., Böhmer, V., Jordon, J. G., Tabatabai, M., Ugozzoli, F., Vogt, W., dan Wolft, A., 1993, Dissymmetric Calix[4]arenes with C-4- and C-2-Symmetry, Synthesis, X-ray Structures, Conformational Fixation, and <sup>1</sup>H NMR Spectroscopic Studies, *J. Org. Chem.*, **58**, 4023-4032.
- Arduini, A., Fabbi, M., Mantovani, M., Mirone, L., Pochini, A., Seccsi, A., dan Ungaro, R., 1995, Calix[4]arene Blocked in Rigid Cone Conformation by Selective Functionalization at Lower Rim, *J. Org. Chem.*, **60**, 1454-1457.
- Asfari, Z., dan Vicens, J., 1988, Preparation of Series of Calix[6]arenes and Calix[8]arenes Derived from n-alkylphenols, *Tetr. Lett.*, **29**, 2659-2660.
- Balaguer, A., Chisvert, A., dan Salvador, A., 2006, Sequential-Injection Determination of Traces of Disodium Phenyl Dibenzimidazole Tetrasulphonate in Urine From Users of Sunscreens by On-Line Solid-Phase Extraction Coupled with A Fluorimetric Detector, *J. Pharm. and Biomed. Anal.*, **40**, 922-927.
- Barrett, A. G., Braddock, D. C., Henscke, J. P., dan Walker, E. R., 1999, Ytterbium (III)triflate-catalyzed Preparation of Calix[4]recorcinarenes: Lewis Assisted Bronsted Acidity, *J. Chem. Soc. Perkins Trans I*, 873-878.
- Bohmer, V., 1995, Calixarenes, Macrocycles with (Almost) Unlimited Possibilities, *Chem. Int. Ed. Engl*, **31**, 713-745.
- Budiana, I. G. M., Jumina, Chairil, A., Mustofa dan Sahadewa, 2014, Synthesis of Benzoyl C-Phenylcalix[4]recorcinaryl Octaacetate and Cinnamoyl C-Phenylcalix[4]arene for UV Absorber, *Indones. J. Chem.*, **14**, 160-163.
- Budiana, I. G. M., 2015, Sintesis Seri Benzoat-sinamat Kaliks[4]resorsinarena dan Benzoil-sinamoil Kalils[4]resorsinarena serta Uji Aktivitasnya Sebagai Tabir Surya dan Adsorben Cr(III), Pb(III) dan Cd(II), *Disertasi*, UGM, Yogyakarta.
- Carey, F.A., 2000, *Organic Chemistry*, 4<sup>th</sup> Edition, McGraw Hill, NewYork.
- Carey, F.A., 2004, *Organic Chemistry*, 5<sup>th</sup> Edition, McGraw Hill, NewYork.
- Chanchal, D., dan Swarnlata, S., 2009, Herbal Photoprotective Formulations and their Evaluation, *The Open Nat. J*, **2**, 71-76.

- Chawla, H. M., Pant, N., Kumar, S., Mrig, S., Srivastava, B., Kumar, N., dan Black, D. S., 2011, Synthesis and Evaluation of Novel Tetrapropoxycalix[4]arene enones and Cinammates for Protection from Ultraviolet Radiation, *J. Photochem. Photobiol.*, **105**, 25-33.
- Cometti, G., Dalcanale, E., Du Vosel, A., dan Andlevelut, A. M., 1992, A New Conformationally Mobile Macrocyclic Core for Bowl-Shaped Columnar Liquid Crystal, *Liquid Crystal*, **11**, 93.
- Cram, D. J., Karbach, S., Kim, H. E., Knobler, C. B., Maverick, E. F. J. L., dan Hegelson, R. C., 1988, Host-Guest Complexation. 46. Cavitands as Open Molecular Vessel From Solvates, *J. Am. Chem. Soc.*, **110**, 2229-2237.
- Cumpelik., B. S., 1972, Analitical Procedures and Evaluation of Sunscreens., *J. The Society of Cosm. Chemist*, **23**, 333-345.
- Dahan, E., dan Biali, S. E., 1989, Octamethylcalix[4]arene, *J. Org. Chem.*, **54**, 6003-6004.
- Deleo, V. A., dan Maso, M. J., 1992, Photosensitivity in Moschella and Hurley Dermatology, 3<sup>rd</sup> Edition, Eds. Fletcher, J. W. B., Saunders.
- Diffey, B. L., 2005, Sunscreens and Melanoma: the Future Looks Bright, *Br J. Dermatol*, **153**, 378-381.
- Dupont, E., Gomez, J., dan Bilodeau, 2013, *Beyond UV Radiation: A, Skin Under*, Review Article, *Inter. J. Cosm. Sci.*, 1-9.
- Duynhoven, J. P. M., Jansen, R. G., Verboom, W., Franleen, S. M., Casnati, A., Pchini, A., Unaro, R., de Mendoza, Nieto, P. M., Prados, P., dan Reinhoudt, D. N., 1994, Control of Calix[6]arene Conformation by Self-Inclusion of 1,3,4-tri-O-alkyl Substituents: Synthesis ad NMR Studies, *J. Am. Chem. Soc.*, **116**, 5814-5822.
- Farman, J. C., Gardiner, B. G., dan Shanklin, J. D., 1985, Large Losses of Total Ozone in Antartica Reveal Seasonal ClOs/NOs Interaction, *Nature*, **315**, 207-210.
- Fessenden, R. J., dan Fessenden, J. S., 1990, *Organic Chemistry*, 4<sup>th</sup> Edition, Books/Cole Company, California.
- Freshney, R. I., 2010, *Culture of Animal Cells: A manual of Basic Technique and Specialized Applications*, 6<sup>th</sup> Edition, Willey-Blackwell, New Jersey.
- Fukumoto, L. R., dan Mazza, G., 2000, Assesing Antioxidant and Prooxidant Activities of Phenolic Compounds, *J. Agric. Food Chem.*, **48**, 3597-3604.
- Gasparro, F.P., Mitchnick, M., dan Nash, J. F., 1998, A Review of Sunscreen Safety and Efficacy, *J. Photochem and Photobiol.*, **63**, 3, 243-256.
- Gil, M. I., Tomas-Barberan, F. A., Hess-Pierce, B., dan Kader, A. A., 2002, Antioxidant Activity of Pomegranate Juice and Its Relationship with Phenolic Composition

- an Processing Capacities, Phenolic Compounds, Carotenoids, and Vitamin C Contents of Nectarine, Peach, and Plum Cultivars From California, *J. Agric. and Food Chem.*, **50**, 4976–4982.
- Gregoris, E., Fabris, S., Bertelle, M., Grassato, L., dan Stevanato, 2011, Propolis as Potential Cosmeceutical Sunscreen Agent for Its Combined Photoprotective and Antioxidant Properties, *Intern. J. Pharm.*, **405**, 97-101.
- Gutsche, C. D., 1981, The Synthesis, Characterization, and Properties of Calixarenes from *p*-ter-buthylphenol, *J. Am. Chem. Soc.*, **103**, 3782–3791.
- Gutsche, C. D., dan Pagoria, P. F., 1985, Calixarenes 16. Functionalized Calixarenes, The Direct Substitution Route, *J. Am. Chem. Soc.*, **50**, 5795-5802.
- Gutsche, C. D., 2008, *Calixarenes*, Monograph in Supramolecular Chemistry, Royal Society of Chemistry, Cambridge.
- Hajilou, J., Fakhimrezaei, S., dan Dehghan, G., 2013, Fruit Quality, Bioactive Compounds and Antioxidant Capacity of 6 Iranian Peach Cultivars, *Research in Plant Biology*, **3**, 6, 6-16.
- Halliwell, B., 2007, Chemistry of Oxidative Stress, *Biochem. Soc. Trans.*, Vol. 35, Part 5, 1147-1150.
- Hasbullah, A., Abosadiya, H. M., Jumina, Tahir, M. I. M., dan Yamin, B. M., 2013, Synthesis, Structural and Antioxidant Properties of *C*-*p*-Methoxyphenyl-calix[4]Resorcinarene, *Inter. J. Adv. Sci. Eng. Inform. Tech.*, Vol. 3., No. 2, ISSN: 2088-5334.
- Henderson, D. E., dan Slickman, A. M., 1999, Quantitative HPLC Determination of the Antioxidant Activity of Chapsaicin on the Formation of Lipid Hydroperoxides of Linoleic acid: a Comparative Study against BHT and Melatonin, *J. Agric. Food Chem.*, 47 (7), 25563-2570.
- Herzog, B., 2005, Prediction of Sun Protection Factors and UV-A Parameter by Calculation of UV Transmission through Sunscreen Film of In Homogenous Surface Structure. In: Shaath NA, editor. *Sunscreen: Regulations and Commercial Development*, 3<sup>rd</sup> Edition, Boca Raton (FL): Taylor and Francis, 881-902.
- Hogberg, A. G. S., 1980, Stereoselective Synthesis and D NMR Study of Two 1,8,15,22-tetraphenyl[4]metacyclophan-3,5,10,12,17,19,24,26-Oktol, *J. Org. Chem*, **102**, 6046.
- Hudson, B. J. F., 1990, *Food Antioxidants*, Elsevier Applied Science, London.
- Hughes, D., dan Mehmet, H., 2003, *Cell proliferation and apoptosis*, BIOS Scientific Publishers Ltd. Oxford

- Ichihashi, M., Ueda, M., Budiyanto, A., Bito, T., Oka, M., Fukunaga, M., Tsuru, K., dan Horikawa, T., 2003, UV-Induced Skin Damage, *Toxicology*, **189**, 21- 39.
- Ikhtiyati, N., Etnawati, K., dan Widodo, Y., 1998, The Prevention of The Occurance of Ultraviolet B (UV B) Inducer Hypoxanthine Guanidin Phosphoribosyl Transferase (HGPRT) Mutant Cells by Several Commercial Sunscreens, An In Vitro Study, *Berkala Ilmu Kedokteran*, Vol. 3, No 2, FK UGM, Yogyakarta.
- Ikeda, A., dan Shinkai, S., 1997, Novel Cavity Design Using Calix(n)arene Skeleton : Toward Molecular Recognition and Metal Binding, *Chem. Rev.*, **97**, 1713 – 1734.
- Indarto, 2013, Sintesis Senyawa Tabir Surya Turunan Kaliks[4]resorsinarena Seri Benzofenon dan Sinamat dari *p*-Anisaldehyde, *Tesis*, UGM, Yogyakarta.
- IARC, 2006, *Exposure to Artificial UV Radiation and Skin Cancer*, IARC Working Group Reports, Volume 1, Lyon, France, ISBN 92 832 2441 8.
- Jadhav, S. J., Nimbalkar, S. S., Kulkarni, A. D., dan Madhavi, D. L., 1996, *Lipid Oxidation in Biological and Food System*. In Food Antioxidant: Technological, Toxicological and Health Perspective, Marcel Dekker, Inc., New York.
- Jumina, Sarjono, R. E., Paramita, B. W., Siswanta, D., Santosa, S. J., Anwar, C., Sastrohamidjojo, H., Ohto, K., dan Oshima, T., 2007, The Adsorption of Pb (II) and Cr (III) by C-4-Methoxyphenylcalix[4]resorcinarene in Batch and Fixed Bed Column System, *J. Chin. Chem. Soc.*, **54**, 5, 1167-1178.
- Jumina, Siswanta. D., dan Mustofa, 2009, Sintesis C-4-metoksifenilkaliks[4]-resorsinarenametiltiol dari Minyak Adas dan Penerapannya sebagai Adsorben Kation Logam Berat Pb(II) dan Cd(II), *Laporan Hibah Riset Kolaborasi Internasional*, Tidak dipublikasikan, Jurusan Kimia FMIPA UGM, Yogyakarta.
- Jumina, Siswanta, D., Mulyono dan Mustofa, 2011, Synthesis of Novel C-arylcalix[4]resorcinarene Phosphonium Halida from Clove Oil and Their Application as Adsorbent and Extractant for Heavy Metal Anions, *Report of International Collaboration and Publication Grant*.
- Kanamathareddy, S., dan Gutsche, C. C., 1992, Calixarenes, Arylation and Arylmethylation of Calix[6]arenes, *J. Org. Chem.*, **57**, 3160-3166.
- Karadag, A., Ozelik, B., dan Saner, S., 2009, Review of Methods to Determine Antioxidant Capacities, *Food Anal. Methods*, **2**, 41–60.
- Karami, B., Khodabakhshi, S., Safikhani, N., dan Arami, A., 2012, A Green and Highly Efficient Solvent-Free Synthesis of Novel Calix[4]resorcinarene Derivatives Using Tungstate Sulfuric Acid, *Bull. Korean Chem. Soc.*, **33**, 123-127.

- Krishnaiah, D., Sarbatly, R., dan Nithyanandam, R., 2011, A Review of The Antioxidant Potential of Medicinal Plant Species, *Food and Bioproduct Processing*, **89**, 217-233.
- Kyha, E. P., Helgersson, R. C., Madan, K., Gokel, G. W., Tarnowski, T. L., Moore, S. S., dan Cram, D. J., 1977, Host-Guest Complexation 1. Concept and Illustration, *J. Am. Chem. Soc.*, **99**, 2564-2571.
- Linane, P., dan Shinkai, S., 1994, Calixarena: Adaptable Hosts Par Excellence, *Chem. Ind.*, 811-814.
- Mardjan, M. I. D., 2012, Preparation and Application of 2-Methoxyphenyl-calix[4]resorcinarene Triphenylphosphonium Chloride Immobilized on Alginate to Remove Hexavalent Chromium, *Tesis*, UGM, Yogyakarta.
- McKenzie, R. I., Aucamp, P. J., Bais, A. F., Bjorn, I. O., Ilyas, M., dan Madronich, S., 2011, Ozon Depletion and Climate Change Impacts on UV Radiation, *Photochem. Photobiol. Sci.*, **10**, 182-198.
- McMahon G, O'Malley, S., Nolan, K., dan Diamond, D., 2003, Important Calixarena Derivative-Their Synthesis and Application, *Arkivoc.*, **7**, 23-31.
- Menter, J. M., dan Hatch, K. I., 2003, Clothing as Solar Radiation Protection, *Curr Probl. Dermatol.*, **31**, 50-63.
- Moloney, F. G., Collins, S., dan Murphy, G. M., 2002, Sunscreen Safety, Efficacy and Appropriate Use, *Am. J. Dermatol.*, **3**, 3, 185-191.
- Molyneux, P., 2004, The Use of the Stable Free Radical Diphenylpicrylhydrazyl (DPPH) for Estimating Antioxidant Activity, Songklanakarin, *J. Sci. Technol.*, **26**, 2, 211-219
- Munim, A. Negishi, O., dan Ozawa, T., 2003, Antioxidative Compound from *Crotalaria sessiliflora*, *Biosci. Biotech. Biochem.*, **67**, 410-414
- Naumann, C., Roman, E., Peinador, C., Ren, T., Patrick, B.O., Kaifer A. E., dan Sherman, J. C., 2001, Expanding Cavitand Chemistry: The Preparation and Characterization of (n) Cavitands with  $n \geq 4$ , *J. Eur. Chem.*, **7**, 8, 1637-1645.
- Neri, P., Geraci, C., dan Piatelli, M., 1993, Conformational Isomerism of Calix[6]arenes: Isolation of Two Conformational Isomers of the 1,2-Bis (p-tert-buthylbenzil) ether of p-ter-Buthylcalix[6]arene, *J. Org. Chem.*, **58**, 6535-6537.
- Nihlati, A. P., Rohman, A. dan Hertiani, T., 2008, Daya Antioksidan Ekstrak Etanol Rimpang Temu Kunci (*Bosenbergia pandurata* (Roxb. Scecth) dengan Metode Penangkapan Radikal DPPH, *J. Traditional Medicines*, **13**, 45, 136-144.
- Ogata, Y., Takagi., dan Takayanagi, Y., 1973, Photodecomposition of Alkyl Benzoates and S-Alkyl Thiobenzoates, Possibility of A Barton-Type Transition State, *J. Chem. Soc., Perkin Trans.*, **1**, 1244-1247.

- Oresajo, C., Stephens, T., Hino, P. H., Law, R., Yatskayer, M., Foltis, P., Pillai, S., dan Pinnell, S. R., 2008, Protective Effects of a Topical Antioxidant Mixture Containing Vitamin C, Ferulic Acid, and Phloretin Against Ultraviolet-Induced Photodamage in Human Skin, *J. Cos. Dermatol*, **7**, 290-297.
- Otsuka, H., Araki., Matsumoto, H., Harada, T., dan Shinkai, S., 1994, Synthesis and NMR Spectroscopic Studies of Bridged and Capped Calix[6]arenes: High-Yield Synthesis of Unimolecular Caged Compounds from Calix[6]arenes, *J. Org. Chem.*, **59**, 1542-1547.
- Othman , A., Ismail, A., Ghani, N. A., dan Adenan, I., 2005, Antioxidant Capacity and Phenolic Content of Cocoa Beans, *J. Food Chem.*, **100**, 1523-1530.
- Ouk, S., Thiebaud, S., Borredon, E., Legars, P., dan Lecomte, L., 2002, O-Methylation of Phenolic Compounds with Dimethyl Carbonate Under Solid/Liquid Phase Transfer System, *Tetrahedron Lett.*, **43**, 2661-2663.
- Pappalardo, S., Ferguson, G., Neri, P., dan Rocco, C., 1995, Synthesis and Complexation studies of Regioisomer and Conformational Isomers of *p*-ter-Buthylcalix[4]arene Bearing Pyridine or Pyridine N-Oxide Pendant Groups at the Lower Rim, *J. Org. Chem.*, **60**, 4126-4135.
- Peteros, N. P., dan Uy, M. M., 2010, Antioxidant and Cytotoxic Activities and Phytochemical Screening of Four Philippine Medicinal Plants, *J. Med. Plants res.*, **4**, 5, 407-414.
- Pinnell, S. R., 2003, Cutaneous Photodamage, Oxidative Stress, Antioxidant Protection, *J. Am. Acad.*, **48**, 1–19.
- Prakash, A, F. Rigelhof dan E. Miller, 2001, *Antioxidant Activity*, [http://www.medallionlabs.com/Downloads/Antiox\\_acti\\_.pdf](http://www.medallionlabs.com/Downloads/Antiox_acti_.pdf), diakses tanggal 13 Agustus 2014.
- Prior, R. L., Wu, X., dan Schaich, K., 2005, Standardized Methods for the Determination of Antioxidant Capacity and Phenolics in Foods and Dietary Supplements, *J. Agric. Food Chem.*, **53**, 4290-4302.
- Priyadarsini, K. I., 2005, Molecular Mechanism Involving Free Radical Reaction of Antioxidants and Radioprotectors, *Founder's Day Special Issue*, 1-5.
- Roberts, B. A., Cave, G.W.V., Raston, C. L., dan Scott, J. L., 2001, Solvent-Free Synthesis of Calix[4]resorcinarenes, *Green Chem.*, **3**, 280–284.
- Roger, J. S., dan Gutsche, C. D., 1992, Calixarenes 28, Synthesis, Structure, and Conformations of Aroylated of Calix[6]arenes, *J. Org. Chem.*, **57**, 3152-3159.
- Sardjono, R. E., 2006, Sintesis dan Penggunaan Tetramer Siklik seri Kaliksresorsinarena, Alkoksikaliksarena, dan Alkenil Kaliksarena untuk Adsorpsi Kation Logam Berat, *Disertasi*, UGM, Yogyakarta.



- Sardjono, R. E., Kadarohman, A., dan Mardhiyah, A., 2012, Green Synthesis of Some Calix[4]resorcinarene Under Microwave Irradiation, *Procedia Chem*, **4**, 224-232.
- Sastrohamidjojo, H., 2001, *Spektroskopi*, Liberty, Yogyakarta.
- Satiadarma, H., dan Suyoto, 1986, *Kesehatan Kulit dan Kosmetika*, Andy Offset, Yogyakarta.
- Setyawan, T., 2013, Sintesis Senyawa Tabir Surya Turunan Kaliks[4]resorsinarene Benzofenon dari Vanilin, *Tesis*, UGM, Yogyakarta.
- Serpone, N., Dondi, D., dan Albini, A., 2007, Inorganic and Organic UV Filter: Their Role and Efficacy in Sunscreens and Suncare Products, *Inorg. Chem. Acta.*, **360**, 794-802.
- Shaath, N. A., 1986, The Chemistry of Sunscreens, Cosmetic and Toiletries, 2<sup>nd</sup> Edition, New York Taylor and Francis Group, 101, 55-68.
- Sies, H., 1993, Strategies of Antioxidant Defense, *Eur. J. Biochem.*, **215**, 213-219.
- Silverstein, R. M., Webster, F. X., dan Keimle, D. J., 2005, *Spectrometric Identification of Organic Compounds*, 7<sup>th</sup> Edition, John Wiley and Sons, New Jersey.
- Smith, M. B., 2001, *Organic Synthesis*, 2<sup>nd</sup> Edition, McGraw-Hill Company, Inc., New York.
- Someya, S., Yoshiki, Y., dan Okuba, K., 2002, Antioxidant Compounds from Bananas (*Musa cavendish*), *J. Food Chem.*, **79**, 351-354.
- Stanfield, J. W., 2003, *Sun Protectant Enhancing Product Functionality in Sunscreen*, in Schueler, R. Romanowski, P., (eds), Multifunctional Cosmetics, Marchel Dekker, Inc., New York.
- Suhartono, E., Fujiati, dan Aflanie, I, 2002, *Oxygen Toxicity by Radiation and Effect of Glutamic Piruvat Transamine (GPT) Activity Rat Plasma After Vitamin C Treatment*, Diajukan pada International Seminar on Environmental Chemistry and Toxicology, Yogyakarta.
- Sykes, P., 1989, *Guidebook of Mechanism in Organic Chemistry*, 6<sup>th</sup> Edition, Longman Scientific and Technical, Copublished John and Wiley Son Inc, New York.
- Tahir, I., Jumina dan Yuliastuti, I., 2002, Analisis Aktivitas Perlindungan Sinar UV Secara *in Vitro* dan *in Vivo* dari Beberapa Senyawa Ester Sinamat Produk Reaksi Kondensasi Benzaldehida Tersubstitusi dan Alkil Asetat, *Proceeding Seminar Nasional Kimia XI*, Jurusan Kimia, FMIPA, UGM, Yogyakarta.
- Teguo, P. W., Fauconneau, B., Deffieux, G., Huguet, F. Vercauteren, J., dan Merrilon, J. M., 1988, Isolation Identification and Antioxidant Activity of Three Stilbene Glucosides Newly Extracted from *Vitis vinivera* Cell Culture, *J. Nat. Prod.*, **61**, 655-657.

- Thaipong, K., Boonprakob, U., Crosby, K., Zevallos, L. C., dan Byrne D. H., 2006, Comparison of ABTS, DPPH, FRAP, and ORAC Assays for Estimating Antioxidant Activity from Guava Fruit Extracts, *J. Food Comp. and Analysis*, **19**, 669–675.
- Thoden, E. U. V. V., Engbersen, J. F. L., dan Reinhoudt, D. N., 1994, Self-Assembled Monolayer of Receptors Adsorbates on Gold: Preparation and Characterisation, *J. Am. Chem. Soc.*, **116**, 3597.
- Touitou, E., dan Godin, B., 2008, Skin Non Penetrating Sunscreens for Cosmetic and Pharmaceutical Formulations, *Clinic in Dermatol.*, **36**, 375-379.
- Tunstad., L. M., Tucker, J. A., Daicanale, E., Weiser, J., Bryant, J. A., Sherman, J. C., Hegelson, R. C., Knobler, C. B., dan Cram, D. J., 1989, Host-Guest Complexation. 48. Octol Building for Cavitands and Carcerands, *J. Org. Chem.*, **54**, **6**, 1305-1312.
- Utomo, S. B., Jumina, dan Wahyuningsih, T. D., 2009, The Adsorption of Pb(II) and Cr(III) by Polypropylcalix[4]arene Polymer, *Indones. J. Chem.*, **9**, 3, 437-444.
- Valko, M., Leibfritz, D., Moncol, J., Mark T. D., Cronin, Mazur, M., dan Telser, J., 2007, Review: Free Radical and Antioxidants in Normal Physiological Functions and Human Disease, *The Intern. J. Biochem. and Cell Biology*, **39**, 44-84.
- Vaya, J., dan Aviram, M., 2001, *Nutritional Antioxidants: Mechanisms of Action, Analyses of Activities and Medical Applications*, <http://www.bentham.org/cmciema/sample/cmciemal-1/vaya/vaya-ms.htm>.
- Velioglu, Y. S., Mazza, G., Gao, L., dan Oomah, B. D., 1998, Antioxidant Activity and Total Phenolics in Selected Fruits, Vegetables, and Grain Products, *J. Agric. Food Chem.*, **46**, 4113-4117.
- Vovk, A. I., Shivanyuk, A. M., Bugas, R. V., Muzychka, dan Melnyk, A. K., 2009, Antioxidant and Antiradical Activities of Recorcinarene Tetranitroxides, *Bioorg. and Med. Chem. Lett.*, Elsevier, **19**, 1314-1317.
- Wahyuningsih, T. D., Raharjo, T. J., Tahir, I., dan Noegrohati, S., 2002, Synthesis of 3,4-Dimethoxy Isoamyl Cinnamic as the Sunscreen Compound from Clove Oil and Fussel Oil, *Indones. J. Chem.*, **2**, 1, 55-63.
- Walter, C., Keeney, A., Wigal, C. T., Johnston, dan Cornelius, R., 1997, The Spectrophotometric Analysis and Modelling of Sunscreens, *J. Chem. Educ.*, **74**, 1, 99-101.
- Weinelt, F., dan Schneider, H. J., 1991, Host-Guest Chemistry. 27. Mechanism of Macrocycle Genesis. The Condensation of Resorcinol with Aldehydes, *J. Org. Chem.*, **56**, 5527-5535.



- Wu, J. Q., Kosten, T. R., dan Zhang, X. Y., 2013, Free Radicals, Antioxidant Defense Systems, and Schizophrenia, *Progress in Neuro-Physchopharmacology and Biological Psychiatry.*, **48**, 2000-2006.
- Wu, T. T., dan Speas, J. R., 1987, Synthesis and Characterization of a Novel Calix[4]arene Tetraether, *J. Org. Chem.*, **52**, 11, 2330-2332.
- Young, A. R., Boles, J., Herzog, B., Osterwalder, U., dan Baschong, W., 2010, A Sunscreen's Labeled Sun Protection Factor May Overestimate Protection at Temperature Latitudes: A Human in Vivo Study, *J. Inv. Derm.*, **130**, 2457-2462.