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Aktivitas Penghambatan Ekstrak Daun Sirsak (*Annona muricata*) Terhadap Enzim 5alfa-reduktase Secara In vitro

CATUR ARYANTO RAHMAN, B. S. Ari Sudarmanto, S. Si., M. Si.; Dr. rer. nat. Nanang Fakhrudin M. Si., Apt.
Universitas Gadjah Mada, 2016 | Diunduh dari <http://etd.repository.ugm.ac.id/>

DAFTAR PUSTAKA

- Anonim, 2000, *Parameter standar umum ekstrak tumbuhan obat*, 3-12, Departemen Kesehatan Republik Indonesia, Jakarta.
- Astirin, O. P., Artanti, A. N., Fitria, M. S., Perwitasari, EA., dan Prayitno, A., 2013, *Annona muricata Linn Leaf Induce Apoptosis in Cancer Cause Virus*, *Scientific Research*, **4**, 1244-1250.
- Azzouni, F., Godoy, A., Li, Y., dan Mohler, J., 2012, The 5 alpha-reductase isozyme family: a review of basic biology and their role in human diseases, *Advance in Urology*, **2012**, 530121. doi:10.1155/2012/530121
- Bagus, N. I. G., 1994, Telaah Fitokimia Akar Sirsak (*Annona muricata* L., Annonaceae), *Skripsi*, Laporan Penelitian Tanaman Obat, Bandung, Jurusan Farmasi, Fakultas Matematika dan Ilmu Pengetahuan Alam, Institut Teknologi Bandung.
- Bratoeff, E., Cabeza, M., Ramirez, E., Heuze, Y., dan Flores, E., 2005, Recent Advances in the Chemistry and Pharmacological Activity of New Steroidal Antiandrogens and 5 α -reductase Inhibitors, *Current Medicinal Chemistry*, **12**, 927-943.
- Bruchovsky, N. dan Wilson, J. D., 1968, The conversion of testosterone to 5-alpha-androstan-17-beta-ol-3-one by rat prostate in vivo and in vitro, *The Journal of Biological Chemistry*, **243**, 2012-2021.
- Chiu, KY. dan Yong, CR., 2004, Effects of Finasteride on Prostate Volume and Prostate-specific Antigen, *Journal of the Chinese Medical Association*, **67** (11), 571-574.
- Dennison, C., 2002, *A Guide to Protein Isolation*, 23-24, Kluwer Academic Publisher, USA.
- Elkelany, O. O., Owen, R. C., dan Kim, E. D., 2015, Combination of Tadalafil And Finasteride For Improving The Symptoms of Benign Prostatic Hyperplasia: Critical Appraisal And Patient Focus, *Therapeutics and Clinical Risk Management*, **11**, 507-513.
- Faiz, O. dan Moffat, D., 2004, *At a Glance Series Anatomi*, diterjemahkan oleh dr. Annisa Rahmalia, 45-57, Penerbit Erlangga, Surabaya.
- Falambany, J. E., 2015, Penetapan Kadar Protein Dengan Metode Lowry, <http://dokumen.tips/documents/penetapan-kadar-protein-dengan-metode-lowry.html> ,diakses tanggal 12 mei 2015
- Gandjar, I. G. dan Rohman, A., 2007, *Kimia Farmasi Analisis*, 353-367, Pustaka Pelajar, Yogyakarta.



- Gormley, G. J., Stoner, E., Bruskewitz, R. C., Imperato-McGinley, J., Walsh, P. C., McConnell, J. D., Andriole, G. L., Geller, J., Bracken, B. R., Tenover, J. S., Vaughan, D., Papas, F., Taylor, A., Binkowitz, B., dan Ng, J., 1992, The Effect of Finasteride In Men With Benign Prostatic Hyperplasia, *The New England Journal of Medicine*, **327** (17), 1185-1191.
- Harborne, J. B., 1987, *Metode Fitokimia, Penuntun Cara Modern Menganalisis Tumbuhan*, diterjemahkan oleh Kosasih Padmawinata dan Iwang Soediro, 2nd Ed., 9, Penerbit ITB, Bandung.
- Hariana, A., 2006, *Tanaman Obat dan Khasiatnya Seri 3*, 89-90, Penebar Swadaya, Jakarta.
- Harvey, R. A. dan Ferrier, D. R., 2011. *Biochemistry*, Edisi 5, 60, Lippincott Williams & Wilkins, Philadelphia.
- Harwoko, Pramono, S., dan Nugroho, A. E., 2014, Triterpenoid-rich fraction of centella asiatica leaves and in vivo antihypertensive activity, *International Food Research Journal*, **21** (1), 149–154.
- Hermawan, G. P. dan Laksono, H., 2013, Ekstraksi Daun Sirsak (*Annona muricata*) menggunakan Pelarut Etanol. *Jurnal Teknologi Kimia dan Industri*, **2** (2), 111-115
- Hiipakka, R. A., Zhang, HZ., Dai, W., Dai, Q., dan Liao, S., 2001, Structure-activity relationships for inhibition of human 5 α -reductases by polyphenols. *Biochemical Pharmacology*, **63** (2002) 1165-1176.
- Kaufman, K. D., Olsen, E. A., Whiting, D., Savin, R., DeVillez, R., Bergfeld, W., Price, V. H., Neste, D. V., Roberts, J. L., Hordinsky, M., Shapiro, J., Binkowitzb, B., dan Gormley, G. J., 1998, Finasteride in the treatment of men with androgenetic alopecia, *Journal of the American Academy of Dermatology*, **39**, 578-589.
- Kojima, N. dan Tanaka, T., 2009, Medicinal Chemistry of Annonaceous Acetogenins: Design, Synthesis, and Biological Evaluation of Novel Analogues, *Molecules*, **14**, 3621-3661
- Lestari, F., 2007, *Bahaya Kimia : Sampling & Pengukuran Kontaminan Kimia Di Udara*, 181-183, EGC, Jakarta.
- Liaw, C. C., Chang, F. R., Chen, S. L., Wu, C. C., dan Lee, K. H., 2005, Novel cytotoxic monotetrahydrofuranic Annonaceous acetogenins from *Annona montana*, *Bioorganic & Medicinal Chemistry*, **13**, 4767–4776.
- Liu, J., Kurashiki, K., Shimizu, K., dan Kondo, R., 2006, Structure-activity relationship for inhibition of 5 α -reductase by triterpenoids isolated from *Ganoderma lucidum*, *Bioorganic & Medical Chemistry*, **14**, 8654-8660.



Martoharsono, S, 2006, *Biokimia 1*, UGM Press, Yogyakarta.

McGuire, J. S., Hollis, V. W., dan Tomkin, G. M., 1960, Some characteristics of the microsomal steroid reductases of a rat liver, *The Journal of Biological Chemistry*, **235**, 112-117.

Moghadamtousi, S. Z., Fadaeinab, M., Nikzad, S., Mohan, G., Ali, H. M., dan Kadir, H. A., 2014, *Annona muricata* (Annonaceae): A Review of Its Traditional Uses, Isolated Acetogenins and Biological Activities, *International Journal of Molecular Sciences*, **16** (7), 15625–15658.

Murray, R. K., Granner, D. K., dan Rodwell, V. W., 2009, *Biokimia Harper*, Edisi 27, diterjemahkan oleh dr. Brahm U. Pendit, 65-72, EGC, Jakarta.

Nelson, D. L., dan Cox, Michael, M., 2004, *Lehninger Principles of Biochemistry*, Edisi 4, 190 - , W. H. Freeman publisher, New York.

Odeghe, O.B., Ezirim, A.U., Okochi, V.I., James, A.B., Adebeshi, O.A., dan Ogunnowo, S., 2013, Induction of apoptosis in myelogenous leukemic k562 cells by ethanolic leaves extract of *Annona muricata* L, *Global Journal for Research in Medicinal Plants and Indigenous Medicine*, **2** (3), 143 - 144.

Park, J. S., Yeom, M. H., Park, W.S., Joo, K. M., Rho, H. S., Kim, D. H., dan Chang, I. S., 2006, Enzymatic Hydrolysis of Green Tea Seed Extract and Its Activity on 5 α -Reductase Inhibition, *Bioscience, Biotechnology, and Biochemistry*, **70** (02) : 387-394.

Payne, A. H., dan Hales, D. B., 2004, Overview of steroidogenic enzymes in the pathway from cholesterol to active steroid hormones. *Endocrine Reviews*, **25**(6), 947–970.

Picard, F., Baston, E., Reichert, W., dan Hartmann, R.W., 2000, Synthesis of N-Substituted Piperidine-4-(benzylidene-4-carboxylic acids) and Evaluation as Inhibitors of Steroid-5 α -Reductase Type 1 and 2, *Bioorganic & Medicinal Chemistry*, **8**, 1479-1487.

Poedjiadi, A. dan Supriyanti, F. M. T., 2007, *Dasar-dasar Biokimia*, 140-170, Penerbit Universitas Indonesia, Jakarta.

Prachi, P., Saraswathy, V., dan Savai., 2010, In Vitro Antimicrobial Activity and Phytochemical Analysis of The Leaves of *Annona muricata*, *International Journal of Pharma Research and Development*, **2** (5), 1-6.

Rachmani, E. P. N., Suhesti, T. S., Widiastuti, R., dan Adityono, 2012, The Breast of Anticancer from Leaf Extract of *Annona muricata* Againts Cell Line in T47D, *International Journal of Applied Science and Technology*, **2** (1), 157-164.



Raja, S. G., 2010, *MRCS Part A: Paper 1 SBAs in Applied Basic Science*, edisi 2, 285, PasTest Ltd, London.

Risma, D., 2012, Isolasi dan Karakterisasi Enzim α-Glukosidase dari Beras Lapuk (*Oriza sativa*), *Skripsi*, 12-13, FMIPA UI.

Roesler, R., Catharino, R. R., dan Malta, L. G., 2007, Antioxidant Activity of *Annona crassiflora*: Characterization of Major Components by Electrospray Ionization Mass Spectrometry, *Food Chemistry*, **104**, 1048–1054.

Sismindari, H. A. dan Mubarika, S., 1998, Sequensing of DNA Superkoil Double Helix with In Vitro Method from *Annona Squamosa* L., *Majalah farmasi indonesia*, **9**, 4-8.

Sousa, J., Silva, C., Brito, R. M. M., Salvador, J., 2014, In Search of Predictive Models for Inhibitors of 5-alpha Reductase 2 Based on the Integration of Bioactivity and Molecular Descriptors Data, *International Work-Conference on Bioinformatics and Biomedical Engineering*, 463-472.

Stocco, D. M., 2001, StAR protein and the regulation of steroid hormone biosynthesis, *Annual Review of Physiology*, **63**, 193–213.

Strauss, J. F. dan Barbieri, R. L., 2009, *Reproductive Endocrinology*, Ed VI, 96-97, Saunders Elsevier, Philadelphia.

Strauss, J. F., dan Barbieri, R. L., 2013, *Yen & Jaffe's Reproductive Endocrinology: Physiology, Pathophysiology, and Clinical Management*, edisi 7, 276, Elsevier Health Sciences, Philadelphia.

Sumardjo, D, 2006, *Pengantar Kimia : Buku Panduan Kuliah Mahasiswa Kedokteran Dan Program Strata I Fakultas Bioeksata*, 389, EGC, Jakarta.

Sunarjono, H, 2005, *Sirsak dan Srikaya*, 22, Penebar Swadaya, Bogor.

Thimmaraju, M. K., Rao, V., dan Gurrala, S., 2011, RP HPLC Method for the Determination of Finasteride in Bulk and Pharmaceutical Formulations, *Scholars Research Library*, **3** (5), 79-86.

Thompson, I. M., Goodman, P. J., Tangen, C. M., Lucia, M. S., Miller, G. J., Ford, L. G., Lieber, M. M., Cespedes, R. D., Atkins, J. N., Lippman, S. M., Carlin, S. M., Ryan, A., Szczepanek, C. M., Crowley, J. J., dan Coltman, C. A., 2003, The Influence of Finasteride on the Development of Prostate Cancer, *The New England Journal of Medicine*, **349** (3), 215-224.

Utami, P., 2008, *Buku Pintar Tanaman Obat*, 228-229, Agromedia Pustaka, Jakarta.

Voight, 1994, *Buku Pelajaran Teknologi Farmasi*, diterjemahkan oleh Soendani Noerono Soewandi, 553-586, Gadjah Mada University Press, Yogyakarta.



Waterborg, J. H., 2002, *Protein Protocols Handbook*, Edisi 2, 7-9, Humana Press, Totowa.

Wijaya, M, 2012, Ekstraksi Annonaceus acetogenin dari Daun Sirsak *Annona muricata* sebagai Senawa Bioaktif Antikanker, *Skripsi*, 12-13, 17 , Fakultas Teknik, Universitas Indonesia.

Wirakusumah, E., 2007, 202 *Jus Buah dan Sayuran*, 41-42, Penebar Swadaya, Jakarta.

Young, W. F., 2011, *Netter Collection of Medical Illustrations: Endocrine System*, Edisi 2, plate 4-13, Elsevier Health Sciences. Philadelphia.