

BAB V

KESIMPULAN DAN SARAN

5.1. Kesimpulan

1. Tepung daun rambusa memiliki kadar air sebesar $13,51 \pm 0,34\%$, kadar abu sebesar $13,51 \pm 0,15\%$, kadar protein sebesar $27,18 \pm 1,05\%$ kadar lemak sebesar $4,22 \pm 0,24\%$ dan kadar karbohidrat sebesar $55,09\%$.
2. Ekstrak daun rambusa memiliki komposisi senyawa fitokimia yang meliputi alkaloid, senyawa fenolik, flavonoid, saponin, dan kardiak glikosida.
3. Ekstrak daun rambusa memiliki total fenol sebesar $22,92 \pm 0,18$ mg/g, total flavonoid sebesar $7,01 \pm 0,10$ mg/g, kemampuan menangkal radikal bebas DPPH sebesar $2,76 \pm 0,01$ mg GAE/g dan kemampuan mereduksi ion besi sebesar $3,20 \pm 0,04$ mg GAE/g.

5.2. Saran

Perlu dilakukan penelitian lebih lanjut mengenai proses ekstraksi daun rambusa sehingga didapatkan aktivitas antioksidan yang semakin tinggi.

DAFAR PUSTAKA

- Ainsworth, E. A., and K. M. Gillespie. 2007. Estimation of Total Phenolic Content and Other Oxidation Substrates in Plant Tissues Using Folin-Ciocalteu Reagent. *Nature Protocols*. 2(4): 875-877.
- Aksoy, L., E. Kolay, Y. Agilonu, Z. Aslan, and M. Kargioglu. 2013. Free Radical Scavenging Activity, Total Phenolic Content, Total Antioxidant Status, and Total Oxidant Status of Endemic *Thermopsis turcica*, *Saudi Journal of Biological Sciences*. (20): 235-239.
- Andarwulan, N., R. Batari, D.A. Sandrasari, B. Bolling, and H. Wijaya. 2010. Flavonoid Content and Antioxidant Activity of Vegetables from Indonesia. *Food Chemistry* 121:1231-1235.
- Anesini, C., G.E. Ferraro, and R. Filip. 2008. Total Polyphenol Content and Antioxidant Capacity of Commercially Available Tea (*Camellia sinensis*) in Argentina. *Journal of Agricultural and Food Chemistry* 56:9225-9229.
- Cahyanta, A.N. 2016. Penetapan Kadar Flavonoid Total Ekstrak Daun Pare Metode Kompleks Kolorimetridengan Pengukuran Absorbansi secara Spektrofotometri, <http://id.portalgaruda.org/article.php?article=447782&val=9479>, (22 Oktober 2016): 58-61.
- Cheyrier, V., G. Comte, K. M. Davies, V. Lattanzio, and S. Martens. 2013. Plant phenolics: Recent advances on their biosynthesis, genetics, and ecophysiology. *Plant Physiology and Biochemistry*. 72(2013): 1-20.
- Clarkson, P.M. and H.S. Thompson. 2000. Antioxidants: What Role Do They Play in Physical Activity and Health?, *The American Journal of Clinical Nutrition*. (72): 637-646.
- Daniel, M. 2006. *Medicinal Plants Chemistry and Properties*. USA: Science Publishers: 9-11.

- Denisov, E. T. and I. B. Afanas'ev. 2005. Oxidation and Antioxidants in Organic Chemistry and Biology. New York: CRC Press: 896-897.
- Duke, J.A. 2009. *Medicinal Plants of Latin America*. New York: CRC Press: 501-502.
- FAO. 1997. Guidelines for Use of Nutrition and Health Claims. http://www.fao.org/input/download/standards/351/CXG_023e.pdf (21 Februari 2017).
- Fennema, O.R. 1996. *Food Chemistry 3rd Edition*. USA: Marcell Dekker, Inc.
- Gupta, S.D. 2011. *Reactive Oxygen Species and Antioxidant in Higher Plants*. New York: CRC Press: 295-297.
- Harborne, J.B. 1973. *Phytochemical Methods*. New York: Chapman and Hall: 14-20.
- Harborne, J.B. 1987. *Phytochemical Methods 2nd Edition*. New York: Chapman and Hall.22-26
- Hardiana, R., Rudiyanasyah dan T.A. Zaharah. 2012. Aktivitas Antioksidan Senyawa Golongan Fenol dari Beberapa Jenis Tumbuhan Famili *Malvaceae*. *Jurnal Kimia dan Kemasan*. 1(1): 8-13.
- Halliwell, B. and M. Whiteman. 2004. Measuring Reactive Species and Oxidative Damage In Vivo and In Cell Culture: How Should You Do It and What Do The Results Mean?. *Britain Journal Pharmacology* 142:231-55.
- Hanifa, R.A., Y. Lukmayani, dan L. Syafnir. 2015. Uji Aktivitas Antioksidan serta Penetapan Kadar Flavonoid Total dari Ekstrak dan Fraksi Daun Paitan (*Tithonia diversifolia* (Hemsley) A. Gray), Prosiding Penelitian Sivitas Akademika Unisba. (2): 164-170.
- Heldt, H. W. 2005. *Plant Biochemistry*. London: Elsevier Inc.: 243-250.
- Inder, Rachael. 1999. Phenol. <http://www.inchem.org/documents/pims/chemical/pim412.htm> (29 Mei 2017)

- Jun, M. H. Y., J. Fong, X. Wan, C. S. Yang, and C. T. Ho. 2003. Comparison of Antioxidant Activities of Isoflavones Form Kudzu Root (*Pueraria labata* O). *Journal Food Science Institute of Technologist*. 68:2117-2122.
- Kumar, S., D. Kumar, Manjusha, K. Saroha, N. Singh and B. Vashishta. 2008. Antioxidant and Free Radical Scavenging Potential of *Citrullus colocynthis* (L.) Schrad. Methanolic Fruit Extract. *Acta Pharmaceutica*. 58: 215-220.
- Kuo, T.M., K. Eskins, and R. L. Cooper. 1997. Proximate Composition of Mature Seeds from Soybean Plants Grown in Different Environments. <http://www.internationalgrasslands.org/files/igc/publications/1997/2-25-053.pdf> (9 Maret 2017).
- Lim, T.K. 2012. *Edible Medicinal and Non-Medicinal Plants Volume 4 Fruits*. New York: Springer: 166-172.
- Manzoor, M., F. Anwar, Z. Mahmood, U. Rashid, and M. Ashraf. 2012. Variation in Minerals, Phenolics and Antioxidant Activity of Peel and Pulp of Different Varieties of Peach (*Prunus persica* L.) Fruit from Pakistan. *Molecules*. 17: 6491-6506.
- Molyneux, P. 2004. The Use of Stable Free Radical Diphenylpicrylhydrazyl (DPPH) for Estimating Antioxidant Activity. *Journal Science Technology*. 26(2): 211-219.
- Muntana, N., and S. Prasong. 2010. Study on Total Phenolic Contents and Their Antioxidant Activities of Thai White, Red, and Black Rice Bran Extracts. *Pakistan Journal of Biological Sciences* (13)4: 170-174.
- Odewo, S.A., A.O. Agbeja, K.A. Olaifa, A.P. Ojo and S.A. Ogundana. 2014. Proximate And Spectroscopic Analysis Of *Passiflora Foetida* L. *International Journal of Scientific and Technology Research*, 3(9): 353-356.
- Park, Y.S., S.J. Kim, and H.I. Chang. 2008. Isolation of Anthocyanins from Black Rice (Heugjinjubyeo) and Screening of Its Antioxidant Activities. *Journal of Microbial Biotechnology* 36(1): 55-60.

- Patterson, G. W., and W. D. Nes. 1991. *Physiology and Biochemistry of Sterols*. USA: AOCS Press.
- Patil, A.S., H.M. Paikrao, and S.R. Patil. 2013. *Passiflora Foetida Linn: A Complete Morphological and Phytopharmacological Review, International Journal of Pharma and Bio Sciences*. 4(1): 285-296.
- Pekal A. and K. Pyrzynska. 2013. Availability of Some Elements from Different Type of Teas. *Natural Product Journal* 3:4
- Pengelly, A. 2004. *The Constituents of Medicinal Plants*. Australia: Sunflower Herbals: 22-24.
- Pokorny, J., N. Yanishlieva, and M. Gordon. 2001. *Antioxidants in Food Practical Applications*. Cambridge: Woodhead Publishing Inc.: 10-17, 30-32.
- Pribadi, I. 2009. Uji Aktivitas Penangkap Radikal Buah *Psidium guajava* L. dengan Metode DPPH (1,1-difenil-2-pikrilhidrazil) serta Penetapan Kadar Fenolik dan Flavonoid Totalnya. *Skripsi*. Fakultas Farmasi Universitas Muhammadiyah Surakarta. <http://etd.eprints.ums.ac.id/5893/1/K100050061.pdf> (2 September 2016).
- Quattrocchi, U. 2012. *CRC World Dictionary of Medicinal and Poisonous Plants Common Names, Scientific Names, Eponyms, Synonyms and, Etymology*. New York: CRC Press: 2803-2804.
- Ramawat, K. G., and J. M. Me´rillon. 2013. *Natural Products Phytochemistry, Botany and Metabolism of Alkaloids, Phenolics and Terpenes*. Berlin: Springer.
- Rice-Evans, C.A. and L. Parker. 1998. *Flavonoids in Health and Disease*. New York: Marcel Dekker Inc.: 1-3.
- Rorong, J. A and E Suryanto. 2010. Analisis fitokimia eceng gondok (*Eichhornia crassipes*) dan efeknya sebagai agen fotoreduksi Fe⁺³. *J Chem Prog* 3: 33-41

- Sandhiutami, N. M. D. 2010. Antioxidant Activity Test and Determination of Phenolic and Flavonoid Contents from Buah Merah (*Pandanus conoideus* LAM), <http://dosen.univpancasila.ac.id/dosenfile/2010211058136950403726May2013.pdf>, (20 Oktober 2016).
- Saroya, A.M. 2011. *Herbalism, Phytochemistry, and Ethnopharmacology*. New York: CRC Press: 105-107.
- Sayuti, K. dan R. Yenrina. 2015. *Antioksidan Alami dan Sintetik*. Padang: Andalas University Press: 75-76.
- Sermakkani, M. and V. Thangapandian. 2010. Phytochemical Screening for Active Compounds in *Petalium murex* L. *Journal Recruiters Research Science Technology* 2: 110-114.
- Shahidi, F. 2015. *Handbook of Antioxidant for Food Preservation*. Cambridge: Woodhead Publishing: 337-340.
- Singleton, V.L. and J.A. Rossi. 1965. Colorimetry of Total Phenolic with Phosphomolybdc-Phosphotungstic Acid Reagent. *American Journal of Enology and Viticulture*, 16, 147.
- Sompong, R., S. Siebenhandl-Ehn, G. Linsberger-Martin and E. Berghofer. 2011. Physicochemical and Antioxidative Properties of Red and Black Rice Varieties from Thailand, China and Sri Lanka. *Food Chemistry*. 124:132-140.
- Stanilova, M., R. Gorgorov, A. Trendafilova, M. Nikolova, and A. Vitkova. 2012. Influence of Nutrient Medium Composition on in vitro Growth, Polyphenolic Content and Antioxidant Activity of *Alchemilla mollis*, *Natural Products Communication*. 7(1): 1-6.
- Sudarmadji, S. 2007. *Prosedur Analisa untuk Bahan Makanan dan Pertanian*. Yogyakarta: Liberty: 67-69, 83, 99-100.
- Sutrisna, E.M. 2013. Preventif Penyakit Degeneratif dengan Pola Hidup, *Seminar Nasional*, Fakultas IlmuKesehatan, Universitas Muhamaddiyah, Surakarta. <https://publikasiilmiah.ums.ac.id/bitstream/handle/11617/3272/PENYAKIT%20DEGENERATIF.pdf?sequence=3>, (5 Oktober 2016).

- Tiong, S.H., C.Y. Looi, H. Hazni, A. Arya, M. Paydar, W.F. Wong, S.C. Cheah, M.R. Mustafa, and K. Awang. 2013. Antidiabetic and Antioxidant Properties of Alkaloids from *Catharanthus roseus*(L.) G. Don. *Molecules* 18:9770-9784.
- USDA. 2003. *Classification for Kingdom Plantae* Down to Genus *Passiflora* L. <https://plants.usda.gov/java/ClassificationServlet?source=profile&symbol=PASSI&display=31#>. (2 November 2016).
- Widyawati, P.S., C.H. Wijaya, P.S. Hardjosworo, dan D. Sajuthi. 2010. Pengaruh Ekstraksi dan Fraksinasi terhadap Kemampuan Menangkap Radikal Bebas DPPH (1,1-difenil-2-pikrilhidrazil) Ekstrak dan Fraksi Daun Beluntas (*Pluchea indica* Less). *Seminar Rekayasa Kimia dan Proses* ISSN: 1411-4216. Semarang: Universitas Diponegoro. C(18):1-7.
- Widyawati, P.S., T.D.W. Budianta, F.A. Kusuma, dan E.L. Wijaya. 2014. Difference of Solvent Polarity To Phytochemical Content and Antioxidant Activity of *Pluchea indicia* Less Leaves Extracts, *International Journal of Pharmacognosy and Phytochemical Research*. 6(4): 850-855.
- Waller, G. R., and K. Yamazaki. 1996. *Saponins Used in Traditional and Modern Medicine*. New York: Springer Science+Business Media. LLC: 1-2.
- Winarsi, H. 2007. *Antioksidan Alami dan Radikal Bebas*. Yogyakarta: Kanisius.
- Yuhernita dan Juniarti. 2011. Analisis Senyawa Metabolit Sekunder dari Ekstrak Metanol Daun Surian yang Berpotensi sebagai Antioksidan, *Makara Sains*. 15(1): 48-52.