

BAB 5

KESIMPULAN DAN SARAN

5.1 Kesimpulan

1. Peningkatan konsentrasi ekstrak kering daun teh hijau (*Camellia sinensis* L.) dengan konsentrasi 10%, 15% dan 20% berpengaruh terhadap hasil uji mutu fisik (pH, persen kandungan solid, viskositas sediaan, uji kemampuan dan stabilitas menghasilkan busa dan tegangan permukaan) dan efektivitas (pengukuran pembersihan dan kemampuan detergen).
2. Formula terbaik sediaan sampo cair jernih ekstrak kering daun teh hijau (*Camellia sinensis* L.) dari Formula 1, 2, dan 3 adalah Formula 1 (ekstrak kering daun teh hijau 10%) berdasarkan hasil yang telah memenuhi spesifikasi (pH, viskositas sediaan, persen kandungan solid, uji kemampuan dan stabilitas menghasilkan busa dan tegangan permukaan) dan efektivitas (pengukuran pembersihan dan kemampuan detergen), aktivitas antibakteri, uji aseptabilitas serta uji keamanan.

5.2 Saran

Pada penelitian selanjutnya disarankan untuk melalukan modifikasi pada formula optimum dengan *design expert* kemudian dilakukan penambahan uji stabilitas agar diperoleh sediaan sampo yang lebih baik.

DAFTAR PUSTAKA

- Agoes, G. 2009, *Teknologi Bahan Alam*, Penerbit ITB, Bandung.
- Anjarsari, I.R.D. 2016, Katekin Teh Indonesia: Prospek dan Manfaatnya. *Jurnal Kultivasi*, **15** (2): 99-106.
- Anwar, E., 2012, *Eksipien dalam Sediaan Farmasi (Karakterisasi dan Aplikasi)*, Dian Rakyat, Jakarta.
- Archana, S. and Abraham, J. 2011, Comparative analysis of antimicrobial activity of leaf extracts from fresh green tea, commercial green tea and black tea on pathogens. *Journal Of Applied Pharmaceutical Science*, **1**(8): 149-52.
- Arora, P., Nanda, D.A. and Karan, D.M. 2011, Shampoos Based on Synthetic Ingredients Vis-à-vis, Shampoo Based on Herbal Ingredients: A review, *International Journal of Pharmaceutical Sciences Review and Research*, **7**(1): 0976-044.
- Aspiyanto. 2010, *Difiltrasi untuk Memperoleh L-Theanine sebagai Ingredien Fungsional dari Ekstrak Teh Hijau (Camellia sinensis) Menggunakan Membran Nanofiltrasi*, Pusat Penelitian Kimia, Serpong.
- Badi, A.K. and Khan, A.S. 2014, Formulation, Evaluation and Comparison of The Herbal Shampoo With The Commercial Shampoos, *Journal of Basic and Applied Science*, **3**:30-305.
- Barel, A.O., Paye, M. and Maibach, H.I. 2009^a, *Handbook of Cosmetic Science and Technology*, Ed. 3, Informa Healthcare Inc, New York.
- Barel, A.O., Paye, M. and Maibach, H.I. 2014^b, *Handbook of Cosmetic Science and Technology*, Ed. 4, Informa Healthcare Inc, New York.
- BASF. 2011. *Safety Data Sheet*. DehytonK® KE ID. Diakses pada 12 Oktober 2018, <http://www.worldaccount.bASF.com>
- BASF. 2011. *Safety Data Sheet*. Texapon® N70. Diakses pada 12 Oktober 2018. <http://www.worldaccount.bASF.com>
- BPOM RI, 2008, *Informasi Obat Nasional*, Jakarta: Badan Pengawas Obat dan Makanan Republik Indonesia.

- BPOM RI, 2010, *Petunjuk Operasional Pedoman Cara Pembuatan Kosmetik Yang Baik*, Jakarta: Departemen Kesehatan Republik Indonesia.
- Burlando, B., Verotta, L., Cornara, L. and Massa, E.B. 2010, *Herbal Principles in Cosmetics: Properties and Mechanisms of Action*, CRC Press, New York.
- D'Souza, P. and Rathi, S.K. 2015, Shampoo and Conditioners: What a Dermatologist Should Know ?, *Indian J Dermatol*, **60(3)**: 248-254.
- Dalimarta, S. 2008. *Atlas Tumbuhan Obat Indonesia*, Jilid 3, PT. Pustaka Pembangunan Swadaya Nusantara, Jakarta.
- Denyer, S.P., Hodges, N. and Gorman, S.P. 2004, *Hugo and Russell's Pharmaceutical Microbiology*, 7th edition, Blackwell Science, London.
- Departemen Kesehatan RI, 2011, *Suplemen II Farmakope Herbal Indonesia*, ed. 1, Jakarta: Departemen Kesehatan Republik Indonesia.
- Departemen Kesehatan RI, 2014, *Farmakope Indonesia Ed. V*, Jakarta: Departemen Kesehatan Republik Indonesia.
- Departemen Kesehatan RI, 2008, *Farmakope Herbal Indonesia* ed. 1, Jakarta: Departemen Kesehatan Republik Indonesia.
- Deshmukh, S., Kaushal, B. and Ghode, S. 2012, Formulation and evaluation of herbal shampoo and comparative studies with herbal marketed shampoo, *International Journal of Pharma and Biosciences*, **3(3)**: 638-645.
- Direktorat Jendral POM RI. 2000, *Parameter Standar Umum Ekstrak Tumbuhan Obat edisi I*, Jakarta: Direktorat Jenderal Pengawasan Obat dan Makanan, Direktorat Pengawasan Obat Tradisional
- Djuanda, A. 2007, *Ilmu Penyakit Kulit dan Kelamin*, Vol. 5, FKUI, Jakarta.
- Djuanda, A., Hamzah, M. dan Aisah, S. 2010, *Ilmu Penyakit Kulit dan Kelamin*, Edisi 5, Universitas Indonesia, Jakarta.
- Evans, W. C. 2002, *Pharmacognosy 16th Edition*, Saunders, Edinburgh.
- Feist, P. 2010, TLC- Retention Factor (*Rf*). Organic Chemistry, *Journal Planar Chromatography*, **123(3)**: 30-41.

- Fessenden, J. R. and Fessenden, S. J. 2003, *Kimia Organik*, Erlangga, Jakarta.
- Figueras, M.J., Guarro, J., Gene, J. and de Hoog, G.S. 2000, *Atlas of Clinical Fungi*, 2nded, Vol.1, Centraal bureau voor Schimmel cultures, Utrecht.
- Frangie, C.M. 2008, *Standard Cosmetology*, Graphic World Inc, New York.
- Gennaro, A.R., Marderasian, A.H.D., Hanson, G.R. and Medwick, T. 2006, *Remington: The Science and Practice of Pharmacy*, 21sted, Lippincott Williams and Wilkins, New York.
- Giancoli, D.C. 2001, *Fisika Jilid I*, Erlangga, Jakarta.
- INCI Directory, 2009, *International Nomenclature of Cosmetics Ingredients*. Diakses pada 10 Oktober 2018, <http://www.inci.directory.com>
- Harbone, J.B. 2006, *Metodee Fitokimia*, Edisi ke-2, Terjemahan Kosasih Padwinata dan Iwang Soediro, ITB, Bandung.
- Iwata, H. and Shimada, K. 2013, *Formulas, Ingridents and Production of Cosmetics*, Springer, Tokyo.
- Jameel, F. and Searles, J. 2010, Development and Optimization of the Freeze-Drying Processes, in *Formulation and Process Development Strategies for Manufacturing Biopharmaceuticals*, John Wiley and Sons, Inc., New Jersey.
- Jang, H.J., Shin, C.Y. and Kim, K.B. 2015, Safety Evaluation of Polyethylene Glycol (PEG) Compounds for Cosmetic Use, *Official Journal of Korean Society of Toxicology*, **31(2)**: 105-136.
- Jirova, D., Basketter, D., Liebsch, M., Bendova, H., Kejlova, K., Marriott, M. and Kandarova, H. 2010, Comparison of human skin irritation patch test data with in vitro skin irritation assays and animal data, *Contact Dermatitis*, **62**: 109-116.
- Kang, H.S., Kang, H., Kim, J.H., Kim, J.S., Na, Y.J., Chae, B.G. and Han, S.H. 2014, Cosmetic Composition Containing Green Tea Component, *Journal Patent Application Publication*, **3**: 1-7.
- Kaplan, P., Suzuki, M., Wiechers, J.W., Lenick, A.O., Leroy, E., Gao, T. and Rigano, L. 2011, *Hair Care Formulation for All Hair Types*, 1st edAllured Pub Corp, London.

- Kaur, C. D. and Saraf, S. 2011, Photochemoprotective Activity of Alcoholic Extract of *Camellia sinensis*, *International Journal Pharmacol*, **7(3)**: 400-404.
- Kenndler, E. 2004. *Introduction to Chromatography*. Institute for Analitica Chemistry, University of Viena, Wina.
- Kibbe, A. H. 2004, *Handbook of Pharmaceutical Excipient 3th*, Pharmaceutical Press, London.
- Kortemeier, U., Venzmer, J., Howe, A., Gruning, B. and Herrwerth, S. 2010, Thickening Agent for Surfactant System, *International Journal for Applied Science*, **3**: 30-38.
- Krunali, T., Dhara, P., Meshram, D.B., and Mitesh, P. 2013, Evaluation of Standards of some Selected Shampoo Preparation, *World Journal of Pharmacy and Pharmaceutical Sciences*, **2(5)**: 3622-3630.
- Kulandhaivel, M., Johny, M.J. and Palaniswamy, M. 2011, Comparative Study of Antifungal Activity of *Camellia sinensis* and *Acacia sinuate Merr* against Dandruff Causing *Pityrosporum ovale*, *International Journal of Pharmaceutical and Biological Archives*, **2(4)**: 1249-1252.
- Kumar, A. and Mali, R. R. 2010, Evaluation of Prepared Shampoo Formulations and to Compare Formulated Shampoo with Marketed Shampoos, *International Journal of Pharmaceutical Sciences Review and Research*, **3(1)**: 120-126.
- Kurniawan, D.W. dan Sulaiman, S.T.N. 2009, *Teknologi Sediaan Farmasi*, Graha Ilmu, Yogyakarta.
- Limbani, M., Dabhi, M.R., Raval, M.K. and Sheth, N.R. 2009, *Clear Shampoo: an Important Aspect with Consideration of the Toxicity of Commonly Used Shampoo Ingredients*, Cosmetic Science Technology, Gujarat.
- Mahmood, T., Akhtar, N., Khan, B. A., Shoaib, K.H. M. and Saeed, T. 2011. Changes in skin mechanical properties after long-term application of cream containing green tea extract, *Aging Clinical Experimental Research*, **23(5-6)**: 333- 336.
- McMichael, J.A. and Hordinsky, K.M. 2008, *Hair and Scalp Diseases: Medical, Surgical, and Cosmetic Treatments*, Informa Health Care, New York.

- Mehta, A., Saxena, G. and Mani, A. 2016, Comparative Analysis of Antibacterial Activity of Aqueous, Ethanolic, Methanolic and Acetone Extracts of Commercial Green Tea and Black Tea against Standard Bacterial Strains, *International Journal of Current Microbiology and Applied Sciences*, **5(11)**: 145-152.
- Milstein, S.R., Bailey, J.E. and Halper, A.R. 2001, *Handbook of Cosmetic Science and Technology: Definition of Cosmetics*, Ed. 2, Marcel Dekker, New York.
- Mitsui, T. 1997, *New Cosmetic Science*. Elsevier Science, Amsterdam.
- Moghimpour, E., Handali, S. 2015, Saponin: Properties, Methods of Evaluation and Applications, *Annual Research and Review in Biology*, **5(3)**: 207-220.
- Mottram, F. J. and Lees, C. E. 2000, *Poucher's Perfumed, Cosmetic and Soaps*, 10th ed, Kluwer Academic Publishers, New York.
- Namita and Nimisha, S. 2013, Formulation and Evaluation of Herbal Shampoo Having Antimicrobial Potential, *International Journal of Pharmacy and Pharmaceutica*, **5(2)**: 710.
- Nazeri, M., Bakhshian, R.A., Taghizadeh, M., Talaee, R. and Mahboubi, M. 2015, Antifungal Activity of Herbal Extracts Against *Malassezia species*, *Iran Journal Dermatol*, **18**: 10-15.
- Nikam, S. R., Khanvilkar, V.V., Jagdale, D.M., Jadhav, A.P., More, S.H., and Kadam, V.J. 2013, Evaluation of Antibacterial and Antifungal Activities of Marketed Anti Dandruff Shampoos, *Indo American Journal of Pharm Research*, **3(10)**: 8097-8100.
- Pepe, R. C., Wenninger, J. A., and McEwen, G. N. 2002, *International Cosmetic Ingredient Dictionary and Handbook* Vol. 1, McGraw Hill, Washington.
- Plate, H. 2000, *Cosmetic and Toiletries Manufacture Worldwide*, 10th edition, Aston Publishing Group, New York.
- Plewig, G. and Jansen, T. S. 2008, *Dermatology in general medicine*. Edisi 7, McGraw-Hill, Washington.
- Potluri, A., Harish, G., Kumar, B. P. and Durraivel. 2013, Formulation and Evaluation of Herbal Anti-Dandruff Shampoo, *Indian Journal of Research in Pharmacy and Biotechnology*, **1(6)**: 835-839.

- Preethi,J.P., Padmini, K., Srikanth, J., Lohita, M., Swetha, K. and Rao, V.P. 2013, A Review on Herbal Shampoo and Its Evaluation, *Asian Journal Pharma*, **3(4)**: 153-156.
- Purnomo, H. dan Syamsul, E.S. 2017, *Statistika Farmasi (Aplikasi Praktis dengan SPSS)*, Gravika Indah, Yogyakarta.
- Rahmawati, D.S. dan Suhartiningsih. 2014, Pengaruh Jumlah Ekstrak Daun Teh Terhadap Sifat Fisik dan Sifat Mikrobiologi *Cream Creambath* untuk Rambut Rontok, *Jurnal Tata Rias Universitas Negeri Jakarta*, **03(03)**: 45-52.
- Reddy, V. S., Reddy, D. J.K. and Velu, M.G. 2016. Formulation and Evaluation of Antidandruff Shampoo, *Journal of Pharmacy Research*, **10(11)**:700-702.
- Rieger, M.M. 2000, *Harry's Cosmetology :The Principles of Modern Cosmetic*, 8Th Editor Vol. I-II, Leonard Hill Book, London.
- Rilley, P.C and Sykes, S.J. 2002, Industrial Application of Spinning Cone Column Technology: A Review Article, John and Wiley, Melbourne.
- Rohdiana, D. 2015, Teh: Proses, Karakteristik dan Komponen Fungsionalnya, *Journal of Food Review Indonesian*, **10(8)**: 34-37.
- Rowe, R.C., Sheskey, J.P. and Quinn, E.M. 2009, *Handbook of Pharmaceutical Excipient*, 6thed, Pharmaceutical Press and The American Pharmacist Association, New York.
- Rudnicka, L., Olszewska, M. and Rakowska, A. 2012, *Atlas of Trichoscopy: Dermoscopy in Hair and Scalp Disease*, Springer, New York, USA.
- Saifudin, A., Rahayu, V. dan Teruna, H. 2011, *Standarisasi Bahan Obat Alam* Edisi I, Graha ilmu, Yogyakarta.
- Salvador, A. and Chisvert, A. 2007, *Analysis of Cosmetic Product*, Elsevier Advanced Technology, Amsterdam.
- Saptarini, M.N and Suryati, L. 2016, Formulasi Sampo Ekstrak Daun Teh Hijau (*Camellia sinensis* var. *assamica*), *Jurnal IJPST Fakultas Farmasi Universitas Padjajaran*, **3**: 66-70.
- Senanayake, N. 2013, Green tea extract: Chemistry, antioxidant properties and food applications: A review, *Journal Function Food*, **5(1)**: 1529-41.

- Setyaningsih, D., Apriyantono, A. and Sari, M.P. 2010, *Analisis Sensori*, IPB Press, Bogor.
- Sharma, R.M., Shah, K. and Patel, J. 2011, Evaluation of prepared formulations and to compare formulated shampoo with marketed Shampoo, *International Journal of Pharmacy and Pharmaceutical Sciences*, **3(4)**:402-405.
- Showell, M.S. 2006, Introduction to Detergents, *Handbook of Detergents Series Part D: Formulation*, Taylor and Francis Group, London.
- Silverberg, J. I., Jagdeo, J., Patel, M., Siegel, D. and Brody, N. 2011, Green tea extract protects human skin fibroblasts from reactive oxygen species induced necrosis, *Journal of Drugs Dermatol*, **10(10)** : 1096-1101.
- Shinde, P. R., Tatiya, A. U. and Surana, S. J. 2013, Formulation Development and Evaluation of Herbal Antidandruff Shampoo, *International Journal of Research in Cosmetic Sciences*, **3(2)**: 25-33.
- Singh, J. 2008, *Maceration , Percolation, and Infusion Techniques for the Extracts of Medicinal and Aromatic Plants, Extraction Technology for Medicinal and Aromatic Plants*, International Centre for Science and High Technology, Triestte.
- Sinko, P.J. 2013, *Martin: Farmasi Fisika dan Ilmu Farmasetika*, Edisi 5. ECG, Jakarta.
- SNI. 06. 2692. 1992, *Standar Mutu Sampo Cair*, Jakarta:Dewan Standarisasi Nasional.
- Soepardiman, L. 2010, *Kelainan Rambut: Ilmu Penyakit Kulit dan Kelamin*, Badan Penerbit Fakultas Kedokteran Universitas Indonesia, Jakarta.
- Stone, H. and Sidel, J.L. 2004, *Sensory Evaluation Practices*, Academic Press, San Diego.
- Surani, F. dan Putriana, N. A. 2016, Evaluasi Sediaan Sampo Herbal Anti Ketombe dan Anti Kutu, *Jurnal Universitas Padjajaran*, **15(2)**: 218-232.
- Svensson, L. 2012, ‘Design and Performance of Small Scale Sensory Consumer tests’, *Master’s Thesis*, Swedish University of Agricultural Sciences, Swedia.

- Towaha, J. 2013, Kandungan Senyawa Kimia pada Tanaman Teh (*Camelia sinensis*), *Warta Penelitian dan Pengembangan Tanaman Industri*, **19 (3)**: 12-16.
- Tranggono, R.I.S. dan Latifah, F. 2014, *Buku Pegangan Dasar Kosmetologi*, Sagung Seto, Jakarta.
- Trease and Evans. 2002, *Pharmacognosy*, 5 edition, Nottingham, Nottingham.
- Vogt, A., McElwee, K.J. and Blume, P.U. 2008, *Biology of the hair follicle: Hair growth and disorders*, Springer, Berlin.
- Vuong, Q.V., Golding, B.J., Nguyen, M. and Roach, P.D. 2010, Extraction and Isolation of Cathechins from Tea, *Journal of Social Science*, **33**: 3415-3428.
- Winarno, F. G. dan Kristiono, L. 2016, *Green Tea and White Tea*, PT. Gramedia Pustaka Utama, Jakarta.
- Zheng, Y.J. and Loh, X.J. 2016, Natural Rheological Modifiers for Personal Care, *Polymers Advanced Technologies*, **8(22)**: 1-16.