

BAB V

KESIMPULAN DAN SARAN

5.1 Kesimpulan

Berdasarkan hasil penelitian optimasi menunjukkan bahwa asam sitrat berpengaruh untuk menurunkan pH, kadar air dan menurunkan (mempercepat) waktu mlarut. Natrium bikarbonat berpengaruh untuk meningkatkan pH, menurunkan kadar air dan menurunkan (mempercepat) waktu mlarut. Interaksi keduanya berpengaruh meningkatkan pH, kadar air dan meningkatkan (memperlama) waktu mlarut.

Hasil dari optimasi, memberikan formula optimum pada garam mandi dalam bentuk serbuk *effervescent* yang diperoleh dengan *design expert* yaitu kombinasi asam sitrat 24,99% dan natrium bikarbonat 50,00% dengan perkiraan hasil pH 6,305, kadar air 1,532% dan waktu mlarut 0,967 menit.

5.2 Saran

Pada penelitian ini hanya menggunakan bahan sintetik. Disarankan pada peneliti selanjutnya dilakukan pengembangan formula dengan bahan alam.

DAFTAR PUSTAKA

- Agoes, G. 2012, *Sediaan Farmasi Padat (SFI-6)*, Penerbit ITB, Bandung.
- Ali, B., Al-Wabel, N.A., Shams, S., Ahamad, A., Khan, S.A. and Anwar, F. 2015, Essential oils used in aromatherapy: A systemic review, *Asian Pacific Journal of Tropical Biomedicine*, **5(8)**:601-611.
- Allen, J.R., Ansel, H.C. and Popovich, N.G. 2005, *Ansel's Pharmaceutical Dosage Form and Delivery System*, Ed VIII, 233-244, Lippincott Williams and Wilkins, New York.
- Allen, L.V. and Ansel, H.C. 2010, *Ansel's Pharmaceutical Dosage Form and Delivery System*, Edisi X, 215-235, Lippincott Williams and Wilkins, London.
- Anonim, 2018^a, Carmoisine. Diakses pada 20 Januari 2018, <https://www.chemicalland21.com/lifescience/foco/CARMOISINE.htm>.
- Anonim, 2018^b, FD&C Blue No. 1. Diakses pada 20 Januari 2018, <http://www.foodadditivesworld.com/fdc-blue-no1.html>.
- Anonim, 2018^c, Sodium Bikarbonat. Diakses pada 20 Januari 2018, https://tr.wikipedia.org/wiki/Sodyum_bikarbonat.
- Anonim, 2018^d, Sodium Laureth Sulfate. Diakses pada 20 Januari 2018, <https://www.lobachemie.com/LaboratoryChemicals-05924/SODIUM-LAURYL-ETHER-SULFATE-SLES-CASNO-9004-82-4.aspx>.
- Annual Review of Cosmetic Ingredient Safety Assessments-2004/2005, 2006, *International Journal of Toxicology*, **25(2)**: 1-89.
- Badan Pengawas Obat dan Makanan (BPOM). 2014, *Persyaratan Mutu Obat Tradisional*, Jakarta: Badan Pengawas Obat dan Makanan Republik Indonesia.
- Badan Pengawas Obat dan Makanan (BPOM). 2015^a, *Natrium Lauril Eter Sulfat*, Jakarta: Badan Pengawas Obat dan Makanan Republik Indonesia.
- Badan Pengawas Obat dan Makanan (BPOM). 2015^b, *Persyaratan Teknis Bahan Kosmetika*, Jakarta: Badan Pengawas Obat dan Makanan Republik Indonesia.

- Badan Standar Nasional. 2004, *Cara Uji Derajat Keasaman (pH) dengan Menggunakan Alat pH Meter*, Standar Nasional Indonesia (SNI) 06-6989.11-2004, Jakarta: Badan Standar Nasional Indonesia.
- Badan Standar Nasional. 2006, *Petunjuk pengujian organoleptik dan atau sensori*, Standar Nasional Indonesia (SNI) 01-2346-2006, Jakarta: Badan Standar Nasional Indonesia.
- Baki, G. and Alexander, K.S. 2015, *Introduction to Cosmetic Formulation and Technology*, John Wiley and Sons Inc., Haboken, pp 150.
- Bensouilah, J. and Buck, P. 2006, *Aromadermatology and Aromatherapy in the Treatment and Care of Common Skin Conditions*, Radcliffe Publishing Ltd., Abingdon.
- Bolton, S. and Bon, C. 2004, *Pharmaceutical Statistic Pratical and Clinical Application*, 4th ed., Marcel Dekker Inc., New York.
- Bolton, S. 2010, *Pharmaceutical Statistic Pratical and Clinical Application*, 5th ed., Marcel Dekker Inc., New York.
- Butler H. 2000, *Poucher's Perfumes, Cosmetics and Soaps*, 10th ed., Kluwer Academic Publishers, London.
- Charbonnier, V., Marrison, B.M., Paye, M. and Maibach, H.I. 2000, Subclinical, non-erythematous irritation with an open assay model (washing): sodium lauryl sulfate (SLS) versus sodium laureth sulfate (SLES), *Food and Chemical Toxicology*, **39**(3): 279-286.
- Cartensen, J.T. 1993, *Pharmaceutical Principles of Solid Dosage Form*, Technomic Publishing Company, Inc., Lancaster.
- Cosmetic Ingredient Review. 2012, *On the Safety Assessment of Citric Acid, Inorganic Citrate Salt, and Alkyl Citrate Esters as Used in Cosmetics*, Washington DC: Cosmetic Ingredient Review Expert Panel.
- Cosmetic Ingredient Review. 2014, *Safety Assessment of Magnesium Sulfate as Used in Cosmetic*, Washington DC: Cosmetic Ingredient Review Expert Panel.
- Davis, M.P. and Declan W., Msc, FACP, FRCP. 2010. Mechanisms of Fatigue. *The journal of Supportive Oncology*. Diakses 12 Februari 2018, <http://www.supportiveoncologi.net>.
- Departemen Kesehatan RI. 2014, *Farmakope Indonesia*, Edisi V, Jakarta: Departemen Kesehatan Republik Indonesia.

- Epsom Salt Council. 2009. Garden Benefits. Diakses 05 Oktober 2017, http://www.epsomsaltcouncil.org/garden_benefits.htm.
- Fung K.Y. and Ng, K.M. 2003, Product Centered Processing: Pharmaceutical and Capsules. *AIChE Journal*. **49(5)**: 1193-1215.
- Giles Chemical. 2008. Typical Uses of Magnesium Sulfate. Diakses 05 Oktober 2017, <http://www.Gileschemical.com/pdfs/MGSO4TYP.pdf>.
- Guerra, E., Llompart, M. and Garcia-Jares, C. 2018, Analysis of Dyes in Cosmetics: Challenges and Recent Developments, *Cosmetics*, **5(3)**: 47.
- Guertechin, L.O. 2009, ‘Surfactants: Classification’, in Barel, A.O., Paye, M. and Maibach, H.I., *Handbook of Cosmetic Science and Technology*, 3rd ed., Informa Healthcare USA Inc., New York.
- Hadisoewignyo, L. dan Fudholi, A. 2013, *Sediaan Solida*, Pustaka Belajar, Yogyakarta.
- Hadisoewignyo, L. 2015, *Pedoman Praktikum Formulasi dan Teknologi Sediaan Solida*, Universitas Katolik Widya Mandala, Surabaya.
- Hallowell, M.R. 2010. Worker Fatigue, Managing Concerns in Rapid Renewal Highway Construction Projects. Diakses 12 Februari 2018, <http://www.asse.org>.
- Herrwerth, S., Leidreiter, H., Wenk, H.H., Farwick, M., Ulrich-Brehm, I. and Gruning, B. 2008, Highly Concentrated Cocamidopropyl Betaine-The Latest Developments for Improved Sustainability and Enhanced Skin Care, *Tenside Surfactants Detergents*, **45(6)**: 304-308.
- Hibbs, J. 2006, ‘Anionic Surfactants’, in Farn, R.J., *Chemistry and Technology of Surfactants*. Blackwell Publishing, Oxford.
- HSDB, 2018, Brilliant Blue. Diakses pada 20 Januari 2018, <https://toxnet.nlm.nih.gov/cgi-bin/sis/search2/f?./temp/~9MNOvA> :1.
- Hunger, K., Mischke, P., Rieper, W., Raue, R., Kunde, K. and Engel, A. 2000, Azo Dyes. *Ullmann's Encyclopedia of Industrial Chemistry*, Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim.

- Hunting, A.L.L. 2000, ‘Soap’, in Butler, H., *Poucher’s Perfumes, Cosmetics and Soaps*, 10th ed., Kluwer Academic Publisher, London, pp 102-103.
- Jellinek, J.S. 1971, *Formulation and Function of Cosmetic*. John Wiley & Sons Inc, New York, pp 530-537.
- Kalangi, S.J.R. 2013, Histofisiologi Kulit, *Jurnal Biomedik (JBM)*, **5(3)**: 12-20.
- Kolarsick, P., Kolarsick, M. and Goodwin, C. 2011, Anatomy and Physiology of The Skin, *Journal of the Dermatology Nurses Association*, **3(4)**: 1-11.
- Kurniawan, D.W. dan Sulaiman S. T. N. 2009, *Teknologi Sediaan Farmasi*, Graha Ilmu, Yogyakarta, pp 703-704, 738-787.
- Lambers, H., Piessens, S., Bloem, A. and Finkel, P. 2006, Natural Skin Surface pH is on Average Below 5, Which is Beneficial for its Resident Flora, *International Journal of Cosmetic Science*, **(28)**: 359-370.
- Liebert, M.A. 1987, Final Report on the Safety Assessment of Sodium Sesquicarbonate, Sodium Bicarbonate, and Sodium Carbonate, *Journal of the American College of Toxicology*, **6(1)**: 121-138.
- Lindberg, N. and Hansson, H. 2002, *Effervescent Pharmaceutical in Encyclopedia of Pharmaceutical Technology*, 3rd ed., Swarbrick, J. (eds), Pharmaceu Tech Inc., Pinehurst, North Carolina, pp 1455-1456, 1458.
- Maunder, T.W. and Rieveley, R.B. 1999, *Effervescent or Foaming Bath Shape or Solid*, Biotech Holding. Vancouver, Canada.
- Mescher A.L. 2010, *Junqueira’s Basic Histology Text & Atlas*, McGraw Hill Medical, New York.
- Mohrle, R. 1989, *Effervescent Tablets*, in Lieberman, H.A., Lachman, L., (eds), Pharmaceutical Dosage Form Tablet, vol I, pp 287,289, 295.
- Novidiyanto dan Setyowati, A. 2008, *Formulasi Serbuk Effervescent Sari Wortel (Daucus carota)*, Fakultas Teknologi Pertanian, Yogyakarta.
- Ohaus Corporation is an ISO9001. 2008, *A Guide to Moisture Content Analysis*, Parsippany: Ohaus Corporation.

Peraturan Kepala BPOM RI. 2010, *Kriteria dan Tata Cara Pengajuan Notifikasi Kosmetika*, Jakarta: Kepala Badan Pengawas Obat dan Makanan RI.

Peraturan Menteri Kesehatan RI. 2014, *Pelayanan Kesehatan Spa*, Jakarta: Menteri Kesehatan Republik Indonesia.

Purnomo, H. dan Syamsul, E.S. 2017, *Statistika Farmasi (Aplikasi Praktis dengan SPSS)*, Gravika Indah, Yogyakarta.

Purwandari, L.E. 2007, ‘Optimasi Campuran Asam Sitrat Asam Tartrat dan Natrium Bikarbonat Sebagai Eksipien Dalam Pembuatan Granul Effervescent Ekstrak Rimpang Temulawak (*Curcuma xanthorrhiza Roxb.*) Secara Granulasi Basah Dengan Metode Desain Faktorial’, *Skripsi*, Sarjana Farmasi, Universitas Sanata Dharma, Yogyakarta.

Rau, A.H. 2000, *Foaming Effervescent Bath Product*, United States Patent. 6121215.

Robinson, V.C., Bergfeld, W.F., Belsito, D.V., Hill, R.A., Klaasen, C.D., Jr Marks, J.G., Shank, R.C., Slaga, T.J., Synder, P.W. and Andersen, F.A. 2010, Final Report of Amended Safety Assessment of Sodium Laureth Sulfate and Related Salts of Sulfated Ethoxylated Alcohols, *International Journal of Toxicology*, **29 (Supplement 3)**: 1515-1615.

Rowe, R.C., Sheskey P.J., and Owen, S.C. (eds). 2006, *Handbook of Pharmaceutical Excipients*, 5th ed., Pharmaceutical Press, London.

Rowe, R.C., Sheskey P.J., and Quinn, M.E. (eds). 2009, *Handbook of Pharmaceutical Excipients*, 6th ed., Pharmaceutical Press, London.

SaltWorks, 2001. America’s Sea Salt Co., Inc, US. Diakses 19 Februari 2018, <https://www.seasalt.com/making-bath-salts>.

Sandrasari, D.A. dan Abidin, Z. 2010, Penentuan konsentrasi natrium bikarbonat dan asam sitrat pada pembuatan serbuk minuman anggur berkarbonasi (effervescent), *Jurnal Teknologi Industri Pertanian*, **21(2)**: 113-117.

Sarifin, G. 2010, *Kontraksi Otot Dan Kelelahan*, Jurnal ILARA, **1(2)**: 58-60.

Sarkic, A. and Stappen, I. 2018, Essential Oils and Their Single Compounds in Cosmetics: A Critical Review, *Cosmetics*, **5(11)**.

Setyaningsih, D., Apriyantono, A dan Sari, M.P. 2010, *Analisis Sensori untuk Industri Pangan dan Agro*, Kampus IPB Taman Kencana Bogor.

SoapKidz, 2008, Diakses 19 Februari 2018, <http://www.soapkidz.org>.

Soekarto. 2002, *Penilaian Organoleptik*, Pusat Pengembangan Teknologi Pangan, Bogor.

Tanu, B. and Harpreet, K. 2016, Benefits of essential oil, *Journal of Chemical and Pharmaceutical Research*, **8(6)**: 143-149.

Technical Evaluation Report. 2011, *Magnesium Sulfate*, Washington DC: ICF International for the USDA Nation Organic Program.

Toledo, M. 2001, Operating Instructions HR73 and HG53 Moiture Analyzers HR73-P and HG53-P Moisture Analyzers, Mettler-Toledo GmbH, Laboratory & Weighing Technologies, Greifensee.

Tortora, G.J. and Derrickson, B.H. 2009, *Principles of Anatomy and Physiology*, 12th ed., John Willey and Sons, Inc., New Jersey.

Tranggono, R.I., dan Latifah, F. 2014, *Buku Pegangan Ilmu Kosmetik*, PT. Gramedia Pustaka Utama, Jakarta.

Wasitaatmaja, 1997, *Penuntun Kosmetik Medik*, Universitas Indonesia, Jakarta.

Waring, R.H. 2015. Diakses 05 Oktober 2017, http://www.epsomsaltcouncil.org/wp-content/uploads/2015/10/report_on_absorption_of_magnesium_sulfate.pdf.

Wehling, F. 2004, Effervescent Composition Including Stevia. Diakses pada 20 Januari 2018, <http://www.google.ch/patents/US6811793>.

Wilkinson, J.B. and Moore, R.J. 1973, *Harry's Cosmeticology*, 6th ed., George Godwin, New York.

Wilkinson, J.B. and Moore, R.J. 1982, *Harry's Cosmeticology*, 7th ed., George Godwin, London.