DAFTAR PUSTAKA

Ahmed, R., Tanvir, E.M., Hossen, M.S., Afroz, R., Ahmmed, I., Rumpa, N.E.N., Paul, S., Gan, S.H., Sulaiman, S.A., Khalil, M.I., 2017. Antioxidant properties and cardioprotective mechanism of Malaysian propolis in rats. *Evidence-based Complement. Altern. Med*. 17 : 1-11

Al-Hariri, M., 2011. Propolis and its direct and indirect hypoglycemic effect. *J. Fam. Community Med*. 18 (3)

Aminimoghadamfarouj, N., Nematollahi, A., 2017. Propolis diterpenes as a remarkable bio-source for drug discovery development: A review. *Int. J. Mol. Sci*. 18 : 1290

Anjum, S.I., Ullah, A., Khan, K.A., Attaullah, M., Khan, H., Ali, H., Bashir, M.A., Tahir, M., Ansari, M.J., Ghramh, H.A., Adgaba, N., Dash, C.K., 2019. Composition and functional properties of propolis (bee glue): A review. *Saudi J. Biol. Sci*. 26 (7) : 1695-1703

Anne E. Dollin, L.J.D. and the late S.F.S., 1997. Australian Stingless Bees of the Genus Trigona (Hymenoptera:Apidae). *Invertebrate Taxonomy.* 11 : 861–896.

Augusto-Obara, T.R., de Oliveira, J., da Gloria, E.M., Spoto, M.H.F., Godoy, K., de Souza Vieira, T.M.F., Scheuermann, E., 2019. Benefits of superfine grinding method on antioxidant and antifungal characteristic of Brazilian green propolis extract. *Sci. Agric*. 76 (5) : 398-404

Bali, V., Ali, M., Ali, J., 2010. Study of surfactant combinations and development of a novel nanoemulsion for minimising variations in bioavailability of ezetimibe. *Colloids Surfaces B Biointerfaces*. 76 : 410-420

Banskota, A.H., Tezuka, Y., Kadota, S., 2001. Recent progress in pharmacological research of propolis. *Phyther. Res*. 15 : 561-571

Barros, K.B.N.T., Neto, E.M.R., Fonteles, M.M. de F., 2019. Propolis and its Cosmetic Applications: A Technological Prospection. *J. Young Pharm*. 11(4) : 350-352

Bott, R.F., Oliveira, W.P., 2007. Storage conditions for stability testing of pharmaceuticals in hot and humid regions. *Drug Dev. Ind. Pharm*. 33 : 393-401

Choudhari, M.K., Punekar, S.A., Ranade, R. V., Paknikar, K.M., 2012. Antimicrobial activity of stingless bee (Trigona sp.) propolis used in the folk medicine of Western Maharashtra. *India. J. Ethnopharmacol*. 141 : 363-367

Choudhury, H., Gorain, B., Pandey, M., Chatterjee, L.A., Sengupta, P., Das, A., Molugulu, N., Kesharwani, P., 2017. Recent Update on Nanoemulgel as Topical Drug Delivery System. *J. Pharm. Sci*. 106 : 1736-1751

Dominica, D., Handayani Prodi, D.S., Matematika dan Ilmu Pengetahuan Alam, F., Bengkulu, U., 2019. Formulasi dan Evaluasi Sediaan Lotion dari Ekstrak Daun Lengkeng (Dimocarpus Longan) sebagai Antioksidan. *J. Farm. dan Ilmu Kefarmasian Indonesia*. 6 (1).

Eid, A.M., El-Enshasy, H.A., Aziz, R., Elmarzugi, N.A., 2014. Preparation, characterization and anti-inflammatory activity of Swietenia macrophylla nanoemulgel. *J. Nanomedicine Nanotechnol*. 5 (2).

Eliska, H., Gurning, T., Wullur, A.C., Lolo, W.A., 2016. Formulasi Sediaan Losio dari Ekstrak Kulit Buah Nanas (Ananas comosus l. (merr)) Sebagai Tabir Surya. *Pharmacon Jurnal Ilmiah Farma*si. 5 (3) : 2302-2493

Elmarzugi, N.A., Eid, A.M., Chellapa, P., Mohamed, A.T., Keleb, E.I., Elmahgoubi, A., Issa, Y.S., 2015. Nanoemulsion and Nanoemulgel as a Topical Formulation. *IOSR Journal Of Pharmacy*. 5(10) : 43-47

Erwan, E., Purnamasari, D.K., Agustin, W., 2020. Pengaruh Desain Kotak Terhadap Produktivitas Lebah Trigona sp. *J. SAINS Teknol. Lingkungan*. 6 (2) : 192-201

Eugresya, G., Avanti, C., Uly, S.A., 2017. Pengembangan Formula dan Uji Stabilitas Fisik-pH Sediaan Gel Facial Wash yang Mengandung Ekstrak Etanol Kulit Kayu Kesambi. *Media Pharmaceutica Indonesiana.* 1 (4)

Farag, M.R., Abdelnour, S.A., Patra, A.K., Dhama, K., Dawood, M.A.O., Elnesr, S.S., Alagawany, M., 2021. Propolis: Properties and composition, health benefits and applications in fish nutrition. *Fish Shellfish Immunol*. 115 : 179-188

Juliantoni, Y., Hajrin, W., Subaidah, W.A., 2020. Formulasi Sediaan Gel Sari Buah Duwet (Syzygium cumini) dengan Basis Karbopol 940 Sebagai Gelling Agent. *Sasambo J. Pharm*. 1 (2) : 30–33.

Kartikasari, D., Anggraini, R., Farmasi Yarsi Pontianak Jl Panglima, A.A., no, im, kartikasari Akademi Farmasi Yarsi Pontianak, D., 2018. Formulasi Masker Gel Peel Off Dari Ekstrak Etanol Umbi Bawang Dayak (Eleutherinebulbosa (Mill.) Urb. Eleutherine americana Merr), *Jurnal Ilmu Farmasi dan Farmasi Klinik (JIFFK)*. 15 (1) : 01-11

Khadar, A., Awanis, A., Mohd Badiazaman, B., Mohd, K., Suryati Mohd, K., Nafi, E.M., Shafiqha, A., Badiazaman, M., Annisava, A.R., 2018.

Propolis: Traditional uses, Phytochemical Composition and Pharmacological Properties. I*nternational Journal of Engineering & Technology*. 7 (4.43) : 78-82

Malaka, M. H, Indalifiany, A., Sahidin, Fristiohady, A., Andriani, R., 2021. Formulasi dan Uji Stabilitas Fisik Nanoemulgel Ekstrak Etanol Spons Petrosia Sp. *JFSP*. 7 (3) : 321-331

Mao, Y., Chen, X., Xu, B., Shen, Y., Ye, Z., Chaurasiya, B., Liu, L., Li, Y., Xing, X., Chen, D., 2019. Eprinomectin Nanoemulgel for Transdermal Delivery Against Endoparasites and Ectoparasites: Preparation, in itro and in vivo Evaluation. *Drug Delivery*. 26 (1) : 1104-1114

Martinotti, S., Ranzato, E., 2015. Propolis: A new frontier for wound healing?. *Burn. Trauma*. 3 (9)

Masri, M., Rahmat, D., Wibowo, A.E., 2021. Pengembangan Sediaan Emulgel dari Nanostructured Lipid Carrier (NLC) Tetrahydrocurcumin Sebagai Pencerah. *J. Sains dan Kesehatan*. 3 (3) : 478–487.

Megawati, Alfreds Roosevelt, L.O.A., 2017. Formulasi dan Uji Stabilitas Fisik Sediaan Gel Ekstrak Kulit Buah Rambutan (Nephelium lappaceum l.) Sebagai Obat Sariawan Menggunakan Variasi Konsentrasi Basis Carbopol. *J. Farm. Sandi Karsa.* 5 (1)

Michener, C.D., Sakagami, S.F., 1990. Classification of the Apidae (Hymenoptera). *Science Bulletin*. 54 (4) : 75-164

Mohammad Ali, B., Ghoname, N., Hodeib, A., Elbadawy, M., 2015. *Significance of topical propolis in the treatment of facial acne vulgaris*. (Online). (http://www.ejdv.eg.net, diakses 10 February 2022).

Mulia, K., Ramadhan, R.M.A., Krisanti, E.A., 2018. Formulation and characterization of nanoemulgel mangosteen extract in virgin coconut oil for topical formulation. *MATEC Web of Conferences*. 156 (01013)

Organization, W.H., 2018. Stability testing of active pharmaceutical ingredients and finished pharmaceutical products. *WHO Technical Report Series.*

Pasupuleti, V.R., Sammugam, L., Ramesh, N., Gan, S.H., 2017. Honey, Propolis, and Royal Jelly: A Comprehensive Review of Their Biological Actions and Health Benefits. *Oxid. Med. Cell. Longev*. 17 : 01-21

Pribadi, A., 2020. Produktivitas Panen Propolis Mentah Lebah Trigona itama Cockerell (Hymenoptera: Apidae) Menggunakan Propolis Trap dan Manipulasi Lingkungan di Riau. *Maj. Ilm. Biol. Biosf*. 37 (2) : 60-68

Przybyłek, I., Karpiński, T.M., 2019. Antibacterial properties of propolis. *Molecules*. 24 (2047)

Rohmani, S., Kuncoro, M.A.A., 2019. Uji Stabilitas dan Aktivitas Gel andsanitizer Ekstrak Daun Kemangi. *J. Pharm. Sci. Clin. Res*. 01 : 16-28

Sanaji, J. B, Sarah Krismala, M., Rosa Liananda, F., Politeknik Katolik Mangunwijaya, F., Josephbaskoro, S., 2019. Pengaruh Konsentrasi Tween 80 Sebagai Surfaktan Terhadap Karakteristik Fisik Sediaan Nanoemulgel Ibuprofen The Effect Of Tween 80 Concentration As A Surfactant On Nanoemulgel Ibuprofen's Physical Characteristics. *IJMS-Indonesian Journal On Medical Science*. 6 (2)

Sanjay Bajaj, D.S. and Sakhuja. N., 2012. Stability Testing of Pharmaceutical Products. *Journal of Applied Pharmaceutical Science*. 2 (3) : 129-138

Santos, S.D.R., Rosseto, H.C., Bassi da Silva, J., Vecchi, C.F., Caetano, W., Bruschi, M.L., 2020. The effect of carbomer 934P and different vegetable oils on physical stability, mechanical and rheological properties of emulsion-based systems containing propolis. *J. Mol. Liq*. 307 : 112969.

Sengupta, P., Chatterjee, B., 2017. Potential and future scope of nanoemulgel formulation for topical delivery of lipophilic drugs. *Int. J. Pharm.* 526 (2) : 353-365

Shah, P., Bhalodia, D., Shelat, P., 2010. *Nanoemulsion: A pharmaceutical review*. (Online). Vol. 1. No. 1. (http://www.sysrevpharm.org, diakses 11 Februari 2010).

Silva-Carvalho, R., Baltazar, F., Almeida-Aguiar, C., 2015. Propolis: A Complex Natural Product with a Plethora of Biological Activities That Can Be Explored for Drug Development. *Evidence-based Complement. Altern. Med*. 15 : 01-29

Spaethe, J., Streinzer, M., Eckert, J., May, S., Dyer, A.G., 2014. *Behavioural evidence of colour vision in free flying stingless bees*. (Online).(https://www.researchgate.net/publication/260149697,diakses 15 September 2014).

Srivastava, M., Kohli, K., Ali, M., 2016. Formulation development of novel in situ nanoemulgel (NEG) of ketoprofen for the treatment of periodontitis. Drug Deliv. 23 (1) : 154-166

Sutradhar, K.B., Amin, L., 2013. Nanoemulsions: Increasing possibilities in drug delivery. *Eur. J. Nanomedicine*. 5 (2) : 97-110

Tranggono R.I. and Latifah F., 2007. *Buku Pegangan Ilmu Pengetahuan Kosmetik*. PT. Gramedia, Jakarta.

Viqhi, A.V., Manggau, M.A., Sartini, S., Wahyudin, E., Rahman, L., Yulianti, R., Permana, A.D., Awal, S.A., 2021. Development of propolis (Apis trigona)-loaded nanoemulgel for improved skin penetration of caffeic acid: The effect of variation of oleic acid concentration. *J. Med. Sci.* 9 (B) : 1264-1278

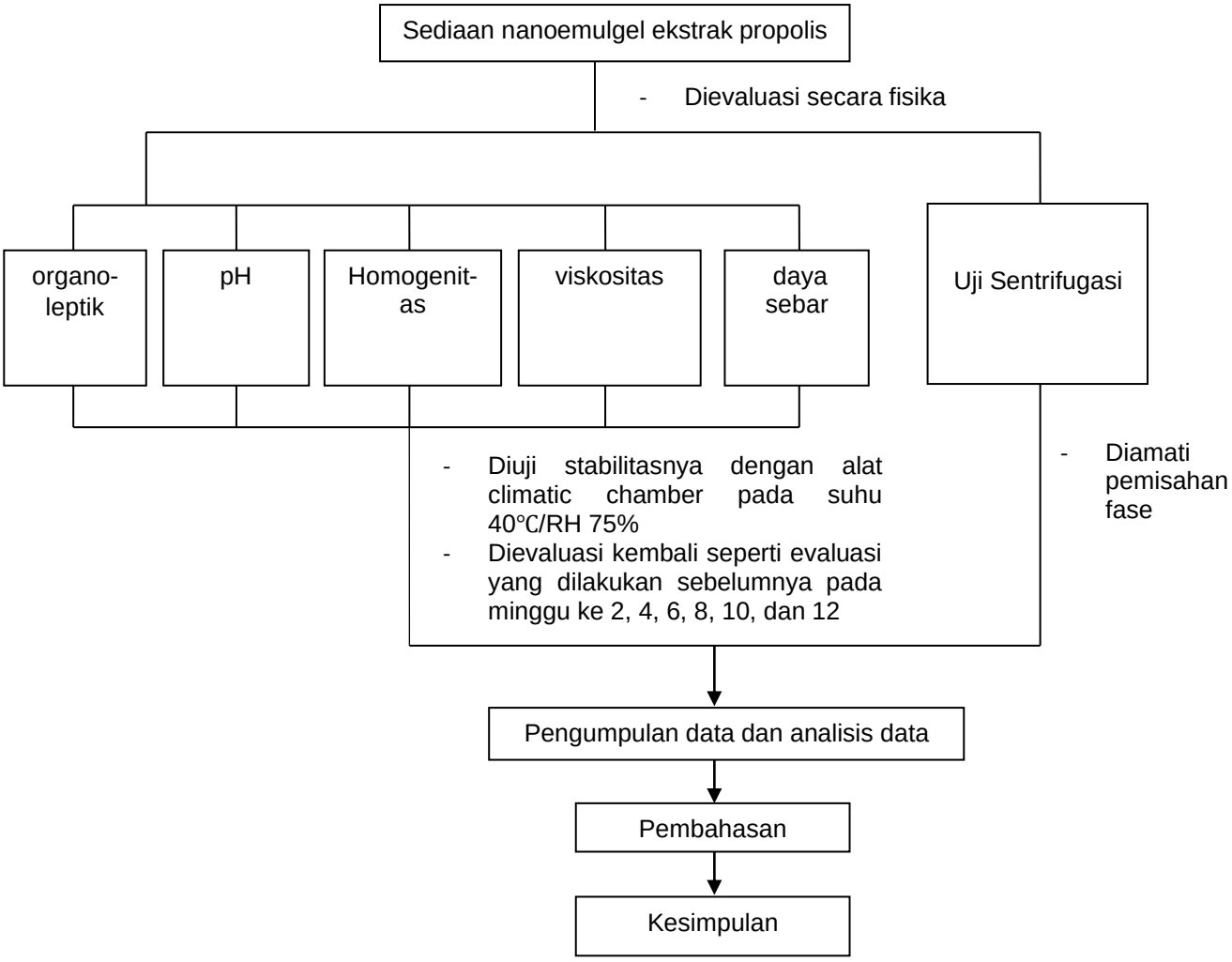
Wardaniati, I., Islami, D., 2020. Formulasi Masker Gel Dari Ekstrak Propolis Dan Lidah Buaya Sebagai Anti Aging Dan Anti Jerawat. *J. Farm. Higea*. 12 (2).

Warnida, H., Juliannor, A., Sukawaty, Y., 2016. Formulation of Bawang Dayak (Eleutherine bulbosa (Mill.) Urb.) Extract into a Gel Toothpaste. *J. Sains Farm. Klin*. 3 (1) : 42–49.

Weżgowiec, J., Więckiewicz, W., Kulbacka, J., 2017. Antimicrobial Activity, Cytotoxicity And Total Phenolic Content Of Different Extracts Of Propolis From The West Pomeranian Region In Poland. *Acta Poloniae Pharmaceutica*. 74 (2) : 715-722

LAMPIRAN

Lampiran 1. Skema Kerja Penelitian



Lampiran 2. Tabel Hasil Pengukuran Nanoemulgel Ekstrak Propolis

Tabel 6 . Hasil pengukuran viskositas (cps) nanoemugel ekstrak propolis lebah *Apis trigona*

Penyimpanan Pekan Ke-	Dial reading	Faktor koreksi	Hasil viskositas (50 rpm)			Rata-rata ± SD
			Sampel 1	Sampel 2	Sampel 3	
0	33	800	26.400	25.200	18.400	23333.333 ± 3522.767
	31.5	800				
	23	800				
2	24	800	19.200	20.800	17.600	19200.000 ± 1306.394
	26	800				
	22	800				
4	20	800	16.000	20.000	15.600	17200.000 ± 1986.621
	25	800				
	19.5	800				
6	24	800	19.200	18.800	19.200	19066,666 ± 188.564
	23.5	800				
	24	800				
8	20	800	16.000	15.200	15.600	15600.000 ± 461.880
	19	800				
	19.5	800				
10	22.7	800	18.160	14.800	20.000	17653.333 ± 2152.910
	18.5	800				
	25	800				
12	22.5	800	18.000	18.400	18.080	18160.000 ± 172.819
	23	800				
	22.6	800				

Lampiran 3. Gambar-gambar Hasil Penelitian

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Gambar 6. Pembuatan ekstrak propolis Apis trigona</td><td>Gambar 7. Sediaan nanoemulgel ekstrak propolis</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Gambar 8. Penyimpanan sediaan nanoemulgel ekstrak propolis ke climatic chamber</td><td>Gambar 9. Uji pH sediaan nanoemulgel ekstrak propolis</td></tr>
</table>

Gambar 10. Uji viskositas sediaan nanoemulgel ekstrak propolis

Gambar 11. Uji daya sebar sediaan nanoemulgel ekstrak propolis

Gambar 12. Uji sentrifugasi sediaan nanoemulgel ekstrak propolis