

DAFTAR PUSTAKA

- Alfina, 2020. Uji Aktivitas Antidiabetik Polisakarida Biji Alpukat (*Persea americana Mill.*) Secara *In Vivo*. [Skripsi]. Makassar. Universitas Hasanuddin.
- Anggraini, D. et al., 2020. Pola Bakteri dan Antibiotogram Penyebab Ulkus Diabetikum Di RS X Riau Periode 2015 –2018. *Biomedika*, 12(1), pp. 27-35.
- Association, A. D., 2014. Standars of Medical Care In Diabtes. *Diabetes Care*, 37(1), pp. 14-80.
- Balouiri, M., Sadiki, M. & Ibnsouda, S. K., 2016. In: *Methods for In Vitro Evaluating Antimicrobial Activity: A Review*. Monacco: Journal of Pharmaceutical Analysis, Elsevier, pp. 71-79.
- Basu, S. et al., 2017. Polysaccharides from *Dolichos biflorus* Linn and *Trachyspermum ammi* Linn seeds: isolation, characterization and remarkable antimicrobial activity. *Chemistry Central journal*, pp. 1-10.
- Bello, O. O., Oyekanmi, E. O. & Kelly, B. A., 2018. Antibiotic Susceptibility Profiles of Bacteria from Diabetic Foot Infections in Selected Teaching Hospitals in Southwestern Nigeria. *International Annals of Science*, 4(1), pp. 1-13.
- Brooks, G. F., Butel, J. S. & Morse, S. A., 2004. *Jawetz, Melnick, & Adelberg Mikrobiologi Kedokteran*. 23 ed. Jakarta: Penerbit Buku Kedokteran EGC.
- Chandra, A., Ingrid, H. M. & Verawati, 2013. Pengaruh pH dan Jenis Pelarut pada Perolehan. *Research Report-Engeenering Science*, Volume 2.
- Dabas, D., Shegog, R. M., Ziegler, G. R. & Lambert, J. D., 2013. Avocado (*Persea americana*) Seed as Source of Bioactive Phytochemicals. *Current Pharmaceutical Design*, 19(No. 34), pp. 6133-6140.
- Elzhageid, M. I., 2018. Laboratory activities to introduce carbohydrates qualitative analysis to college students. *World Journal of Chemical Education*, 6(2), pp. 82-86.
- Engelkirk, P. G. & Duben-Engelkirk, J., 2015. *Burton's Microbiology for The Health Sciences*. 10th ed. USA: Wolters Kluwer Health.
- Fardin & Wulan, C., 2016. Uji Aktivitas Antibakteri Ekstrak Metanol Jamur Rayap (*Termitomyces albuminosus* (Berk.) Heim.) Terhadap

Bakteri *Staphylococcus aureus* dan *Bacillus subtilis*. *The National Journal Of Pharmacy*, 13(2), pp. 46-54.

International Federation Diabetes, 2015. *Diabetes Atlas*. Brussels, Belgium.

Ginting, M. H. S. et al., 2018. *Supply of Avocado Starch (Persea americana Mill.) as Bioplastic*. Medan, IOP Publishing.

He, F., Yang, Y., Yang, G. & Yu, L., 2010. Studies on antibacterial activity and antibacterial mechanism of a novel. *Food Control* 21, Elsevier, p. 1257–1262.

Hidayat, S. R. & Napitupulu, R. M., 2015. *Kitab Tumbuhan Obat*. Jakarta: AGRIFLO.

Iyanar, K. et al., 2014. Isolation and Antibiotic Susceptibility of Bacteria From Foot Infections in The Patients with Diabetes Mellitus Type I and Type II in The District of Kancheepuram, Tamil Nadu, India. *International Journal of Research in Medical sciences*, 2(2), pp. 457-461.

Jannah, L., 2016. *Perbandingan Daya Hambat Ekstrak Daun Alpukat (Persea americana mill.) Terhadap Pertumbuhan Bakteri Shigella dysenteriae dan Salmonella typhi serta Pemanfaatannya Sebagai Leaflet [Skripsi]*. Jember: Fakultas Keguruan dan Ilmu Pendidikan Universitas Negeri Jember.

Kusmiyati & Agustini, N. W., 2007. Uji Aktivitas Senyawa Antibakteri dari Mikroalga. *Biodiversitas*, 8(1), pp. 48-53.

Liu, J., Willfor, S. & Xu, C., 2014. A review of bioactive plant polysaccharides: Biological activities, functionalization, and biomedical applications. *Elsevier*, pp. 31-61.

Lubis, Y. M., Chaidir, Z., Refilda & Dharma, A., 2017. Antimicrobial Activity of *Persea americana* Peel extract from North Sumatera, Indonesia, against Gram Positive and Gram Negative Bacteria in Vitro. *American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS)*, Volume 38, pp. 247-251.

Milley, J. M., Sherwood, L. M. & Woolverton, C. J., 2008. *Prescott, Harley, and Klein's Microbiology*. 7th ed. New York: McGraw-Hill.

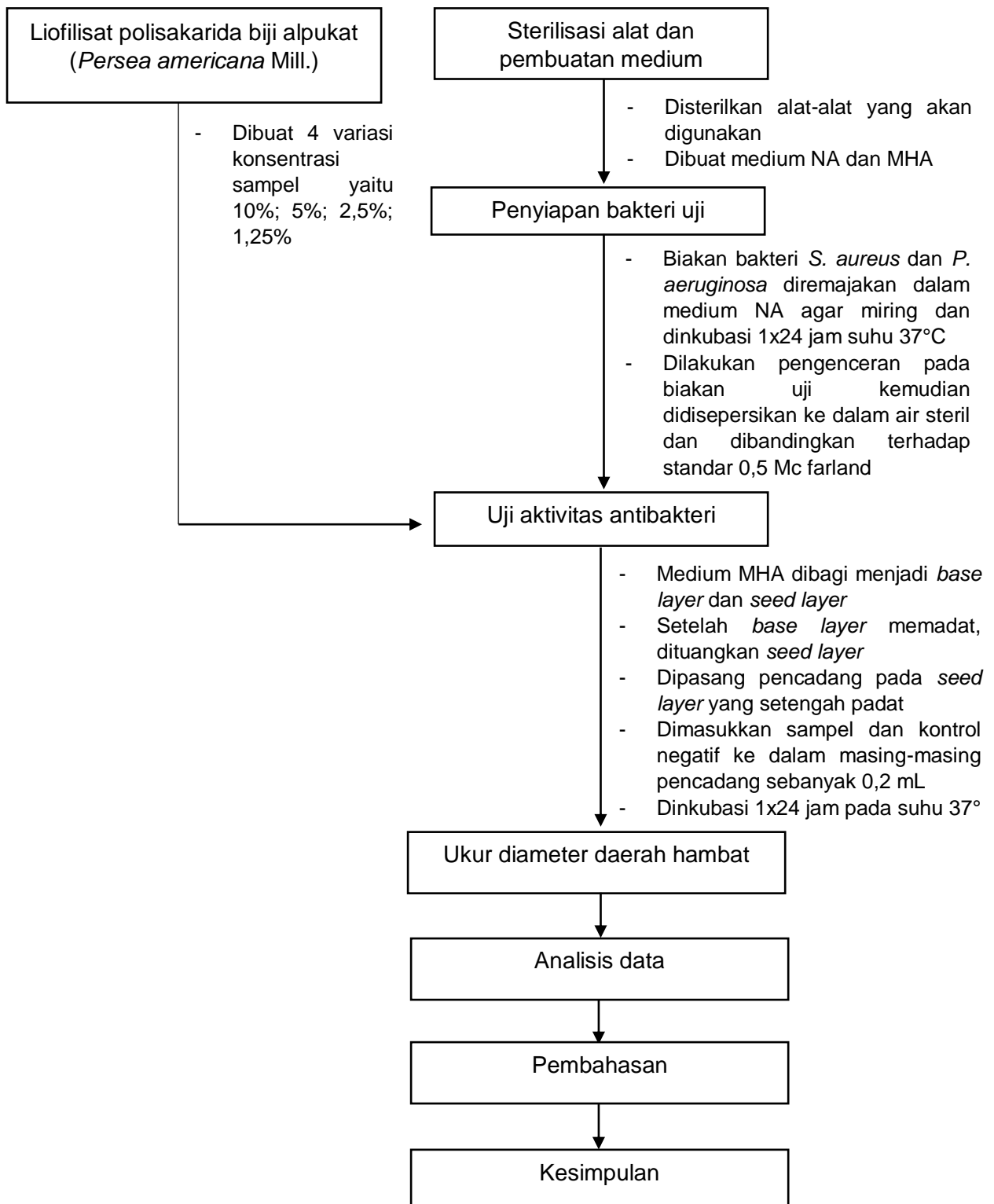
Murray, R. K. et al., 2009. *Harper's Illustrated Biochemistry*. 28th ed. s.l.:The McGraw-Hill.

Panayidou, S. & Apidianakis, Y., 2017. *Pseudomonas aeruginosa*. In: D. Liu, ed. *Laboratory Models for Foodborne Infections*. s.l.:CRC Press, pp. 373-390.

- Polia, A., Di, P. D., Taurisano, V. & Nicolausa, B., 2014. Polysaccharides: Applications in Biology and Biotechnology/ Polysaccharides from Bioagro-Waste New Biomolecules-Life. *Springer International Publishing Switzerland*, pp. 1-29.
- Radji, M., Putri, C. M. & Fauziyah, S., 2014. Antibiotic Therapy for Diabetic Foot Infections in a Tertiary Care Hospital in Jakarta, Indonesia. *Diabetes & Metabolic Syndrome: Clinical Research & Reviews*.
- Sadwiyanti, L., Sudarso, D. & Budiyaniti, T., 2009. *Budidaya Alpukat*. Solok, Sumatera Barat: Balai Penelitian Tanaman Buah Tropika.
- Stapp, B. & Caudell, 2008. Gangrene: Recognizing and Treating Cellular Necrosis. *Association of Surgical Technologists*, pp. 547-555.
- Swarna, S. R., Madhavan, R., Gomathi, S. & Thamaraiselvi, S., 2012. A Study of Biofilm on Diabetic Foot Ulcer. *International Journal of Research in Pharmaceutical and Biomedical Sciences*, Volume 3, pp. 1809-1814.
- Syarurachman, A. et al., 2010. *Buku Ajar Mikrobiologi Kedokteran*. Edisi Revisi ed. Jakarta: Binarupa Aksara.
- Valgas, C., Souza, S. M. d., Smania, E. F. A. & Smania, J. A., 2007. Screening Methods to Determine Antibacterial Activity of Natural Products. In: s.l.:Brazilian Journal of Microbiology, pp. 369-380.
- Waspadji, S., 2014. Kaki Diabetik. In: *Buku Ajar Ilmu Penyakit Dalam*. Jakarta: Interna Publishing, pp. 2367-2394.
- Zhang, Y. et al., 2017. The Antibacterial Activity and Antibacterial Mechanism of a Polysaccharide from *Cordyceps cicadae*. *Journal of Functional Foods*, pp. 373-379.

LAMPIRAN

Lampiran 1. Skema Kerja Penelitian



Lampiran 2. Analisis Statistik

1. Pengujian Distribusi Normal

a. *Staphylococcus aureus*

One-Sample Kolmogorov-Smirnov Test

		konsentrasi	diameter daerah hambat
N		15	15
Normal Parameters ^a	Mean	3.00	8.5307
	Std. Deviation	1.464	.46806
Most Extreme Differences	Absolute	.153	.185
	Positive	.153	.185
	Negative	-.153	-.148
Kolmogorov-Smirnov Z		.592	.717
Asymp. Sig. (2-tailed)		.875	.683

a. Test distribution is Normal.

b. *Pseudomonas aeruginosa*

One-Sample Kolmogorov-Smirnov Test

		diameter hambat (mm)
N		15
Normal Parameters ^a	Mean	8.5807
	Std. Deviation	.51675
Most Extreme Differences	Absolute	.179
	Positive	.179
	Negative	-.144
Kolmogorov-Smirnov Z		.693
Asymp. Sig. (2-tailed)		.723

a. Test distribution is Normal.

2. Pengujian Analisis menggunakan One-Way ANOVA

a. *Staphylococcus aureus*

Descriptives

diameter hambat terhadap *S. aureus* (mm)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
10%	3	9.3167	.03055	.01764	9.2408	9.3926	9.29	9.35
5%	3	8.6767	.04509	.02603	8.5647	8.7887	8.63	8.72
2.5%	3	8.4267	.00577	.00333	8.4123	8.4410	8.42	8.43
1.25%	3	8.2333	.02517	.01453	8.1708	8.2958	8.21	8.26
kontrol	3	8.0000	.00000	.00000	8.0000	8.0000	8.00	8.00
Total	15	8.5307	.46806	.12085	8.2715	8.7899	8.00	9.35

Test of Homogeneity of Variances

diameter hambat terhadap *S. aureus* (mm)

Levene Statistic	df1	df2	Sig.
2.625	4	10	.098

ANOVA

diameter hambat terhadap *S. aureus* (mm)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.060	4	.765	1.053E3	.000
Within Groups	.007	10	.001		
Total	3.067	14			

b. *Pseudomonas aeruginosa*

Descriptives

diameter hambat (mm)

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
10%	3	9.4500	.04583	.02646	9.3362	9.5638	9.40	9.49
5%	3	8.7033	.05508	.03180	8.5665	8.8401	8.64	8.74
2.5%	3	8.4867	.11240	.06489	8.2075	8.7659	8.39	8.61
1.25%	3	8.2633	.15885	.09171	7.8687	8.6579	8.08	8.36
kontrol	3	8.0000	.00000	.00000	8.0000	8.0000	8.00	8.00
Total	15	8.5807	.51675	.13343	8.2945	8.8668	8.00	9.49

Test of Homogeneity of Variances

diameter hambat (mm)

Levene Statistic	df1	df2	Sig.
5.469	4	10	.013

ANOVA

diameter hambatan (mm)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.652	4	.913	106.177	.000
Within Groups	.086	10	.009		
Total	3.738	14			

3. Pengujian Analisis Post Hoc (LSD)

a. *Staphylococcus aureus*

Multiple Comparisons

diameter hambatan terhadap *S. aureus* (mm)

LSD

(I) konsentrasi	(J) konsentrasi	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
10%	5%	.64000*	.02201	.000	.5910	.6890
	2.5%	.89000*	.02201	.000	.8410	.9390
	1.25%	1.08333*	.02201	.000	1.0343	1.1324
	kontrol	1.31667*	.02201	.000	1.2676	1.3657
5%	10%	-.64000*	.02201	.000	-.6890	-.5910
	2.5%	.25000*	.02201	.000	.2010	.2990
	1.25%	.44333*	.02201	.000	.3943	.4924
	kontrol	.67667*	.02201	.000	.6276	.7257
2.5%	10%	-.89000*	.02201	.000	-.9390	-.8410
	5%	-.25000*	.02201	.000	-.2990	-.2010
	1.25%	.19333*	.02201	.000	.1443	.2424
	kontrol	.42667*	.02201	.000	.3776	.4757
1.25%	10%	-1.08333*	.02201	.000	-1.1324	-1.0343
	5%	-.44333*	.02201	.000	-.4924	-.3943
	2.5%	-.19333*	.02201	.000	-.2424	-.1443
	kontrol	.23333*	.02201	.000	.1843	.2824
kontrol	10%	-1.31667*	.02201	.000	-1.3657	-1.2676
	5%	-.67667*	.02201	.000	-.7257	-.6276
	2.5%	-.42667*	.02201	.000	-.4757	-.3776
	1.25%	-.23333*	.02201	.000	-.2824	-.1843

*. The mean difference is significant at the 0.05 level.

b. *Pseudomonas aeruginosa*

Multiple Comparisons

diameter hambatan (mm)
LSD

(I) konsentrasi	(J) konsentrasi	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
10%	5%	.74667 [*]	.07572	.000	.5780	.9154
	2.5%	.96333 [*]	.07572	.000	.7946	1.1320
	1.25%	1.18667 [*]	.07572	.000	1.0180	1.3554
	kontrol	1.45000 [*]	.07572	.000	1.2813	1.6187
5%	10%	-.74667 [*]	.07572	.000	-.9154	-.5780
	2.5%	.21667 [*]	.07572	.017	.0480	.3854
	1.25%	.44000 [*]	.07572	.000	.2713	.6087
	kontrol	.70333 [*]	.07572	.000	.5346	.8720
2.5%	10%	-.96333 [*]	.07572	.000	-1.1320	-.7946
	5%	-.21667 [*]	.07572	.017	-.3854	-.0480
	1.25%	.22333 [*]	.07572	.015	.0546	.3920
	kontrol	.48667 [*]	.07572	.000	.3180	.6554
1.25%	10%	-1.18667 [*]	.07572	.000	-1.3554	-1.0180
	5%	-.44000 [*]	.07572	.000	-.6087	-.2713
	2.5%	-.22333 [*]	.07572	.015	-.3920	-.0546
	kontrol	.26333 [*]	.07572	.006	.0946	.4320
kontrol	10%	-1.45000 [*]	.07572	.000	-1.6187	-1.2813
	5%	-.70333 [*]	.07572	.000	-.8720	-.5346
	2.5%	-.48667 [*]	.07572	.000	-.6554	-.3180
	1.25%	-.26333 [*]	.07572	.006	-.4320	-.0946

*. The mean difference is significant at the 0.05 level.

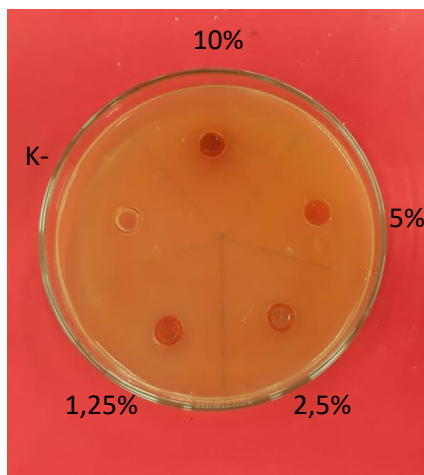
Lampiran 3. Dokumentasi Penelitian



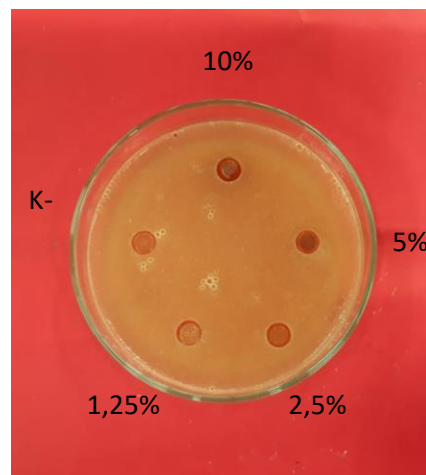
Gambar 4. Liofilisat biji alpukat



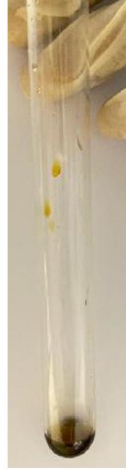
Gambar 5. Polisakarida biji alpukat konsentrasi 10%



Gambar 6. Aktivitas Antibakteri polisakarida biji alpukat terhadap bakteri *Pseudomonas aeruginosa*



Gambar 7. Aktivitas Antibakteri polisakarida biji alpukat terhadap bakteri *Staphylococcus aureus*



Gambar 8. Hasil uji kualitatif polisakarida metode iodin (Alfina, 2020)



Gambar 9. Hasil uji kualitatif polisakarida metode barfoed (Alfina, 2020)