

DAFTAR PUSTAKA

- Awaludin, A., Simanjuntak, R. F., & Jumsan, J. (2020). *Modifikasi Pakan Buatan untuk Meningkatkan Pertumbuhan dan Kelangsungan Hidup Udang Windu (Penaeus monodon)*. *Majalah Ilmiah Biologi BIOSFERA: A Scientific Journal*, 37(3), 168–174. <https://doi.org/10.20884/1.mib.2020.37.3.1225>
- Dangeubun, J., Andayani, S., & Risjani, Y. (2013). *The Use of Active Compound in the Methanol Extract of Alstonia Acuminata for the Improvement of Non-Specific Immune System in Tiger Grouper (Epinephelus Fuscoguttatus)*. *Journal of Biology and Life Science*, 4(2), 167–179. <https://doi.org/10.5296/jbls.v4i2.3682>
- Darwantin, K., Sidik, R., & Mahasri, G. (2016). *Efisiensi Penggunaan Imunostimulan dalam Pakan Terhadap Laju Pertumbuhan, Respon Imun dan Kelulushidupan Udang Vannamei (Litopenaeus vannamei)*. *Jurnal Biosains Pascasarjana*, 18(2), 123. <https://doi.org/10.20473/jbp.v18i2.2016.123-139>
- Declarador, R. S., Serrano, A. E., & Corre, V. L. (2014). *Ulvan extract acts as immunostimulant against white spot syndrome virus (WSSV) in juvenile black tiger shrimp Penaeus monodon*. *AACL Bioflux*, 7(3), 153–161.
- Diansyah, S., Kusumawati, I., & Hardinata, F. (2018). *Inventarisasi Jenis-Jenis Makroalga Di Pantai Lhok Bubon Kecamatan Samatiga Kabupaten Aceh Barat*. *JURNAL PERIKANAN TROPIS*, 5(1), 93. <https://doi.org/10.35308/jpt.v5i1.1029>
- Gunawan, G., & Khalil, M. (2015). *Analisa Proksimat Formulasi Pakan Pelet dengan Penambahan Bahan Baku Hewani yang Berbeda*. *Acta Aquatica*, 2(1), 23–30.
- Ismawati, I., Destryana, R. A., & Huzaimeh, N. (2019). *Imunitas Udang Vannamei (Litopenaeus vannamei) Yang Diberi Pakan Tambahan Daun Kasembukan (Paederia foetida Linn.)*. *Jurnal Kelautan: Indonesian Journal of Marine Science and Technology*, 12(2), 201–206. <https://doi.org/10.21107/jk.v12i2.5998>
- Jasmanindar, Y., Sukenda, S., Zairin, M. J., Alimuddin, A., & Utomo, N. B. P. (2018). *Dietary administration of Gracilaria verrucosa extract on Litopenaeus vannamei immune response , growth , and resistance to Vibrio harveyi*. 11(4), 1069–1080.
- Kurniawan, M. H., Putri, B., & Elisdiana, Y. (2018). *Efektivitas Pemberian Bakteri Bacillus polymyxa Melalui Pakan Terhadap Imunitas Non Spesifik Udang Vannamei (Litopenaeus vannamei)*. *E-Jurnal Rekayasa Dan Teknologi Budidaya Perairan*, 7(1), 739. <https://doi.org/10.23960/jrtbp.v7i1.p739-750>
- Latritiani, D. S. (2017). *KEBERADAAN White Spot Syndrome Virus (WSSV) PADA UDANG VANNAMEI (Litopenaeus vannamei) DI PERTAMBAKAN KOTA PEKALONGAN*. *Journal of Aquaculture Management and Technology*, 6(3), 276–283.
- Melani, D., Eka Radiati, L., & Imam Thohari, dan. (n.d.). *THE ADDITION OF EDTA (ethylenediaminetetraacetic acid) WITH EGG WHITE LYSOZYME*

*EXTRACTS AS THE ANTIMICROBIAL ACTIVITY ON *Salmonella* sp and *Staphylococcus aureus*.*

- Moniung, P., Singkoh, M., & Butarbutar, R. (2022). *Potensi Alga *Halymenia durvillei* Sebagai Sumber Antioksidan Alami.* JURNAL BIOS LOGOS, 12(1), 39. <https://doi.org/10.35799/jbl.v12i1.36721>
- Mulyadi, Nur, I., & Iba, W. (2020). *Efficacy of Seaweed (*Sargassum* sp.) Extract to Prevent Vibriosis in White Shrimp (*Litopenaeus vannamei*) Juvenile.* International Journal of Zoological Research, 16(1), 1–11. <https://doi.org/10.3923/ijzr.2020.1.11>
- Noviantari, N. P., Suhendra, L., & Wartini, N. M. (2017). *Pengaruh Ukuran Partikel Bubuk Dan Konsentrasi Pelarut Aseton Terhadap Karakteristik Ekstrak Warna *Sargassum polycystum*.* Rekayasa Dan Manajemen Agroindustri, 5(3), 102–112.
- Rahi, M. L., Sabbir, W., Salin, K. R., Aziz, D., & Hurwood, D. A. (2022). *Physiological, biochemical and genetic responses of black tiger shrimp (*Penaeus monodon*) to differential exposure to white spot syndrome virus and *Vibrio parahaemolyticus*.* Aquaculture, 546(July 2021), 737337. <https://doi.org/10.1016/j.aquaculture.2021.737337>
- Rahman, R., Lahming, L., & Fadilah, R. (2018). *EVALUASI KOMPONEN GIZI PADA PAKAN UDANG FERMENTASI.* Jurnal Pendidikan Teknologi Pertanian, 4(2), 101. <https://doi.org/10.26858/jptp.v4i2.6617>
- Rula, N. A. M., Ganzon-Fortes, E. T., Pante, M. J. R., & Trono, G. C. (2021). *Influence of light, water motion, and stocking density on the growth and pigment content of *Halymenia durvillei* (Rhodophyceae) under laboratory conditions.* Journal of Applied Phycology, 33(4), 2367–2377. <https://doi.org/10.1007/s10811-021-02474-4>
- Scabra, A. R., Marzuki, M., Cokrowati, N., Setyono, B. D. H., & Mulyani, L. F. (2021). *PENINGKATAN KELARUTAN KALSIUM MELALUI PENAMBAHAN DAUN KETAPANG *Terminalia catappa* PADA MEDIA AIR TAWAR BUDIDAYA UDANG VANNAMEI *Litopenaeus vannamei*.* Jurnal Perikanan Unram, 11(1), 35–49. <https://doi.org/10.29303/jp.v11i1.250>
- Sinurat, E., & Kusumawati, R. (2017). *Optimasi Metode Ekstraksi Fukoidan dari Rumput Laut Cokelat *Sargassum binderi* Sonder.* Jurnal Pascapanen dan Bioteknologi Kelautan dan Perikanan. JPB Kelautan Dan Perikanan, 12(2), 125–134.
- Sirirustananun, N., Chen, J., Lin, Y., Yeh, S., Liou, C., Chen, L., Sing, S., & Li, S. (2011). *Fish & Shell fish Immunology Dietary administration of a *Gracilaria tenuistipitata* extract enhances the immune response and resistance against *Vibrio alginolyticus* and white spot syndrome virus in the white shrimp *Litopenaeus vannamei*.* Fish and Shellfish Immunology, 31(6), 848–855. <https://doi.org/10.1016/j.fsi.2011.07.025>
- Srisapoome, P., Hamano, K., Tsutsui, I., & Iiyama, K. (2018). *Immunostimulation and yellow head virus (YHV) disease resistance induced by a lignin-based pulping by-product in black tiger shrimp (*Penaeus monodon* Linn.).* Fish and

Shellfish Immunology, 72(November 2017), 494–501.
<https://doi.org/10.1016/j.fsi.2017.11.037>

- Supardi, R., & Suryani, L. (n.d.). *EFEKTIFITAS LISOZIM PADA PENURUNAN KADAR HAMBAT MINIMUM SEFADROKSIL TERHADAP Staphylococcus aureus LYSOZYME EFFECTIVENESS IN DECREASED LEVELS OF MINIMUM INHIBITORY CEFADROXIL Staphylococcus aureus.*
- Susilo, A., Martuti, N. K. T., & Setiati, N. (2018). *Keanekaragaman Jenis Ektoparasit pada Udang Windu di Tambak Desa Langgenharjo Kecamatan Margoyoso Kabupaten Pati.* 7(1), 1–8.
- Tassakka, A. C. M. A. R., Sumule, O., Massi, M. N., Sulfahri, Manggau, M., Iskandar, I. W., Alam, J. F., Permana, A. D., & Liao, L. M. (2021). *Potential bioactive compounds as SARS-CoV-2 inhibitors from extracts of the marine red alga Halymenia durvillei (Rhodophyta) – A computational study.* Arabian Journal of Chemistry, 14(11), 103393. <https://doi.org/10.1016/j.arabjc.2021.103393>
- Widyantoko, W., Pinandoyo, & Herawati, V. E. (2015). *Optimalisasi Penambahan Tepung Rumput Laut Coklat (Sargassum sp.) Yang Berbeda Dalam Pakan Terhadap Pertumbuhan dan Kelulushidupan Juvenil Udang Widi (Penaeus monodon).* 4(2), 9–17.
- Wijesekara, I., Pangestuti, R., & Kim, S. K. (2011). *Biological activities and potential health benefits of sulfated polysaccharides derived from marine algae.* In *Carbohydrate Polymers* (Vol. 84, Issue 1, pp. 14–21). Elsevier Ltd. <https://doi.org/10.1016/j.carbpol.2010.10.062>
- Yeh, S. T., & Chen, J. C. (2008). *Immunomodulation by carrageenans in the white shrimp Litopenaeus vannamei and its resistance against Vibrio alginolyticus.* Aquaculture, 276(1–4), 22–28. <https://doi.org/10.1016/j.aquaculture.2008.01.034>
- Zahra, A., Sukenda, S., & Wahjuningrum, D. (2017). *Extract of seaweed Gracilaria verrucosa as immunostimulant to controlling white spot disease in Pacific white shrimp Litopenaeus vannamei* Ekstrak rumput laut Gracilaria verrucosa sebagai imunostimulan untuk pengendalian penyakit white spot pada udang vana. Akuakultur Indonesia, 16(2), 174–183. <https://doi.org/10.19027/jai.16.2.174-183>
- Mai, W. J., dan Wang, W. N. 2010. *Protection of Blue Shrimp (Litopenaeus stylirostris) against the White Spot Syndrome Virus (WSSV) when Injected with Shrimp Lysozyme.* Fish and Shellfish Immunology. Vol 28 (4) : 727-733.
- Harikrishnan, R., Kim, J., Balasundaram, C., Heo, M. 2012. *Immunomodulatory effects of chitin and chitosan enriched diets in Epinephelus bruneus against Vibrio alginolyticus infection.* Aquaculture 326-329:46-52.
- Ahmadi, A., Moghadamtousi, S. Z., Abubakar, S., Zandi, K. 2015. *Antiviral Potential of Algae Polysaccharides Isolated from Marine Sources : A Review.* Biomed Research International.

Ismaningdyah, K., Maftuch., Anik Martinah., H. 2017. *Determination Of Immunostilant Dose Range and The Best Soaking Time Durationto The Phenolic Crude Extract Before Aeromonas sp. Challenge Test Using LC50*

LAMPIRAN

Lampiran 1. Data Mentah Aktivitas Lisozim (LA) H0 Setelah Injeksi Ekstrak

PERLUAKAN	ULANGAN 1			ULANGAN 2			ULANGAN 3					
	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA
A (Kontrol)	A1 (1)	10.5	14.8	0.71	A2 (1)	14.2	17.3	0.82	A3 (1)	10.9	13.5	0.81
	A1 (2)	12.0	15.3	0.78	A2 (2)	12.3	13.4	0.92	A3 (2)	12.7	16.8	0.76
	A1 (3)	9.9	17.4	0.57	A2 (3)	14.3	13.2	1.08	A3 (3)	11.6	15.1	0.77
	A1 (4)	8.6	15.3	0.56	A2 (4)	6.4	14.0	0.46	A3 (4)	13.0	15.0	0.87
	A1 (5)	12.0	15.1	0.79	A2 (5)	12.5	16.6	0.75	A3 (5)	12.9	14.7	0.88
	RATA-RATA			0.68	RATA-RATA			0.81	RATA-RATA			0.82
B (0,2 mg)	ULANGAN 1			ULANGAN 2			ULANGAN 3			ULANGAN 3		
	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA
	B1 (1)	8.5	11.1	0.77	B2 (1)	12.9	15.0	0.86	B3 (1)	13.1	13.6	0.96
	B1 (2)	12.6	15.6	0.81	B2 (2)	9.0	13.1	0.69	B3 (2)	11.6	15.7	0.74
	B1 (3)	11.8	13.8	0.86	B2 (3)	12.4	14.8	0.84	B3 (3)	9.3	13.9	0.67
	B1 (4)	9.8	13.9	0.71	B2 (4)	12.4	16.1	0.77	B3 (4)	13.7	14.4	0.95
	B1 (5)	12.0	14.9	0.81	B2 (5)	11.6	15.3	0.76	B3 (5)	11.8	13.4	0.88
	RATA-RATA			0.79	RATA-RATA			0.78	RATA-RATA			0.84
C (0,6 mg)	ULANGAN 1			ULANGAN 2			ULANGAN 3			ULANGAN 3		
	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA
	C1 (1)	8.7	13.0	0.67	C2 (1)	8.7	13.0	0.67	C3 (1)	10.9	15.8	0.69
	C1 (2)	12.3	14.3	0.86	C2 (2)	12.3	14.3	0.86	C3 (2)	13.5	13.4	1.01
	C1 (3)	12.4	13.6	0.91	C2 (3)	12.4	13.6	0.91	C3 (3)	13.8	13.8	1.00
	C1 (4)	11.4	12.3	0.93	C2 (4)	11.4	12.3	0.93	C3 (4)	12.5	15.4	0.81
	C1 (5)	12.7	11.9	1.07	C2 (5)	12.7	11.9	1.07	C3 (5)	13.9	13.0	1.07
	RATA-RATA			0.89	RATA-RATA			0.89	RATA-RATA			0.92
D (1 mg)	ULANGAN 1			ULANGAN 2			ULANGAN 3			ULANGAN 3		
	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA
	D1 (1)	9.5	12.7	0.75	D2 (1)	11.0	12.5	0.88	D3 (1)	10.8	12.0	0.90
	D1 (2)	10.2	13.8	0.74	D2 (2)	10.2	9.6	1.06	D3 (2)	12.0	9.7	1.24
	D1 (3)	11.2	13.6	0.82	D2 (3)	11.1	14.9	0.74	D3 (3)	9.3	10.8	0.86
	D1 (4)	12.0	13.6	0.88	D2 (4)	10.7	12.4	0.86	D3 (4)	11.8	12.9	0.91
	D1 (5)	9.2	11.5	0.80	D2 (5)	10.7	12.3	0.87	D3 (5)	8.6	11.4	0.75
	RATA-RATA			0.80	RATA-RATA			0.88	RATA-RATA			0.93

Lampiran 2. Data Mentah Aktivitas Lisozim (LA) H5 Setelah Injeksi Ekstrak

PERLUAKAN	ULANGAN 1			ULANGAN 2			ULANGAN 3			ULANGAN 3		
	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA
A (Kontrol)	A1 (1)	13.4	15.5	0.86	A2 (1)	11.1	13.9	0.80	A3 (1)	11.1	14.4	0.77
	A1 (2)	11.8	13.4	0.88	A2 (2)	15.4	14.0	1.10	A3 (2)	14.2	15.0	0.95
	A1 (3)	8.6	14.1	0.61	A2 (3)	13.6	16.3	0.83	A3 (3)	14.2	17.1	0.83
	A1 (4)	12.4	14.0	0.89	A2 (4)	13.4	12.9	1.04	A3 (4)	13.3	14.2	0.94
	A1 (5)	14.2	15.5	0.92	A2 (5)	13.1	13.9	0.94	A3 (5)	15.6	17.4	0.90
	RATA-RATA			0.83	RATA-RATA			0.94	RATA-RATA			0.88
B (0,2 mg)	ULANGAN 1			ULANGAN 2			ULANGAN 3			ULANGAN 3		
	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA
	B1 (1)	13.9	14.8	0.94	B2 (1)	12.1	13.4	0.90	B3 (1)	13.2	15.2	0.87
	B1 (2)	13.4	14.6	0.92	B2 (2)	12.3	14.1	0.87	B3 (2)	13.2	15.8	0.84
	B1 (3)	14.8	15.9	0.93	B2 (3)	11.2	17.6	0.64	B3 (3)	12.7	16.2	0.78
	B1 (4)	13.1	13.3	0.98	B2 (4)	13.1	14.4	0.91	B3 (4)	11.7	15.0	0.78
	B1 (5)	12.7	15.2	0.84	B2 (5)	13.7	14.7	0.93	B3 (5)	13.3	12.4	1.07
	RATA-RATA			0.92	RATA-RATA			0.85	RATA-RATA			0.87
C (0,6 mg)	ULANGAN 1			ULANGAN 2			ULANGAN 3			ULANGAN 3		
	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA
	C1 (1)	13.7	14.4	0.95	C2 (1)	12.2	7.0	1.74	C3 (1)	9.7	6.7	1.45
	C1 (2)	10.4	11.6	0.90	C2 (2)	12.4	11.0	1.13	C3 (2)	11.2	8.7	1.29
	C1 (3)	11.5	9.4	1.22	C2 (3)	12.0	8.7	1.38	C3 (3)	10.2	11.2	0.91
	C1 (4)	11.0	6.4	1.72	C2 (4)	10.0	7.3	1.37	C3 (4)	8.6	11.1	0.77
	C1 (5)	12.3	12.2	1.01	C2 (5)	5.8	5.9	0.98	C3 (5)	10.1	7.9	1.28
	RATA-RATA			1.16	RATA-RATA			1.32	RATA-RATA			1.14
D (1 mg)	ULANGAN 1			ULANGAN 2			ULANGAN 3			ULANGAN 3		
	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA
	D1 (1)	11.7	10.8	1.08	D2 (1)	11.6	14.2	0.82	D3 (1)	9.8	12.1	0.8
	D1 (2)	10.0	12.7	0.79	D2 (2)	12.4	14.2	0.87	D3 (2)	9.7	9.3	1.0
	D1 (3)	11.1	12.7	0.87	D2 (3)	9.3	12.3	0.76	D3 (3)	9.3	11.7	0.8
	D1 (4)	11.8	6.1	1.93	D2 (4)	12.7	9.8	1.30	D3 (4)	8.1	10.5	0.8
	D1 (5)	13.0	11.1	1.17	D2 (5)	10.2	10.0	1.02	D3 (5)	9.2	10.7	0.9
	RATA-RATA			1.17	RATA-RATA			0.95	RATA-RATA			0.86

Lampiran 3. Data Mentah Aktivitas Lisozim (LA) H10 Setelah Injeksi Ekstrak

PERLAKUAN	ULANGAN 1						ULANGAN 2						ULANGAN 3					
	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA		
A (Kontrol)	A1 (1)	14.0	14.7	0.95	A2 (1)	12.3	14.9	0.83	A3 (1)	11.5	15.7	0.73						
	A1 (2)	14.7	17.1	0.86	A2 (2)	15.0	17.3	0.87	A3 (2)	12.5	17.3	0.72						
	A1 (3)	13.1	14.3	0.92	A2 (3)	13.6	15.9	0.86	A3 (3)	14.1	15.6	0.90						
	A1 (4)	13.6	17.2	0.79	A2 (4)	13.9	15.1	0.92	A3 (4)	12.8	17.0	0.75						
	A1 (5)	12.5	16.3	0.77	A2 (5)	14.3	16.8	0.85	A3 (5)	11.7	16.3	0.72						
RATA-RATA				0.86	RATA-RATA				0.86	RATA-RATA				0.77				
PERLAKUAN	ULANGAN 1						ULANGAN 2						ULANGAN 3					
B (0.2 mg)	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA						
	B1 (1)	15.7	17.0	0.92	B2 (1)	13.0	16.6	0.78	B3 (1)	13.0	15.6	0.83						
	B1 (2)	13.2	16.9	0.78	B2 (2)	13.7	17.8	0.77	B3 (2)	12.5	15.9	0.79						
	B1 (3)	14.3	15.6	0.92	B2 (3)	12.0	15.8	0.76	B3 (3)	14.2	16.1	0.88						
	B1 (4)	13.1	16.3	0.80	B2 (4)	14.5	16.9	0.86	B3 (4)	11.8	16.5	0.72						
	B1 (5)	15.3	16.1	0.95	B2 (5)	12.5	16.4	0.76	B3 (5)	13.5	15.9	0.85						
RATA-RATA				0.88	RATA-RATA				0.79	RATA-RATA				0.81				
PERLAKUAN	ULANGAN 1						ULANGAN 2						ULANGAN 3					
C (0.6 mg)	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA						
	C1 (1)	14.8	12.7	1.17	C2 (1)	12.8	17.3	0.74	C3 (1)	12.0	15.5	0.77						
	C1 (2)	13.7	16.6	0.83	C2 (2)	13.2	16.0	0.83	C3 (2)	12.5	14.9	0.84						
	C1 (3)	13.6	14.8	0.92	C2 (3)	13.5	16.0	0.84	C3 (3)	12.0	16.3	0.74						
	C1 (4)	13.7	15.0	0.91	C2 (4)	12.1	17.3	0.70	C3 (4)	11.1	15.6	0.71						
	C1 (5)	15.3	17.1	0.89	C2 (5)	13.0	15.6	0.83	C3 (5)	12.5	15.4	0.81						
RATA-RATA				0.94	RATA-RATA				0.79	RATA-RATA				0.77				
PERLAKUAN	ULANGAN 1						ULANGAN 2						ULANGAN 3					
D (1 mg)	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA	SAMPEL	DARAH	KONTROL (+)	LA						
	D1 (1)	12.2	15.9	0.77	D2 (1)	12.6	15.6	0.81	D3 (1)	12.5	17.3	0.72						
	D1 (2)	14.8	16.5	0.90	D2 (2)	9.5	15.7	0.61	D3 (2)	12.5	16.4	0.76						
	D1 (3)	14.4	15.9	0.91	D2 (3)	12.7	16.3	0.78	D3 (3)	12.3	15.0	0.82						
	D1 (4)	14.8	14.7	1.01	D2 (4)	12.6	16.0	0.79	D3 (4)	11.0	14.9	0.74						
	D1 (5)	10.6	16.9	0.63	D2 (5)	12.9	16.7	0.77	D3 (5)	9.4	13.8	0.68						
RATA-RATA				0.84	RATA-RATA				0.75	RATA-RATA				0.74				

Lampiran 4. Data Deskriptif Aktivitas Lisozim (LA)

Descriptive Statistics				
Dependent Variable: Aktivitas Lisozim				
Dosis Injeksi	Hari	Mean	Std. Deviation	N
A (Kontrol)	H0	.7687	.15343	15
	H5	.8840	.11488	15
	H10	.8293	.07796	15
	Total	.8273	.12607	45
B (0,2 mg)	H0	.8053	.08749	15
	H5	.8800	.09950	15
	H10	.8247	.06917	15
	Total	.8367	.09018	45
C (0,6 mg)	H0	.8973	.13936	15
	H5	1.2067	.29410	15
	H10	.8353	.11495	15
	Total	.9798	.25472	45
D (1 mg)	H0	.8707	.13253	15
	H5	.8340	.43876	15
	H10	.7800	.10488	15
	Total	.8282	.26788	45
Total	H0	.8355	.13723	60
	H5	.9512	.30693	60
	H10	.8173	.09386	60
	Total	.8680	.20903	180

Lampiran 5. Hasil Uji Normalitas Data Aktivitas Lisozim (LA) H0 Setelah Injeksi Ekstrak

Tests of Normality

Aktivitas Lisozim	Dosis Ekstrak	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
	A = Kontrol	.185	15	.178	.953	15	.572
	B = 0,2 mg	.124	15	.200*	.966	15	.790
	C = 0,6 mg	.136	15	.200*	.907	15	.121
	D = 1 mg	.250	15	.012	.816	15	.006

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Lampiran 6. Hasil Uji Independent T Test antara Perlakuan A (Kontrol) dan B (0,2 mg) H0 Setelah Injeksi Ekstrak

Group Statistics

Dosis Ekstrak		N	Mean	Std. Deviation	Std. Error Mean
Aktivitas Lisozim	A = Kontrol	15	.7687	.15343	.03962
	B = 0,2 mg	15	.8053	.08749	.02259

Independent Samples Test

	Aktivitas Lisozim	Levene's Test for Equality of Variances			t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
		Equal variances assumed	1.474	.235	-.804	28	.428	-.03667	.04560	-.13008	.05675
	Equal variances not assumed			-.804	22.234	.430	-.03667	.04560	-.13119	.05785	

Lampiran 7. Hasil Uji Independent T Test antara Perlakuan A (Kontrol) dan C (0,6 mg) H0 Setelah Injeksi Ekstrak

Group Statistics

Dosis Ekstrak		N	Mean	Std. Deviation	Std. Error Mean
Aktivitas Lisozim	A = Kontrol	15	.7687	.15343	.03962
	C = 0,6 mg	15	.8973	.13936	.03598

Independent Samples Test

	Aktivitas Lisozim	Levene's Test for Equality of Variances			t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
		Equal variances assumed	.007	.933	-2.404	28	.023	-.12867	.05352	-.23829	-.01904
	Equal variances not assumed			-2.404	27.745	.023	-.12867	.05352	-.23834	-.01900	

Lampiran 8. Hasil Uji Man Whitney antara Perlakuan A (Kontrol) dan D (1 mg) H0
Setelah Injeksi Ekstrak

Ranks				
	Dosis Ekstrak	N	Mean Rank	Sum of Ranks
Aktivitas Lisozim	A = Kontrol	15	13.00	195.00
	D = 1 mg	15	18.00	270.00
	Total	30		

Test Statistics^a

Aktivitas Lisozim	
Mann-Whitney U	75.000
Wilcoxon W	195.000
Z	-1.558
Asymp. Sig. (2-tailed)	.119
Exact Sig. [2*(1-tailed Sig.)]	.126 ^b

a. Grouping Variable: Dosis Ekstrak

b. Not corrected for ties.

Lampiran 9. Hasil Uji Normalitas Data Aktivitas Lisozim (LA) H5 Setelah Injeksi Ekstrak

Tests of Normality

	Dosis Ekstrak	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Aktivitas Lisozim	A = Kontrol	.138	15	.200*	.929	15	.262
	B = 0,2 mg	.173	15	.200*	.938	15	.358
	C = 0,6 mg	.217	15	.055	.840	15	.013
	D = 1 mg	.151	15	.200*	.961	15	.716

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Lampiran 10. Hasil Uji Independent T Test antara Perlakuan A (Kontrol) dan B (0,2 mg) H5 Setelah Injeksi Ekstrak

Group Statistics

Dosis Ekstrak		N	Mean	Std. Deviation	Std. Error Mean
Aktivitas Lisozim	A = Kontrol	15	.8840	.11488	.02966
	B = 0,2 mg	15	.8800	.09950	.02569

Independent Samples Test

Aktivitas Lisozim		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
		Equal variances assumed	.117	.734	.102	28	.920	.00400	.03924	-.07638	.08438
		Equal variances not assumed			.102	27.441	.920	.00400	.03924	-.07645	.08445

Lampiran 11. Hasil Uji Independent T Test antara Perlakuan A (Kontrol) dan C (0,6 mg) H5 Setelah Injeksi Ekstrak

Group Statistics

Dosis Ekstrak		N	Mean	Std. Deviation	Std. Error Mean
Aktivitas Lisozim	A = Kontrol	15	.8840	.11488	.02966
	C = 0,6 mg	15	1.2067	.29410	.07594

Independent Samples Test

Aktivitas Lisozim		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
		Equal variances assumed	12.090	.002	-3.958	28	.000	-.32267	.08152	-.48966	-.15567
		Equal variances not assumed			-3.958	18.175	.001	-.32267	.08152	-.49382	-.15151

Lampiran 12. Hasil Uji Man Whitney antara Perlakuan A (Kontrol) dan D (1 mg) H5
Setelah Injeksi Ekstrak

Ranks				Sum of Ranks
	Dosis Ekstrak	N	Mean Rank	
Aktivitas Lisozim	A = Kontrol	15	17.80	267.00
	D = 1 mg	15	13.20	198.00
	Total	30		

Test Statistics^a

Aktivitas Lisozim	
Mann-Whitney U	78.000
Wilcoxon W	198.000
Z	-1.433
Asymp. Sig. (2-tailed)	.152
Exact Sig. [2*(1-tailed Sig.)]	.161 ^b

a. Grouping Variable: Dosis Ekstrak

b. Not corrected for ties.

Lampiran 13. Hasil Uji Normalitas Data Aktivitas Lisozim (LA) H10 Setelah Injeksi Ekstrak

Tests of Normality

	Dosis Ekstrak	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Aktivitas Lisozim	A = Kontrol	.138	15	.200*	.929	15	.262
	B = 0,2 mg	.173	15	.200*	.938	15	.358
	C = 0,6 mg	.217	15	.055	.840	15	.013
	D = 1 mg	.151	15	.200*	.961	15	.716

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Lampiran 14. Hasil Uji Independent T Test antara Perlakuan A (Kontrol) dan B (0,2 mg) H10 Setelah Injeksi Ekstrak

Group Statistics

	Dosis Ekstrak	N	Mean	Std. Deviation	Std. Error
					Mean
Aktivitas Lisozim	A = Kontrol	15	.8293	.07796	.02013
	B = 0,2 mg	15	.8247	.06917	.01786

Independent Samples Test

	Aktivitas Lisozim	Levene's Test for Equality of Variances			t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
	Equal variances assumed	.362	.552	.173	28	.864	.00467	.02691	-.05046	.05979	
	Equal variances not assumed			.173	27.608	.864	.00467	.02691	-.05049	.05982	

Lampiran 15. Hasil Uji Man Whitney antara Perlakuan A (Kontrol) dan C (0,6 mg) H10 Setelah Injeksi Ekstrak

Ranks

	Dosis Ekstrak	N	Mean Rank	Sum of Ranks
Aktivitas Lisozim	A = Kontrol	15	16.27	244.00
	C = 0,6 mg	15	14.73	221.00
	Total	30		

Test Statistics^a

Aktivitas Lisozim	
Mann-Whitney U	101.000
Wilcoxon W	221.000
Z	-.478
Asymp. Sig. (2-tailed)	.633
Exact Sig. [2*(1-tailed Sig.)]	.653 ^b

a. Grouping Variable: Dosis Ekstrak

b. Not corrected for ties.

Lampiran 16. Hasil Uji Independent T Test antara Perlakuan A (Kontrol) dan D (1 mg) H10 Setelah Injeksi Ekstrak

Group Statistics

	Dosis Ekstrak	N	Mean	Std. Deviation	Std. Error
					Mean
Aktivitas Lisozim	A = Kontrol	15	.8293	.07796	.02013
	D = 1 mg	15	.7800	.10488	.02708

Independent Samples Test

	Aktivitas Lisozim	Levene's Test for Equality of Variances			t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper	
	Equal variances assumed	.170	.683	1.462	28	.155	.04933	.03374	-.01978	.11845	
	Equal variances not assumed			1.462	25.853	.156	.04933	.03374	-.02004	.11871	

Lampiran 17. Data Mentah Jumlah Udang Hidup Setelah Uji Tantang.

KOLAM	AWAL	H1	H2	H3	H4	H5	H6	H7
A1	10	10	10	8	8	8	5	5
A2	10	10	10	10	10	10	10	6
A3	10	10	10	9	9	9	9	9
B1	10	10	10	9	7	5	5	5
B2	10	10	9	9	7	4	4	4
B3	10	10	9	9	9	9	9	9
C1	10	10	10	10	10	10	10	10
C2	10	10	7	6	4	4	4	4
C3	10	10	10	10	10	10	10	10
D1	10	10	9	8	8	8	5	2
D2	10	10	9	9	9	9	9	9
D3	10	10	10	10	10	10	10	10

Lampiran 18. Data Survival Rate (SR) Setelah Uji Tantang

KOLAM	AWAL	H1	H2	H3	H4	H5	H6	H7
A1	10	100.00	100.00	80.00	80.00	80.00	50.00	50.00
A2	10	100.00	100.00	100.00	100.00	100.00	100.00	60.00
A3	10	100.00	100.00	90.00	90.00	90.00	90.00	90.00
B1	10	100.00	100.00	90.00	70.00	50.00	50.00	50.00
B2	10	100.00	90.00	90.00	70.00	40.00	40.00	40.00
B3	10	100.00	90.00	90.00	90.00	90.00	90.00	90.00
C1	10	100.00	100.00	100.00	100.00	100.00	100.00	100.00
C2	10	100.00	70.00	60.00	40.00	40.00	40.00	40.00
C3	10	100.00	100.00	100.00	100.00	100.00	100.00	100.00
D1	10	100.00	90.00	88.89	100.00	100.00	62.50	40.00
D2	10	100.00	90.00	90.00	90.00	90.00	90.00	90.00
D3	10	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Lampiran 19. Data Deskriptif Survival Rate (SR)

Descriptive Statistics

Dependent Variable: Survival Rate

Dosis	Hari	Mean	Std. Deviation	N
Kontrol	H1	100.0000	.00000	3
	H2	100.0000	.00000	3
	H3	90.0000	10.00000	3
	H4	90.0000	10.00000	3
	H5	90.0000	10.00000	3
	H6	80.0000	26.45751	3
	H7	66.6667	20.81666	3
	Total	88.0952	16.31534	21
0,2 mg	H1	100.0000	.00000	3
	H2	93.3333	5.77350	3
	H3	90.0000	.00000	3
	H4	76.6667	11.54701	3
	H5	60.0000	26.45751	3
	H6	60.0000	26.45751	3
	H7	60.0000	26.45751	3
	Total	77.1429	22.39260	21
0,6 mg	H1	100.0000	.00000	3
	H2	90.0000	17.32051	3
	H3	86.6667	23.09401	3
	H4	80.0000	34.64102	3
	H5	80.0000	34.64102	3
	H6	80.0000	34.64102	3
	H7	80.0000	34.64102	3
	Total	85.2381	24.82318	21
1 mg	H1	100.0000	.00000	3
	H2	93.3333	5.77350	3
	H3	90.0000	10.00000	3
	H4	90.0000	10.00000	3
	H5	90.0000	10.00000	3
	H6	80.0000	26.45751	3
	H7	70.0000	43.58899	3
	Total	87.6190	19.46915	21
Total	H1	100.0000	.00000	12
	H2	94.1667	9.00337	12
	H3	89.1667	11.64500	12
	H4	84.1667	17.81640	12
	H5	80.0000	23.35497	12
	H6	75.0000	26.11165	12
	H7	69.1667	28.74918	12
	Total	84.5238	21.07958	84

Lampiran 20. Hasil Uji Normalitas Data Survival Rate (SR)

One-Sample Kolmogorov-Smirnov Test

		Survival Rate	Dosis	Hari
N		84	84	84
Normal Parameters ^{a,b}	Mean	84.5238	2.50	4.00
	Std. Deviation	21.07958	1.125	2.012
Most Extreme Differences	Absolute	.305	.172	.126
	Positive	.231	.172	.126
	Negative	-.305	-.172	-.126
Test Statistic		.305	.172	.126
Asymp. Sig. (2-tailed)		.000 ^c	.000 ^c	.002 ^c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Lampiran 21. Hasil Uji Homogenitas Data Survival Rate (SR)

Levene's Test of Equality of Error Variances^a

Dependent Variable: Survival Rate

F	df1	df2	Sig.
4.557	27	56	.000

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Dosis + Hari

Lampiran 22. Hasil One Way Anova Data Survival Rate (SR)

ANOVA

Survival Rate

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1623.810	3	541.270	1.228	.305
Within Groups	35257.143	80	440.714		
Total	36880.952	83			