DAFTAR PUSTAKA

Afonso, A. C., Oliveira, D., Saavedra, M. J., Borges, A., & Simões, M. 2021. *Biofilms in Diabetic Foot Ulcers : Impact , Risk Factors and Control Strategies*. 1–26.

Amadeu, T. P., Seabra, A. B., de Oliveira, M. G., & Costa, A. M. A. 2007. S-nitrosoglutathione-containing hydrogel accelerates rat cutaneous wound repair. *Journal of the European Academy of Dermatology and Venereology*, *21*(5), 629–637. https://doi.org/10.1111/j.1468-3083.2006.02032.x

Applications, A. 2022. *Recent Developments in Nitric Oxide Donors and Delivery for Antimicrobial and Anti-Biofilm Applications*.

Asri, M, F. (2019). Jurnal riset kefarmasian indonesia vol. 1 no. 2, 2019. *Jurnal Riset Kefarmasian Indonesia*, *1*(2), 140–147.

Bian, H., Jiao, L., Wang, R., Wang, X., Zhu, W., & Dai, H. 2018. Lignin nanoparticles as nano-spacers for tuning the viscoelasticity of cellulose nanofibril reinforced polyvinyl alcohol-borax hydrogel. *European Polymer Journal*, *107*, 267–274. https://doi.org/10.1016/j.eurpolymj.2018.08.028

Cai, Y. ming, & Webb, J. S. 2020. Optimization of nitric oxide donors for investigating biofilm dispersal response in Pseudomonas aeruginosa clinical isolates. *Applied Microbiology and Biotechnology*, *104*(20), 8859–8869. https://doi.org/10.1007/s00253-020-10859-7

Cao, J., Su, M., Hasan, N., Lee, J., Kwak, D., Kim, D. Y., Kim, K., Lee, E. H., Jung, J. H., & Yoo, J. 2020. *Nitric Oxide-Releasing Thermoresponsive Pluronic F127 / Alginate Hydrogel for Enhanced Antibacterial Activity and Accelerated Healing of Infected Wounds*.

Cariello, A. J., Bispo, P. J. M., de Souza, G. F. P., Pignatari, A. C. C., de Oliveira, M. G., & Hofling-Lima, A. L. 2012. Bactericidal effect of S-nitrosothiols against clinical isolates from keratitis. *Clinical Ophthalmology*, *6*(1), 1907–1914. https://doi.org/10.2147/OPTH.S34830

Choi, M., Hasan, N., Cao, J., Lee, J., Hlaing, S. P., & Yoo, J. 2019. Chitosan-based nitric oxide-releasing dressing for anti-biofilm and in vivo. *INTERNATIONAL JOURNAL OF BIOLOGICAL MACROMOLECULES*. https://doi.org/10.1016/j.ijbiomac.2019.10.009

Crouzet, M., Le Senechal, C., Brözel, V. S., Costaglioli, P., Barthe, C., Bonneu, M., Garbay, B., & Vilain, S. (2014). Exploring early steps in biofilm formation: Set-up of an experimental system for molecular studies. *BMC Microbiology*, *14*(1). https://doi.org/10.1186/s12866-014-0253-z

Donlan, R. M. 2002. Biofilm: microbial life on surface. Emerging Infectious Diseases, Vol.8, no. 9. Page : 881-890.

Eivazzadeh-keihan, R., Khalili, F., Aghamirza, H., Aliabadi, M., Maleki, A., Madanchi, H., Ziaei, E., & Salimi, M. 2020. International Journal of Biological Macromolecules Alginate hydrogel-polyvinyl alcohol / silk fi broin / magnesium hydroxide nanorods : A novel scaffold with biological and antibacterial activity and improved mechanical properties. *International Journal of Biological Macromolecules*, *162*, 1959–1971.

Fan, Y., Lu, Q., Liang, W., Wang, Y., Zhou, Y., & Lang, M. 2021. Preparation and characterization of antibacterial polyvinyl alcohol / chitosan sponge and potential applied for wound dressing. *European Polymer Journal*, *157*(March), 110619. https://doi.org/10.1016/j.eurpolymj.2021.110619

Fijan, S., Frauwallner, A., Langerholc, T., Krebs, B., Ter Haar, J. A., Heschl, A., Mičetić Turk, D., & Rogelj, I. 2019. Efficacy of Using Probiotics with Antagonistic Activity against Pathogens of Wound Infections: An Integrative Review of Literature. *BioMed Research International*, *2019*. https://doi.org/10.1155/2019/7585486

Gawande, P. V, Clinton, A. P., Lovetri, K., Yakandawala, N., Rumbaugh, K. P., & Madhyastha, S. 2014. *Microbiology Insights*. 9–13. https://doi.org/10.4137/MBI.S13914

Georgii, J. L., Amadeu, T. P., Seabra, A. B., & Oliveira, M. G. De. 2011. *Topical S -nitrosoglutathione-releasing hydrogel improves healing of rat ischaemic wounds*. *December 2010*, 612–619. https://doi.org/10.1002/term

Gunardi, W. D. 2019. Peranan biofilm dalam kaitannya dengan penyakit infeksi. *Jurnal Kedokteran Meditek*, *15*(6), 1–9.

Gupta, D., Gangwar, A., Jyoti, K., Jyothi, V. G. S. S., Sodhi, R. K., Mehra, N. K., Singh, S. B., & Madan, J. 2020. Jo ur na l P re of. *Colloids and Surfaces B: Biointerfaces*, 111171. https://doi.org/10.1016/j.colsurfb.2020.111171

Hasan, N., Cao, J., Lee, J., Naeem, M., Hlaing, S. P., Kim, J., Jung, Y., Lee, B. L., & Yoo, J. W. 2019. PEI/NONOates-doped PLGA nanoparticles for eradicating methicillin-resistant Staphylococcus aureus biofilm in diabetic wounds via binding to the biofilm matrix. *Materials Science and Engineering C*, *103*(December 2018), 109741. https://doi.org/10.1016/j.msec.2019.109741

Hasan, N., Lee, J., Ahn, H. J., Hwang, W. R., Bahar, M. A., Habibie, H., Amir, M. N., Lallo, S., Son, H. J., & Yoo, J. W. 2022. Nitric oxide-releasing bacterial cellulose/chitosan crosslinked hydrogels for the treatment of polymicrobial wound infections. *Pharmaceutics*, *14*(1). https://doi.org/10.3390/pharmaceutics14010022

K, A. D. V, Shyam, R., Palaniappan, A., Jaiswal, A. K., Oh, T., & Nathanael, A. J. 2021. *Advancement in Biomedical Applications*.

Kamoun EA, Chen S, Eldin MS, Kenawy ES. 2015. Crosslinked Poly (vinyl Alcohol) Hydrogel For Wound dressing Aplications : A Review Of Remarkably Blended Polymers*. Arabian Journal of Chemistry*. 8: 1-14.

Kaplan, J. B. 2011. Antibiotic-induced biofilm formation. *International Journal of Artificial Organs*, *34*(9), 737–751. https://doi.org/10.5301/ijao.5000027

Khorasani, M. T., Joorabloo, A., Moghaddam, A., Shamsi, H., & Mansoorimoghadam, Z. 2018. *PT*. *2017*, https://doi.org/10.1016/j.ijbiomac.2018.04.010

Kırmusaoğlu, S. 2019. The Methods for Detection of Biofilm and Screening Antibiofilm Activity of Agents. *Antimicrobials, Antibiotic Resistance, Antibiofilm Strategies and Activity Methods*, *February*.

Krishna, D. A. 2013. Isolasi, Identifikasi dan Uji Sensitivitas Staphylococcus aureus terhadap Amoxicillin dari Sampel Susu Kambing Peranakan Ettawa (PE) Penderita Mastitis Di Wilayah Girimulyo, Kulonprogo, Yogyakarta. *Sain Veteriner*, *2*(31), 138–140.

Kurniasih, M., Kartika, D., & Riyanti. 2020. Sintesis dan karakterisasi karboksimetil kitosan. *Merdeka Belajar Di Tengah Pandemi Covid-19*, *Merdeka belajardi tengah pandemi*, 51–56.

Lee, J., Kwak, D., Kim, H., Kim, J., Hlaing, S. P., Hasan, N., Cao, J., & Yoo, J. 2020. *Nitric Oxide-Releasing S -Nitrosoglutathione- Conjugated Poly (Lactic- Co -Glycolic Acid) Nanoparticles for the Treatment of MRSA-Infected Cutaneous Wounds*.

Liu, B., Zhang, J., & Guo, H. 2022. Research Progress of Polyvinyl Alcohol Water-Resistant Film Materials. *Membranes*, *12*(3), 1–13. https://doi.org/10.3390/membranes12030347

Mahmudah, R., Soleha, T. U., & Ekowati, C. 2013. Identifikasi Methicillin-Resistant Staphylococcus Aureus (MRSA) Pada Tenaga Medis Dan Paramedis Di Ruang Intensivecare Unit (ICU) Dan Ruang Perawatan Bedah Rumah Sakit Umum Daerah Abdul Moeloek. *Medical Journal of Lampung University*, *2*(4), 70–78.

Maifreni, M., Frigo, F., Bartolomeoli, I., Buiatti, S., Picon, S., & Marino, M. 2015. Bacterial biofilm as a possible source of contamination in the microbrewery environment. *Food Control*, *50*, 809–814. https://doi.org/10.1016/j.foodcont.2014.10.032

Midgley, A. C., Wei, Y., Li, Z., Kong, D., & Zhao, Q. 2019. *Nitric-Oxide-Releasing Biomaterial Regulation of the Stem Cell Microenvironment in Regenerative Medicine*. *1805818*, 1–13. https://doi.org/10.1002/adma.201805818

Negut, I., Grumezescu, V., & Grumezescu, A. M. 2018. Treatment strategies for infected wounds. *Molecules*, *23*(9), 1–23. https://doi.org/10.3390/molecules23092392

Noor Mutsaqof, A. A., -, W., & Suryani, E. 2016. Sistem Pakar Untuk Mendiagnosis Penyakit Infeksi Menggunakan Forward Chaining. *Jurnal Teknologi & Informasi ITSmart*, *4*(1), 43.

https://doi.org/10.20961/its.v4i1.1758

Oliver, S., Pham, T. T. P., Li, Y., Xu, F. J., & Boyer, C. 2021. More than skin deep: Using polymers to facilitate topical delivery of nitric oxide. *Biomaterials Science*, *9*(2), 391–405. https://doi.org/10.1039/d0bm01197e

Palungan, J. 2024. Formulasi dan Karakterisasi Pembalut Luka yang Melepaskan S-Nitrosogluthathion dari self-healing hydrogel Polivinil Alkohol/Boraks yang Diperkuat dengan Karboksimetil Kitosan. Universitas Hasanuddin, Makassar, Indonesia.

Pandian, M., Selvaprithviraj, V., Pradeep, A., & Rangasamy, J. 2021. International Journal of Biological Macromolecules In-situ silver nanoparticles incorporated N , O -carboxymethyl chitosan based adhesive , self-healing , conductive , antibacterial and anti-biofilm hydrogel. *International Journal of Biological Macromolecules*, *188*(June), 501–511. https://doi.org/10.1016/j.ijbiomac.2021.08.040

Pant, J., Pedaparthi, S., Hopkins, S. P., Goudie, M. J., Douglass, M. E., & Handa, H. 2019. Antibacterial and Cellular Response Toward a Gasotransmitter-Based Hybrid Wound Dressing. *ACS Biomaterials Science and Engineering*, *5*(8), 4002–4012. https://doi.org/10.1021/acsbiomaterials.9b00737

Percival, S. L., McCarty, S. M., & Lipsky, B. 2015. Biofilms and Wounds: An Overview of the Evidence. *Advances in Wound Care*, *4*(7), 373–381. https://doi.org/10.1089/wound.2014.0557

Poh, W. H., & Rice, S. A. 2022. Recent Developments in Nitric Oxide Donors and Delivery for Antimicrobial and Anti-Biofilm Applications. *Molecules*, *27*(3). https://doi.org/10.3390/molecules27030674

Pratiwi, Silvya. T. 2008. Mikrobiologi Farmasi. Jakarta : Erlangga.

Purbowati, R., Rianti, E. D. D., & Ama, F. 2017. Kemampuan pembentukan slime pada. *Jurnal Florea*, *4*(2), 1–9.

Safika, S., Matondang, S. W., Darmawi, D., Abral, M., Erina, E., & Jalaluddin, M. 2017. 9. Total colony of cellulolitic bacteria in the rumen of aceh cattle. *Jurnal Medika Veterinaria*, *11*(1), 51–58. https://doi.org/10.21157/j.med.vet..v11i1.3411

Saghazadeh, S., Rinoldi, C., Schot, M., Kashaf, S. S., Derakhshandeh, H., Yue, K., & Swieszkowski, W. 2019. *HHS Public Access*. *402*, 138–166. https://doi.org/10.1016/j.addr.2018.04.008.Drug

Salim, S. E., Sukrama, I. D. M., Nengah, N., Fatmawati, D., & Agus, M. 2020. *Jurnal medika udayana*. *9*(10), 98–104.

Sammulia, S. F., Suhatri, N., & Raja Guk-Guk, H. C. 2019. Deteksi Rhodamin B pada Saus Serta Cemaran Boraks dan Bakteri Salmonella sp. pada Cilok Jajanan Sekolah Dasar Kota Batam. *PHARMACY: Jurnal Farmasi Indonesia*

(Pharmaceutical Journal of Indonesia), *16*(2), 286. https://doi.org/10.30595/pharmacy.v16i2.5744

Sapkota, A., Mondal, A., Chug, M. K., & Brisbois, E. J. 2023. Biomimetic catheter surface with dual action NO-releasing and generating properties for enhanced antimicrobial efficacy. *Journal of Biomedical Materials Research - Part A*, *111*(10), 1627–1641. https://doi.org/10.1002/jbm.a.37560

Sari, N. P. D. P., Cahyo, B. D., Sugijanto, N. E. N., & Suciati, S. 2021. Aktivitas Antibakteri dari Jamur Endofit Penicillium oxalicum Hasil Isolasi dari Spons Homaxinella tanitai. *Jurnal Farmasi Dan Ilmu Kefarmasian Indonesia*, *8*(1), 10. https://doi.org/10.20473/jfiki.v8i12021.10-15

Savitri, N. H., Indiastuti, D. N., & Wahyunitasari, M. R. 2019. Inhibitory Activity of Allium Sativum L. Extract Against Streptococcus Pyogenes and Pseudomonas Aeruginosa. *Journal of Vocational Health Studies*, *3*(2), 72. https://doi.org/10.20473/jvhs.v3.i2.2019.72-77

Schairer, D. O., Chouake, J. S., Nosanchuk, J. D., & Friedman, A. J. 2012. The potential of nitric oxide releasing therapies as antimicrobial agents. *Virulence*, *3*(3), 271–279. https://doi.org/10.4161/viru.20328

Shankar, M., Ramesh, B., D, R. K., & M, N. B. 2014. Wound Hassan, M. A. et al. (2022) 'Prevalence, antimicrobial resistance profile, and characterization of multi-drug resistant bacteria from various infected wounds in North Egypt', Saudi Journal of Biological Sciences, 29(4), pp. 2978–2988. doi: 10.1016/j. *Der Pharmacologia Sinica*, *1*(1), 24–30.

Shantina, O., Soegianto, L., Wijaya, S., Kelengkeng, T., & Steud, L. 2019. *Uji Aktivitas Antibakteri dan Antibiofilm Fraksi Biji Kelengkeng (Euphoria longan Lour . Steud .) terhadap Staphylococcus aureus ATCC 6538 Universitas Katolik Widya Mandala Surabaya Antibacterial and Antibiofilm Activity Test of Longan (Euphoria longan* . *6*(1), 84–90.

Shariatinia, Z. 2018. Carboxymethyl chitosan: Properties and biomedical applications. *International Journal of Biological Macromolecules*, *120*, 1406–1419. https://doi.org/10.1016/j.ijbiomac.2018.09.131

Sundari, S. 2019. *Uji Angka Lempeng Total (ALT) pada Sediaan Kosmetik Lotion X di BBPOM Medan The Total Plate Number (ALT) Test on Lotion X Cosmetic Supply in BBPOM Medan*. *1*(1), 25–33.

Surkama, D. 2021. Karakteristik Bakteri *Pseudomonas Aeruginosa* Dan Pola Kepekaannya Terhadap Antibiotik Di Intensive Care Unit (Icu) Rsup Sanglah Pada Bulan November 2014 – Januari 2015. *The Encyclopedia of Philosophy of Religion*, *8*(4), 1–3.

Suseno, N., Padmawijaya, K. S., Wirana, J. W., & Julio, M. 2018. Pengaruh Berat Molekul Kitosan terhadap Kelarutan Karboksimetil Kitosan. *Seminar Nasional Polimer XI 2018*, *6*(9), 1–9.

Tanpichai, S., Phoothong, F., & Boonmahitthisud, A. 2022. Superabsorbent cellulose-based hydrogels cross-liked with borax. *Scientific Reports*, *12*(1), 1–12. https://doi.org/10.1038/s41598-022-12688-2

Toole, G. O., Kaplan, H. B., & Kolter, R. 2000. *Biofilm Formation as Microbial Development d*. 49–79.

Utomo, S.B., Fujiyanti, M., Lestari, W.P., dan Mulyani, S. 2018. Uji aktivitas antibakteri senyawa hexadecyltrimetylamonium-bromide terhadap bakteri Staphylococcus aureus dan Escherichia coli antibacterial activity test of the c-4-methoxyphenylcalix [4]. *Resorcinarene Compound Modified By Hexadecyltrimethylammonium*, *3*(3), 201–209.

Wu, W., Jin, Y., Bai, F., & Jin, S. 2014. Pseudomonas aeruginosa. In *Molecular Medical Microbiology: Second Edition* (Vols. 2–3). Elsevier Ltd. https://doi.org/10.1016/B978-0-12-397169-2.00041-X

Yanti, N. A. 2020. BIOMA : JURNAL BIOLOGI MAKASSAR Bioma , Bioma , Volume 5 (1) : 9-17 , Januari – Juni 2020. *Jurusan Biologi FMIPA Universitas Halu Oleo*, *5*(1), 9–17.

Zainab, S. S. T., Nasrudin, M., & Redaksi, T. 2022. *Khasiat Kandungan dan Aktivitas Antibakteri pada Ekstrak Daun Kelambu Menjangan*. https://ppm-poltekkeskemenkesbanjarmasin.com/repositori/Zainab/Artikel_ZAINAB_Bukti Monograf Khasiat Kandungan dan Aktivitas Antibakteri .pdf

Zhang, A., Liu, Y., Qin, D., Sun, M., Wang, T., & Chen, X. 2020. Research status of self-healing hydrogel for wound management: A review. *International Journal of Biological Macromolecules*, *164*, 2108–2123. https://doi.org/10.1016/j.ijbiomac.2020.08.109

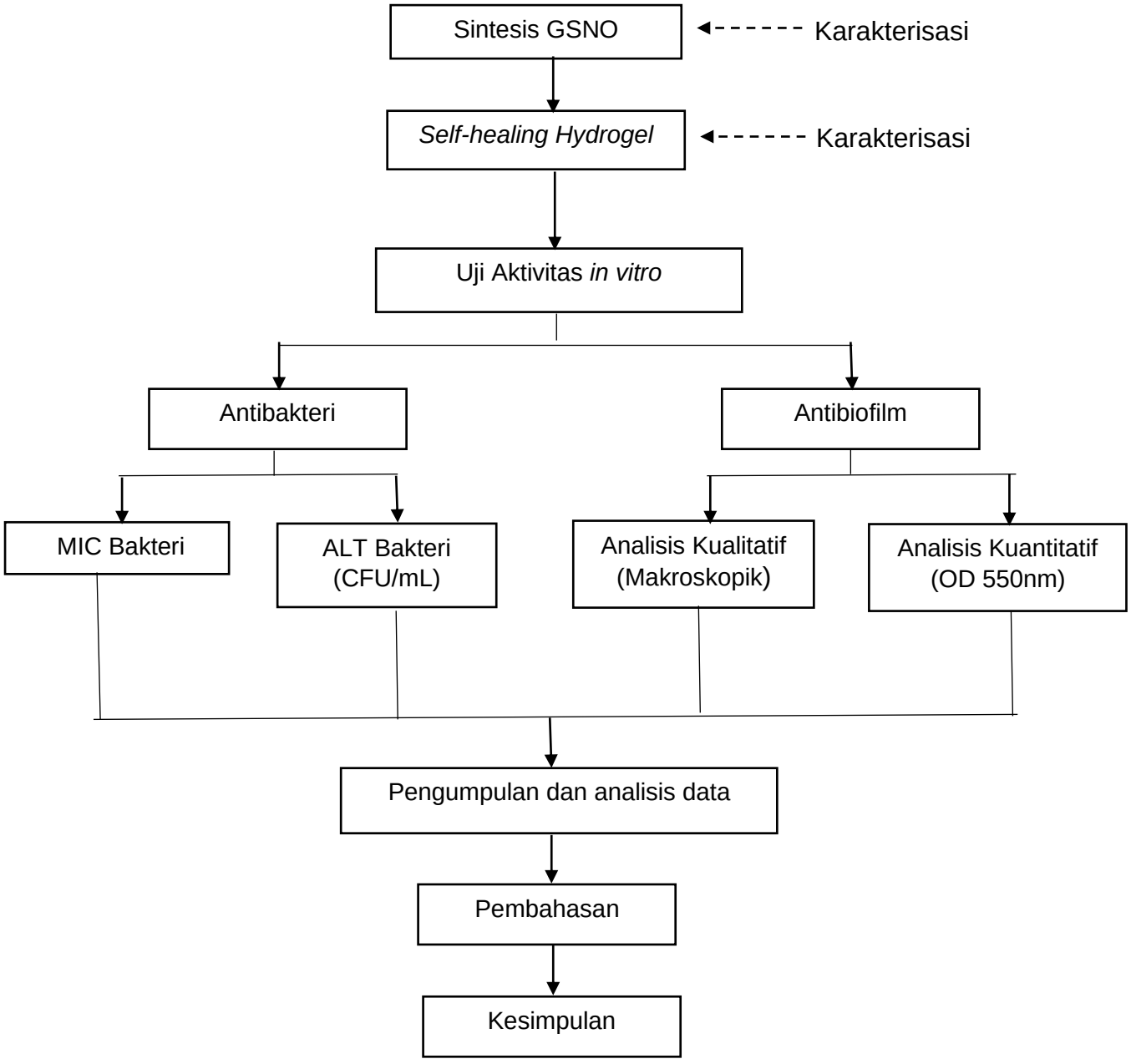
Zhang, B., He, J., Shi, M., Liang, Y., & Guo, B. 2020. Injectable self-healing supramolecular hydrogels with conductivity and photo-thermal antibacterial activity to enhance complete skin regeneration. *Chemical Engineering Journal*, *400*(June), 125994. https://doi.org/10.1016/j.cej.2020.125994

Zhang, X., Li, Y., He, D., Ma, Z., Liu, K., Xue, K., & Li, H. 2021. An effective strategy for preparing macroporous and self-healing bioactive hydrogels for cell delivery and wound healing. *Chemical Engineering Journal*, *425*(June), 130677. https://doi.org/10.1016/j.cej.2021.130677

LAMPIRAN

Lampiran 1. Skema Kerja

SKEMA KERJA



Lampiran 2. Komposisi media

Komposisi Media

a. Tryptic Soy Agar (Oxoid®)

Komposisi	**gram/liter**
Pancreatic digest of casein	15,0
Enzymatic digest of soya bean (papain)	5,0
Sodium chloride	5,0
Agar	15,0
pH 7,3 ± 0,2 @ 25°C	

b. Tryptic Soy Broth (Oxoid®)

Komposisi	**gram/liter**
Pancreatic digest of casein	17,0
Enzymatic digest of soya bean (papain)	3,0
Sodium chloride	5,0
Dipotassium hydrogen phosphate	2,5
Glucose	2,5
pH 7,3 ± 0,2 @ 25°C	

c. Luria Broth (Miller®)

Komposisi	**gram/liter**
Tryptone	10,0
Yeast extract	5,0
Sodium chloride	10,0
pH 7,2 @ 25°C	

d. Luria Bertani Agar (Miller®)

Komposisi	**gram/liter**
Tryptone	10,0
Yeast extract	5,0
Sodium chloride	10,0
Agar	15,0
pH 7,2 @ 25°C	

Lampiran 3. Data Hasil Uji Pengamatan Makroskopik ALT Antibakteri

A. Data CFU bakteri uji *P.aeruginosa*

Tabel 5. Hasil pengamatan ALT konsentrasi 10 mg/mL

Replikasi	Jumlah koloni				CFU/mL
	$P10^{-1}$	$P10^{-2}$	$P10^{-3}$	$P10^{-4}$	
1	400	311	163	31	**3,2 X 10^6**
2	405	310	127	61	
3	350	264	116	58	
Rata-rata	**385**	**295**	**135**	**50**	
SD	**30,413**	**26,851**	**24,583**	**16,522**	**99,450**

Tabel 6. Hasil pengamatan ALT konsentrasi 20 mg/mL

Replikasi	Jumlah koloni				CFU/mL
	$P10^{-1}$	$P10^{-2}$	$P10^{-3}$	$P10^{-4}$	
1	301	180	23	9	**3,3 X 10^5**
2	350	276	93	10	
3	250	111	28	6	
Rata-rata	**300**	**189**	**48**	**8,33**	
SD	**50,003**	**82,867**	**39,051**	**2,081**	**21,753**

Tabel 7. Hasil pengamatan ALT konsentrasi 40 mg/mL

Replikasi	Jumlah koloni				CFU/mL
	$P10^{-1}$	$P10^{-2}$	$P10^{-3}$	10^{-4}	
1	14	4	0	0	**1,8 X 10^3**
2	21	9	2	0	
3	18	6	2	0	
Rata-rata	**17, 667**	**6,333**	**1,333**	**0**	
SD	**3,511**	**2,516**	**1,154**	**0**	**3,511**

Keterangan :
$P10^{-1}$ = Pengenceran ke-1 (100 µL dari sediaan dimasukkan ke 900 µL media cair)
$P10^{-2}$ = Pengenceran ke-2 (100 µL dari $P10^{-1}$ dimasukkan ke 900 µL media cair)
$P10^{-3}$ = Pengenceran ke-3 (100 µL dari $P10^{-2}$ dimasukkan ke 900 µL media cair)
$P10^{-4}$ = Pengenceran ke-4 (100 µL dari $P10^{-3}$ dimasukkan ke 900 µL media cair)

B. Data CFU bakteri uji *S.aureus*

Tabel 8. Hasil pengamatan ALT konsentrasi 10 mg/mL

Replikasi	Jumlah koloni				CFU/mL
	$P10^{-1}$	$P10^{-2}$	$P10^{-3}$	$P10^{-4}$	
1	377	300	136	31	**$2,2 \times 10^{6}$**
2	340	297	165	50	
3	300	190	92	14	
Rata-rata	**339**	**262,333**	**131**	**31,667**	
SD	**38,509**	**62,660**	**36,755**	**18,009**	**10,135**

Tabel 9. Hasil pengamatan ALT konsentrasi 20 mg/mL

Replikasi	Jumlah koloni				CFU/mL
	$P10^{-1}$	$P10^{-2}$	$P10^{-3}$	$P10^{-4}$	
1	108	67	10	3	**$4,7 \times 10^{4}$**
2	182	97	18	9	
3	192	68	13	5	
Rata-rata	**160**	**77,333**	**13,667**	**5,667**	
SD	**45,883**	**17,039**	**4,041**	**3,055**	**88,040**

Tabel 10. Hasil pengamatan ALT konsentrasi 40 mg/mL

Replikasi	Jumlah koloni				CFU/mL
	$P10^{-1}$	$P10^{-2}$	$P10^{-3}$	$P10^{-4}$	
1	82	18	9	1	**$5,7 \times 10^{3}$**
2	56	14	4	0	
3	32	14	7	0	
Rata-rata	**56,667**	**15,333**	**6,667**	**0,333**	
SD	**25,006**	**2,309**	**2,516**	**0,577**	**25,006**

Keterangan :
$P10^{-1}$ = Pengenceran ke-1 (100 µL dari sediaan dimasukkan ke 900 µL media cair)
$P10^{-2}$ = Pengenceran ke-2 (100 µL dari $P10^{-1}$ dimasukkan ke 900 µL media cair)
$P10^{-3}$ = Pengenceran ke-3 (100 µL dari $P10^{-2}$ dimasukkan ke 900 µL media cair)
$P10^{-4}$ = Pengenceran ke-4 (100 µL dari $P10^{-3}$ dimasukkan ke 900 µL media cair)

C. Data CFU bakteri uji MRSA

Tabel 11. Hasil pengamatan ALT konsentrasi 10 mg/mL

Replikasi	Jumlah koloni				CFU/mL
	$P10^{-1}$	$P10^{-2}$	$P10^{-3}$	$P10^{-4}$	
1	315	142	87	44	**$3,5 \times 10^6$**
2	350	193	98	57	
3	400	342	155	73	
Rata-rata	**355**	**225**	**113,333**	**58**	
SD	**42,720**	**103,924**	**36,501**	**14,525**	**90,880**

Tabel 12. Hasil pengamatan ALT konsentrasi 20 mg/mL

Replikasi	Jumlah koloni				CFU/mL
	$P10^{-1}$	$P10^{-2}$	$P10^{-3}$	$P10^{-4}$	
1	282	112	57	10	**$2,9 \times 10^5$**
2	216	108	22	6	
3	301	128	61	23	
Rata-rata	**266,333**	**116**	**46,667**	**13**	
SD	**44,613**	**10,583**	**21,455**	**8,888**	**11,260**

Tabel 13. Hasil pengamatan ALT konsentrasi 40 mg/mL

Replikasi	Jumlah koloni				CFU/mL
	$P10^{-1}$	$P10^{-2}$	$P10^{-3}$	$P10^{-4}$	
1	65	11	3	0	**$8,0 \times 10^3$**
2	82	11	1	0	
3	94	24	9	1	
Rata-rata	**80,333**	**15,333**	**4,333**	**0,333**	
SD	**14,571**	**7,505**	**4,163**	**0,577**	**14,571**

Keterangan :
$P10^{-1}$ = Pengenceran ke-1 (100 µL dari sediaan dimasukkan ke 900 µL media cair)
$P10^{-2}$ = Pengenceran ke-2 (100 µL dari $P10^{-1}$ dimasukkan ke 900 µL media cair)
$P10^{-3}$ = Pengenceran ke-3 (100 µL dari $P10^{-2}$ dimasukkan ke 900 µL media cair)
$P10^{-4}$ = Pengenceran ke-4 (100 µL dari $P10^{-3}$ dimasukkan ke 900 µL media cair)

Lampiran 4. Perhitungan ALT Bakteri

A. Perhitungan ALT sediaan *self-healing hydrogel* PVA-B-KMK/GSNO pada bakteri uji *P.aeruginosa*

konsentrasi	replikasi	Jumlah koloni		Volume cuplik ke cawan petri	Hasil CFU/mL
10 mg/mL	1	163	31	0,1mL	$3,2 \times 10^6$
	2	127	61		
	3	116	58		
	Faktor dilusi	**10^{-3}**	**10^{-4}**		
20 mg/mL	1	180	23	0,1 mL	$3,3 \times 10^5$
	2	276	93		
	3	111	28		
	Faktor dilusi	**10^{-2}**	**10^{-3}**		
40 mg/mL	1	14		0,1 mL	$1,8 \times 10^3$
	2	21			
	3	18			
	Faktor dilusi	**10^{-1}**			

Konsentrasi 10 mg/mL

Pengenceran 10^{-3}

Replikasi 1 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{163 \times 10^{-3}}{0,1}$

$= 1,6 \times 10^6$

Replikasi 2 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{127 \times 10^{-3}}{0,1}$

$= 1,3 \times 10^6$

Replikasi 3 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{116 \times 10^{-3}}{0,1}$

$= 1,2 \times 10^6$

X $\quad = \frac{(1,6 \times 10^6) + (1,3 \times 10^6) + (1,2 \times 10^6)}{3} = 1,3 \times 10^6$

Pengenceran 10^{-4}

Replikasi 1 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{31 \times 10^{-4}}{0,1}$

$= 3,1 \times 10^{6}$

Replikasi 2 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{61 \times 10^{-4}}{0,1}$

$= 6,1 \times 10^{6}$

Replikasi 3 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{58 \times 10^{-4}}{0,1}$

$= 5,8 \times 10^{6}$

X $= \frac{(3,1 \times 10^{6}) + (6,1 \times 10^{6}) + (5,8 \times 10^{6})}{3} = 5,0 \times 10^{6}$

Maka nilai CFU/mL pada konsentrasi 10 mg/mL

CFU/mL $= \frac{(1,3 \times 10^{6}) + (5,0 \times 10^{6})}{2} = 3,2 \times 10^{6}$

B. Perhitungan ALT sediaan *self-healing hydrogel* PVA-B-KMK/GSNO pada bakteri uji *S.aureus*

konsentrasi	replikasi	Jumlah koloni		Volume cuplik ke cawan petri	Hasil CFU/mL
10 mg/mL	1	136	31	0,1mL	$2,2 \times 10^{6}$
	2	165	50		
	3	92	14		
	Faktor dilusi	**10^{-3}**	**10^{-4}**		
20 mg/mL	1	108	67	0,1 mL	$4,7 \times 10^{4}$
	2	182	97		
	3	192	68		
	Faktor dilusi	**10^{-1}**	**10^{-2}**		
40 mg/mL	1	82		0,1 mL	$5,7 \times 10^{3}$
	2	56			
	3	32			
	Faktor dilusi	**10^{-1}**			

Konsentrasi 10 mg/mL

Pengenceran 10^{-3}

Replikasi 1 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{136 \times 10^{-3}}{0,1}$

$= 1,4 \times 10^{6}$

Replikasi 2 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{165 \times 10^{-3}}{0,1}$

$= 1,6 \times 10^{6}$

Replikasi 3 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{92 \times 10^{-3}}{0,1}$

$= 9,2 \times 10^{6}$

X $= \frac{(1,4 \times 10^{6}) + (1,6 \times 10^{6}) + (9,2 \times 10^{6})}{3} = 1,3 \times 10^{6}$

Pengenceran 10^{-4}

Replikasi 1 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{31 \times 10^{-4}}{0,1}$

$= 3,1 \times 10^{6}$

Replikasi 2 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{50 \times 10^{-4}}{0,1}$

$= 5,0 \times 10^{6}$

Replikasi 3 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{14 \times 10^{-4}}{0,1}$

$= 1,4 \times 10^{6}$

X $= \frac{(3,1 \times 10^{6}) + (5,0 \times 10^{6}) + (1,4 \times 10^{6})}{3} = 3,2 \times 10^{6}$

Maka nilai CFU/mL pada konsentrasi 10 mg/mL

CFU/mL $= \frac{(1{,}3 \times 10^6) + (3{,}2 \times 10^6)}{2} = 2{,}2 \times 10^6$

C. Perhitungan ALT sediaan *self-healing hydrogel* PVA-B-KMK/GSNO pada bakteri uji MRSA

konsentrasi	replikasi	Jumlah koloni		Volume cuplik ke cawan petri	Hasil CFU/mL
10 mg/mL	1	87	44	0,1mL	$3{,}5 \times 10^6$
	2	98	57		
	3	155	73		
	Faktor dilusi	**10^{-3}**	**10^{-4}**		
20 mg/mL	1	112	57	0,1 mL	$3{,}9 \times 10^5$
	2	108	22		
	3	128	61		
	Faktor dilusi	**10^{-2}**	**10^{-3}**		
40 mg/mL	1	65		0,1 mL	$8{,}0 \times 10^3$
	2	82			
	3	94			
	Faktor dilusi	**10^{-1}**			

Konsentrasi 40 mg/mL

Pengenceran 10^{-1}

Replikasi 1 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{65 \times 10^{-1}}{0{,}1}$

$= 6{,}5 \times 10^3$

Replikasi 2 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{82 \times 10^{-1}}{0{,}1}$

$= 8{,}2 \times 10^3$

Replikasi 3 $\quad CFU/mL = \frac{\text{Jumlah Koloni x Faktor dilusi}}{\text{Volume yang dicuplik ke cawan petri}}$

$= \frac{94 \times 10^{-1}}{0{,}1}$

$= 9,4 \times 10^3$

Maka nilai CFU/mL pada konsentrasi 40 mg/mL

CFU/mL $= \frac{(6,2 \times 10^3) + (5,6 \times 10^3) + (9,4 \times 10^3)}{3} = 8,0 \times 10^3$

Lampiran 5. Data Pengukuran Optical Density (OD) Antibiofilm

A. Bakteri uji *P.aeruginosa*

Tabel 14. Data pengukuran Optical density (OD) dan penghambatan biofilm

konsentrasi	replikasi	serapan	% penghambatan
PVA-B-KMK/GSNO 10 mg	1	0,442	58,143
	2	0,555	45,747
	3	0,376	64,087
Rata-rata ± SD		**0,458 ± 0,091**	**55,992 ± 9,357**
PVA-B-KMK/GSNO 20 mg	1	0,214	79,734
	2	0,222	78,299
	3	0,201	80,802
Rata-rata ± SD		**0,212 ± 0,011**	**76,612 ± 1,256**
PVA-B-KMK/GSNO 40 mg	1	0,153	85,511
	2	0,116	88,660
	3	0,111	89,398
Rata-rata ± SD		**0,127 ± 0,023**	**87,856 ± 2,064**
PVA-B-KMK 10 mg	1	0,986	6,628
	2	0,998	2,443
	3	0,982	6,208
Rata-rata ± SD		**0,989 ± 0,008**	**5,093 ± 2,305**
PVA-B-KMK 20 mg	1	0,998	5,492
	2	0,997	2,541
	3	0,991	5,348
Rata-rata ± SD		**0,995 ± 0,004**	**4,4603 ± 1,664**
PVA-B-KMK 40 mg	1	0,989	6,344
	2	0,990	3,225
	3	0,998	4,680
Rata-rata ± SD		**0,992 ± 0,005**	**4,7497 ± 1,561**
Kontrol negatif	1	1,056	0
	2	1,023	0
	3	1,047	0
Rata-rata ± SD		**1,042 ± 0,017**	**0 ± 0**

B. Bakteri uji MRSA

Tabel 15. Data pengukuran Optical density (OD) dan penghambatan biofilm

konsentrasi	replikasi	Serapan	% penghambatan
PVA-B-KMK/GSNO 10 mg	1	0,387	63,212
	2	0,525	51,298
	3	0,382	63,619
Rata-rata ± SD		**0,431 ± 0,081**	**59,376 ± 6,999**
PVA-B-KMK/GSNO 20 mg	1	0,276	73,764
	2	0,225	79,128
	3	0,271	74,190
Rata-rata ± SD		**0,257 ± 0,028**	**75,694 ± 2,982**
PVA-B-KMK/GSNO 40 mg	1	0,177	83,174
	2	0,165	84,693
	3	0,158	84,952
Rata-rata ± SD		**0,167 ± 0,010**	**84,273 ± 0,961**
PVA-B-KMK 10 mg	1	0,993	5,608
	2	0,999	7,328
	3	0,995	5,238
Rata-rata ± SD		**0,996 ± 0,003**	**6,058 ± 1,115**
PVA-B-KMK 20 mg	1	0,997	5,228
	2	0,998	7,421
	3	0,976	7,047
Rata-rata ± SD		**0,990 ± 0,012**	**6,5653 ± 1,173**
PVA-B-KMK 40 mg	1	0,983	6,558
	2	0,991	8,07
	3	0,979	6,761
Rata-rata ± SD		**0,984 ± 0,006**	**7,1297 ± 0,821**
Kontrol negatif	1	1,052	0
	2	1,078	0
	3	1,050	0
Rata-rata ± SD		**1,060 ± 0,016**	**0 ± 0**

C. Bakteri Uji Polimikrobial

Tabel 16. Data pengukuran Optical density (OD) dan penghambatan biofilm

konsentrasi	replikasi	Serapan	% penghambatan
PVA-B-KMK/GSNO 10 mg	1	0,647	37,788
	2	0,517	49,363
	3	0,510	51,886
Rata-rata ± SD		**0,558 ± 0,077**	**46,345 ± 7,518**
PVA-B-KMK/GSNO 20 mg	1	0,468	55
	2	0,480	52,987
	3	0,354	66,603
Rata-rata ± SD		**0,434 ± 0,070**	**58,192 ± 7,349**
PVA-B-KMK/GSNO 40 mg	1	0,228	78,076
	2	0,225	77,962
	3	0,221	79,150
Rata-rata ± SD		**0,225 ± 0,004**	**78,396 ± 0,655**
PVA-B-KMK 10 mg	1	1,009	2,980
	2	1,013	0,783
	3	1,014	4,339
Rata-rata ± SD		**1,012 ± 0,003**	**2,7007 ± 1,794**
PVA-B-KMK 20 mg	1	1,011	2,788
	2	1,010	1,077
	3	1,015	4,245
Rata-rata ± SD		**1,012 ± 0,003**	**2,7033 ± 1,586**
PVA-B-KMK 40 mg	1	1,002	3,653
	2	1,009	1,175
	3	1,011	4,622
Rata-rata ± SD		**1,007 ± 0,005**	**3,150 ± 1,778**
Kontrol negatif	1	1,040	0
	2	1,021	0
	3	1,060	0
Rata-rata ± SD		**1,040 ± 0,020**	**0 ± 0**

Lampiran 6. Perhitungan Persentase Penghambatan Biofilm

% Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

Keterangan : ODkn = Nilai OD kontrol negatif

ODs = Nilai OD sampel uji

A. Perhitungan persentase penghambatan biofilm *self-healing hydrogel* PVA-B-KMK/GSNO pada bakteri uji *P.aeruginosa*

konsentrasi	replikasi	ODs	ODkn	Hasil (%)	rata-rata (%)
10 mg/mL	1	0,442	1,056	58,14	55,99
	2	0,555	1,023	45,75	
	3	0,376	1,047	64,09	
20 mg/mL	1	0,214	1,056	79,73	76,61
	2	0,222	1,023	78,30	
	3	0,201	1,047	80,80	
40 mg/mL	1	0,153	1,056	85,51	87,86
	2	0,116	1,023	88,70	
	3	0,111	1,047	89,40	

Konsentrasi 10 mg/mL

Keterangan : ODkn = Replikasi 1 (1,056)
Replikasi 2 (1,023)
Replikasi 3 (1,047)
ODs = Replikasi 1 (0,442)
Replikasi 2 (0,555)
Replikasi 3 (0,376)

Replikasi 1

% Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

= $\frac{1{,}056 - 0{,}442}{1{,}056}\ x\ 100\ \%$

= 58,143 %

Replikasi 2

% Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

= $\frac{1{,}023 - 0{,}555}{1{,}023}\ x\ 100\ \%$

= 45,747 %

Replikasi 3 % Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

$= \frac{1{,}047 - 0{,}376}{1{,}047}\ x\ 100\ \%$

= 64,087 %

X $= \frac{58{,}143 + 45{,}747 + 64{,}087}{3}$ = 55,992 %

Maka % Penghambatan Biofilm konsentrasi 10 mg/mL 55,992 %

B. Perhitungan persentase penghambatan biofilm *self-healing hydrogel* PVA-B-KMK/GSNO pada bakteri uji MRSA

konsentrasi	replikasi	ODs	ODkn	Hasil (%)	rata-rata (%)
10 mg/mL	1	0,387	1,052	63,21	59,38
	2	0,525	1,078	51,30	
	3	0,383	1,050	63,62	
20 mg/mL	1	0,276	1,052	73,76	75,69
	2	0,225	1,078	79,13	
	3	0,271	1,050	74,19	
40 mg/mL	1	0,177	1,052	83,17	84,27
	2	0,165	1,078	84,69	
	3	0,158	1,050	84,95	

Konsentrasi 10 mg/mL

Keterangan : ODkn = Replikasi 1 (1,052)
Replikasi 2 (1,078)
Replikasi 3 (1,050)
ODs = Replikasi 1 (0,387)
Replikasi 2 (0,525)
Replikasi 3 (0,383)

Replikasi 1 % Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

$= \frac{1{,}052 - 0{,}387}{1{,}052}\ x\ 100\%$

=63,212 %

Replikasi 2 % Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

$= \frac{1{,}078 - 0{,}525}{1{,}078}\ x\ 100\ \%$

= 51,298 %

Replikasi 3 % Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

$= \frac{1{,}050 - 0{,}328}{1{,}050}\ x\ 100\ \%$

= 63,619 %

X $= \frac{61{,}212 + 51{,}298 + 63{,}619}{3}$ = 59,376 %

Maka % Penghambatan Biofilm konsentrasi 10 mg/mL 59,376 %

C. Perhitungan persentase penghambatan biofilm *self-healing hydrogel* PVA-B-KMK/GSNO pada bakteri uji Polimikrobial

konsentrasi	replikasi	ODs	ODkn	Hasil (%)	rata-rata (%)
10 mg/mL	1	0,647	1,040	37,79	46,34
	2	0,517	1,021	49,36	
	3	0,510	1,060	51,89	
20 mg/mL	1	0,468	1,040	55	58,19
	2	0480	1,021	52,99	
	3	0,354	1,060	66,60	
40 mg/mL	1	0,228	1,040	78,08	78,40
	2	0,225	1,021	77,96	
	3	0,221	1,060	79,15	

Konsentrasi 10 mg/mL

Keterangan : ODkn = Replikasi 1 (1,040)
Replikasi 2 (1,021)
Replikasi 3 (1,060)
ODs = Replikasi 1 (0,647)
Replikasi 2 (0,517)
Replikasi 3 (0,510)

Replikasi 1 % Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

$= \frac{1{,}040 - 0{,}647}{1{,}040}\ x\ 100\ \%$

= 37,788 %

Replikasi 2 % Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

$= \frac{1{,}021 - 0{,}517}{1{,}021}\ x\ 100\ \%$

= 49,363 %

Replikasi 3 % Penghambatan Biofilm = $\frac{OD\ kn - ODs}{OD\ kn}\ x\ 100\ \%$

$= \frac{1{,}060 - 0{,}510}{1{,}060}\ x\ 100\ \%$

= 51,886 %

X $= \frac{37{,}788 + 49{,}363 + 51{,}886}{3}$ = 46,346 %

Maka % Penghambatan Biofilm konsentrasi 10 mg/mL 46,346 %

Lampiran 7. Hasil Analisis Statistik Antibakteri

A. Bakteri uji *P.aeruginosa*

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	PVA-B-K/GSNO	Statistic	df	Sig.	Statistic	df	Sig.
Log reduction 24 jam 10mg/mL	Blank	.296	3	.	.919	3	.448
	GSNO	.353	3	.	.824	3	.174
Log reduction 24 jam 20mg/mL	Blank	.296	3	.	.919	3	.448
	GSNO	.362	3	.	.803	3	.122
Log reduction 24 jam 40mg/mL	Blank	.296	3	.	.919	3	.448
	GSNO	.204	3	.	.993	3	.843

a. Lilliefors Significance Correction

Independent Samples Test

		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
Log reduction 24 jam 10mg/mL	Equal variances assumed	10.568	.031	4.896	4	.008	48661666666.666664	9938701056.364346	2106740876.699740	76255924566.633590
	Equal variances not assumed			4.896	2.000	.039	48661666666.666664	9938701056.364346	5898888191.589020	91424445141.744310
Log reduction 24 jam 20mg/mL	Equal variances assumed	10.570	.031	4.897	4	.008	48666186666.666664	9938701013.141058	2107192888.706830	76260444446.626500
	Equal variances not assumed			4.897	2.000	.039	48666186666.666664	9938701013.141058	5903407664.691559	91428965668.641770
Log reduction 24 jam 40mg/mL	Equal variances assumed	10.570	.031	4.897	4	.008	48666664900.000000	9938701010.583717	2107240712.140480	76260922672.859530
	Equal variances not assumed			4.897	2.000	.039	48666664900.000000	9938701010.583717	5903885866.850571	91429443933.149430

B. Bakteri uji *S.aureus*

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	PVA-B-K/GSNO	Statistic	df	Sig.	Statistic	df	Sig.
Log reduction 24 jam 10mg/mL	Blank	.375	3	.	.775	3	.056
	GSNO	.221	3	.	.986	3	.774
Log reduction 24 jam 20mg/mL	Blank	.375	3	.	.775	3	.056
	GSNO	.375	3	.	.775	3	.056
Log reduction 24 jam 40mg/mL	Blank	.375	3	.	.775	3	.056
	GSNO	.178	3	.	.999	3	.956

a. Lilliefors Significance Correction

Independent Samples Test

		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
Log reduction 24 jam 10mg/mL	Equal variances assumed	15.876	.016	7.387	4	.002	72665356666.666670	98375697 1.204647	45351884394.950460	99978828938.382870
	Equal variances not assumed			7.387	2.000	.018	72665356666.666670	98375697 1.204649	30337710532.601067	11499300280 0.732270
Log reduction 24 jam 20mg/mL	Equal variances assumed	15.877	.016	7.387	4	.002	72666589333.333340	98375697 8.920721	45353117067.958330	99980061598.708360
	Equal variances not assumed			7.387	2.000	.018	72666589333.333340	98375697 8.920723	30338943171.426360	11499423549 5.240330
Log reduction 24 jam 40mg/mL	Equal variances assumed	15.877	.016	7.387	4	.002	72666661000.000000	98375697 8.915909	45353188734.638350	99980133265.361650
	Equal variances not assumed			7.387	2.000	.018	72666661000.000000	98375697 8.915909	30339014838.034363	11499430716 1.965640

C. Bakteri uji MRSA

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	PVA-B-K/GSNO	Statistic	df	Sig.	Statistic	df	Sig.
Log reduction 24 jam 10mg/mL	Blank	.320	3	.	.884	3	.336
	GSNO	.194	3	.	.996	3	.886
Log reduction 24 jam 20mg/mL	Blank	.320	3	.	.884	3	.336
	GSNO	.352	3	.	.826	3	.178
Log reduction 24 jam 40mg/mL	Blank	.320	3	.	.884	3	.336
	GSNO	.212	3	.	.990	3	.811

a. Lilliefors Significance Correction

Independent Samples Test

		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
Log reduction 24 jam 10mg/mL	Equal variances assumed	12.459	.024	5.377	4	.006	70994200000.000000	13203534906.859854	34335310136.540764	107653089863.459230
	Equal variances not assumed			5.377	2.000	.033	70994200000.000000	13203534906.859856	14183974930.199280	127804425069.800720
Log reduction 24 jam 20mg/mL	Equal variances assumed	12.461	.024	5.377	4	.006	70999533333.333330	13203534880.806646	34340643542.209390	107658423124.457280
	Equal variances not assumed			5.377	2.000	.033	70999533333.333330	13203534880.806646	14189307945.940697	127809758720.725950
Log reduction 24 jam 40mg/mL	Equal variances assumed	12.461	.024	5.377	4	.006	70999991966.666670	13203534880.225600	34341102177.155975	107658881756.177370
	Equal variances not assumed			5.377	2.000	.033	70999991966.666670	13203534880.225601	14189766572.190987	127810217361.142360

Lampiran 8. Hasil Analisis Statistik Antibiofilm

A. Bakteri uji *P.aeruginosa*

Uji Normalitas Optical Density (OD)

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Sediaan	Statistic	df	Sig.	Statistic	df	Sig.
Optical Density	10 mg/mL P-B-K	.292	3	.	.923	3	.463
	20 mg/mL P-B-K	.337	3	.	.855	3	.253
	40 mg/mL P-B-K	.349	3	.	.832	3	.194
	10 mg/mL P-B-K/GSNO	.235	3	.	.978	3	.713
	20 mg/mL P-B-K/GSNO	.229	3	.	.981	3	.739
	40 mg/mL P-B-K/GSNO	.346	3	.	.838	3	.209
	Kontrol negatif	.282	3	.	.936	3	.510

a. Lilliefors Significance Correction

Anova Optical Density (OD)

ANOVA

Optical Density

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2991588.571	6	498598.095	378.053	.000
Within Groups	18464.000	14	1318.857		
Total	3010052.571	20			

Multiple Comparisons

Dependent Variable: Optical density
Tukey HSD

		Mean Difference (I-J)			95% Confidence Interval	
(I) sediaan	(J) sediaan		Std. Error	Sig.	Lower Bound	Upper Bound
10 mg/mL P-B-K	20 mg/mL P-B-K	-6.666667	29.651949	1.000	-107.91581	94.58248
	40 mg/mL P-B-K	-3.666667	29.651949	1.000	-104.91581	97.58248
	10 mg/mL P-B-K/GSNO	531.000000*	29.651949	.000	429.75086	632.24914
	20 mg/mL P-B-K/GSNO	776.333333*	29.651949	.000	675.08419	877.58248
	40 mg/mL P-B-K/GSNO	862.000000*	29.651949	.000	760.75086	963.24914
	Kontrol negatif	-53.333333	29.651949	.569	-154.58248	47.91581
20 mg/mL P-B-K	10 mg/mL P-B-K	6.666667	29.651949	1.000	-94.58248	107.91581
	40 mg/mL P-B-K	3.000000	29.651949	1.000	-98.24914	104.24914
	10 mg/mL P-B-K/GSNO	537.666667*	29.651949	.000	436.41752	638.91581
	20 mg/mL P-B-K/GSNO	783.000000*	29.651949	.000	681.75086	884.24914
	40 mg/mL P-B-K/GSNO	868.666667*	29.651949	.000	767.41752	969.91581
	Kontrol negatif	-46.666667	29.651949	.700	-147.91581	54.58248

40 mg/mL P-B-K	10 mg/mL P-B-K	3.666667	29.651949	1.000	-97.58248	104.91581
	20 mg/mL P-B-K	-3.000000	29.651949	1.000	-104.24914	98.24914
	10 mg/mL P-B-K/GSNO	534.666667*	29.651949	.000	433.41752	635.91581
	20 mg/mL P-B-K/GSNO	780.000000*	29.651949	.000	678.75086	881.24914
	40 mg/mL P-B-K/GSNO	865.666667*	29.651949	.000	764.41752	966.91581
	Kontrol negatif	-49.666667	29.651949	.641	-150.91581	51.58248
10 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	-531.000000*	29.651949	.000	-632.24914	-429.75086
	20 mg/mL P-B-K	-537.666667*	29.651949	.000	-638.91581	-436.41752
	40 mg/mL P-B-K	-534.666667*	29.651949	.000	-635.91581	-433.41752
	20 mg/mL P-B-K/GSNO	245.333333*	29.651949	.000	144.08419	346.58248
	40 mg/mL P-B-K/GSNO	331.000000*	29.651949	.000	229.75086	432.24914
	Kontrol negatif	-584.333333*	29.651949	.000	-685.58248	-483.08419
20 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	-776.333333*	29.651949	.000	-877.58248	-675.08419
	20 mg/mL P-B-K	-783.000000*	29.651949	.000	-884.24914	-681.75086
	40 mg/mL P-B-K	-780.000000*	29.651949	.000	-881.24914	-678.75086
	10 mg/mL P-B-K/GSNO	-245.333333*	29.651949	.000	-346.58248	-144.08419
	40 mg/mL P-B-K/GSNO	85.666667	29.651949	.124	-15.58248	186.91581
	Kontrol negatif	-829.666667*	29.651949	.000	-930.91581	-728.41752
40 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	-862.000000*	29.651949	.000	-963.24914	-760.75086
	20 mg/mL P-B-K	-868.666667*	29.651949	.000	-969.91581	-767.41752
	40 mg/mL P-B-K	-865.666667*	29.651949	.000	-966.91581	-764.41752
	10 mg/mL P-B-K/GSNO	-331.000000*	29.651949	.000	-432.24914	-229.75086
	20 mg/mL P-B-K/GSNO	-85.666667	29.651949	.124	-186.91581	15.58248
	Kontrol negatif	-915.333333*	29.651949	.000	-1016.58248	-814.08419
Kontrol negatif	10 mg/mL P-B-K	53.333333	29.651949	.569	-47.91581	154.58248
	20 mg/mL P-B-K	46.666667	29.651949	.700	-54.58248	147.91581
	40 mg/mL P-B-K	49.666667	29.651949	.641	-51.58248	150.91581
	10 mg/mL P-B-K/GSNO	584.333333*	29.651949	.000	483.08419	685.58248
	20 mg/mL P-B-K/GSNO	829.666667*	29.651949	.000	728.41752	930.91581
	40 mg/mL P-B-K/GSNO	915.333333*	29.651949	.000	814.08419	1016.58248

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

Uji Normalitas % Penghambatan biofilm

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Sediaan	Statistic	df	Sig.	Statistic	df	Sig.
% penghambatan biofilm	10 mg/mL P-B-K	.352	3	.	.824	3	.174
	20 mg/mL P-B-K	.370	3	.	.787	3	.083
	40 mg/mL P-B-K	.183	3	.	.999	3	.932
	10 mg/mL P-B-K/GSNO	.258	3	.	.960	3	.617
	20 mg/mL P-B-K/GSNO	.205	3	.	.993	3	.839
	40 mg/mL P-B-K/GSNO	.318	3	.	.886	3	.343

a. Lilliefors Significance Correction

Anova % penghambatan biofilm

ANOVA

% penghambatan biofilm

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	23813895401.778	5	4762779080.356	259.508	.000
Within Groups	220237615.333	12	18353134.611		
Total	24034133017.111	17			

Multiple Comparisons

Dependent Variable: % penghambatan biofilm

Tukey HSD

(I) sediaan	(J) sediaan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
10 mg/mL P-B-K	20 mg/mL P-B-K	632.666667	3497.916962	1.000	-11116.55961	12381.89295
	40 mg/mL P-B-K	1747.333333	3497.916962	.995	-10001.89295	13496.55961
	10 mg/mL P-B-K/GSNO	-50899.333333*	3497.916962	.000	-62648.55961	-39150.10705
	20 mg/mL P-B-K/GSNO	-74518.666667*	3497.916962	.000	-86267.89295	-62769.44039
	40 mg/mL P-B-K/GSNO	-82763.333333*	3497.916962	.000	-94512.55961	-71014.10705
20 mg/mL P-B-K	10 mg/mL P-B-K	-632.666667	3497.916962	1.000	-12381.89295	11116.55961
	40 mg/mL P-B-K	1114.666667	3497.916962	.999	-10634.55961	12863.89295
	10 mg/mL P-B-K/GSNO	-51532.000000*	3497.916962	.000	-63281.22628	-39782.77372
	20 mg/mL P-B-K/GSNO	-75151.333333*	3497.916962	.000	-86900.55961	-63402.10705
	40 mg/mL P-B-K/GSNO	-83396.000000*	3497.916962	.000	-95145.22628	-71646.77372
40 mg/mL P-B-K	10 mg/mL P-B-K	-1747.333333	3497.916962	.995	-13496.55961	10001.89295
	20 mg/mL P-B-K	-1114.666667	3497.916962	.999	-12863.89295	10634.55961
	10 mg/mL P-B-K/GSNO	-52646.666667*	3497.916962	.000	-64395.89295	-40897.44039
	20 mg/mL P-B-K/GSNO	-76266.000000*	3497.916962	.000	-88015.22628	-64516.77372
	40 mg/mL P-B-K/GSNO	-84510.666667*	3497.916962	.000	-96259.89295	-72761.44039
10 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	50899.333333*	3497.916962	.000	39150.10705	62648.55961
	20 mg/mL P-B-K	51532.000000*	3497.916962	.000	39782.77372	63281.22628
	40 mg/mL P-B-K	52646.666667*	3497.916962	.000	40897.44039	64395.89295
	20 mg/mL P-B-K/GSNO	-23619.333333*	3497.916962	.000	-35368.55961	-11870.10705
	40 mg/mL P-B-K/GSNO	-31864.000000*	3497.916962	.000	-43613.22628	-20114.77372
20 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	74518.666667*	3497.916962	.000	62769.44039	86267.89295
	20 mg/mL P-B-K	75151.333333*	3497.916962	.000	63402.10705	86900.55961
	40 mg/mL P-B-K	76266.000000*	3497.916962	.000	64516.77372	88015.22628
	10 mg/mL P-B-K/GSNO	23619.333333*	3497.916962	.000	11870.10705	35368.55961
	40 mg/mL P-B-K/GSNO	-8244.666667	3497.916962	.245	-19993.89295	3504.55961
40 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	82763.333333*	3497.916962	.000	71014.10705	94512.55961
	20 mg/mL P-B-K	83396.000000*	3497.916962	.000	71646.77372	95145.22628
	40 mg/mL P-B-K	84510.666667*	3497.916962	.000	72761.44039	96259.89295
	10 mg/mL P-B-K/GSNO	31864.000000*	3497.916962	.000	20114.77372	43613.22628
	20 mg/mL P-B-K/GSNO	8244.666667	3497.916962	.245	-3504.55961	19993.89295

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

B. Bakteri uji MRSA

Uji Normalitas Optical Density (OD)

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Sediaan	Statistic	df	Sig.	Statistic	df	Sig.
Optical Density	10 mg/mL P-B-K	.253	3	.	.964	3	.637
	20 mg/mL P-B-K	.371	3	.	.784	3	.077
	40 mg/mL P-B-K	.253	3	.	.964	3	.637
	10 mg/mL P-B-K/GSNO	.374	3	.	.776	3	.059
	20 mg/mL P-B-K/GSNO	.353	3	.	.823	3	.170
	40 mg/mL P-B-K/GSNO	.236	3	.	.977	3	.712
	Kontrol negatif	.362	3	.	.803	3	.122

a. Lilliefors Significance Correction

Anova Optical Density (OD)

ANOVA

Optical Density

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2804124.952	6	467354.159	413.379	.000
Within Groups	15828.000	14	1130.571		
Total	2819952.952	20			

Multiple Comparisons

Dependent Variable: Optical density
Tukey HSD

(I) sediaan	(J) sediaan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
10 mg/mL P-B-K	20 mg/mL P-B-K	5.333333	27.453857	1.000	-88.41024	99.07690
	40 mg/mL P-B-K	11.333333	27.453857	.999	-82.41024	105.07690
	10 mg/mL P-B-K/GSNO	564.333333*	27.453857	.000	470.58976	658.07690
	20 mg/mL P-B-K/GSNO	738.333333*	27.453857	.000	644.58976	832.07690
	40 mg/mL P-B-K/GSNO	829.000000*	27.453857	.000	735.25643	922.74357
	Kontrol negatif	-64.333333	27.453857	.290	-158.07690	29.41024
20 mg/mL P-B-K	10 mg/mL P-B-K	-5.333333	27.453857	1.000	-99.07690	88.41024
	40 mg/mL P-B-K	6.000000	27.453857	1.000	-87.74357	99.74357
	10 mg/mL P-B-K/GSNO	559.000000*	27.453857	.000	465.25643	652.74357
	20 mg/mL P-B-K/GSNO	733.000000*	27.453857	.000	639.25643	826.74357
	40 mg/mL P-B-K/GSNO	823.666667*	27.453857	.000	729.92310	917.41024
	Kontrol negatif	-69.666667	27.453857	.218	-163.41024	24.07690
40 mg/mL P-B-K	10 mg/mL P-B-K	-11.333333	27.453857	.999	-105.07690	82.41024
	20 mg/mL P-B-K	-6.000000	27.453857	1.000	-99.74357	87.74357
	10 mg/mL P-B-K/GSNO	553.000000*	27.453857	.000	459.25643	646.74357
	20 mg/mL P-B-K/GSNO	727.000000*	27.453857	.000	633.25643	820.74357

	40 mg/mL P-B-K/GSNO	817.666667*	27.453857	.000	723.92310	911.41024
	Kontrol negatif	-75.666667	27.453857	.154	-169.41024	18.07690
10 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	-564.333333*	27.453857	.000	-658.07690	-470.58976
	20 mg/mL P-B-K	-559.000000*	27.453857	.000	-652.74357	-465.25643
	40 mg/mL P-B-K	-553.000000*	27.453857	.000	-646.74357	-459.25643
	20 mg/mL P-B-K/GSNO	174.000000*	27.453857	.000	80.25643	267.74357
	40 mg/mL P-B-K/GSNO	264.666667*	27.453857	.000	170.92310	358.41024
	Kontrol negatif	-628.666667*	27.453857	.000	-722.41024	-534.92310
20 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	-738.333333*	27.453857	.000	-832.07690	-644.58976
	20 mg/mL P-B-K	-733.000000*	27.453857	.000	-826.74357	-639.25643
	40 mg/mL P-B-K	-727.000000*	27.453857	.000	-820.74357	-633.25643
	10 mg/mL P-B-K/GSNO	-174.000000*	27.453857	.000	-267.74357	-80.25643
	40 mg/mL P-B-K/GSNO	90.666667	27.453857	.061	-3.07690	184.41024
	Kontrol negatif	-802.666667*	27.453857	.000	-896.41024	-708.92310
40 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	-829.000000*	27.453857	.000	-922.74357	-735.25643
	20 mg/mL P-B-K	-823.666667*	27.453857	.000	-917.41024	-729.92310
	40 mg/mL P-B-K	-817.666667*	27.453857	.000	-911.41024	-723.92310
	10 mg/mL P-B-K/GSNO	-264.666667*	27.453857	.000	-358.41024	-170.92310
	20 mg/mL P-B-K/GSNO	-90.666667	27.453857	.061	-184.41024	3.07690
	Kontrol negatif	-893.333333*	27.453857	.000	-987.07690	-799.58976
Kontrol negatif	10 mg/mL P-B-K	64.333333	27.453857	.290	-29.41024	158.07690
	20 mg/mL P-B-K	69.666667	27.453857	.218	-24.07690	163.41024
	40 mg/mL P-B-K	75.666667	27.453857	.154	-18.07690	169.41024
	10 mg/mL P-B-K/GSNO	628.666667*	27.453857	.000	534.92310	722.41024
	20 mg/mL P-B-K/GSNO	802.666667*	27.453857	.000	708.92310	896.41024
	40 mg/mL P-B-K/GSNO	893.333333*	27.453857	.000	799.58976	987.07690

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

Uji Normalitas % penghambatan biofilm

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Sediaan	Statistic	df	Sig.	Statistic	df	Sig.
% Penghambatan biofilm	10 mg/mL P-B-K	.323	3	.	.878	3	.318
	20 mg/mL P-B-K	.326	3	.	.874	3	.306
	40 mg/mL P-B-K	.374	3	.	.776	3	.057
	10 mg/mL P-B-K/GSNO	.375	3	.	.775	3	.056
	20 mg/mL P-B-K/GSNO	.360	3	.	.809	3	.137
	40 mg/mL P-B-K/GSNO	.336	3	.	.857	3	.258

a. Lilliefors Significance Correction

Anova % penghambatan biofilm

ANOVA

% Penghambatan biofilm

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	21369524193.778	5	4273904838.756	352.022	.000
Within Groups	145692080.000	12	12141006.667		
Total	21515216273.778	17			

Multiple Comparisons

Dependent Variable: % penghambatan biofilm

Tukey HSD

(I) sediaan	(J) sediaan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
10 mg/mL P-B-K	20 mg/mL P-B-K	-507.333333	2844.996387	1.000	-10063.45107	9048.78440
	40 mg/mL P-B-K	1349.333333	2844.996387	.996	-8206.78440	10905.45107
	10 mg/mL P-B-K/GSNO	-53318.333333*	2844.996387	.000	-62874.45107	-43762.21560
	20 mg/mL P-B-K/GSNO	-69636.000000*	2844.996387	.000	-79192.11774	-60079.88226
	40 mg/mL P-B-K/GSNO	-78215.000000*	2844.996387	.000	-87771.11774	-68658.88226
20 mg/mL P-B-K	10 mg/mL P-B-K	507.333333	2844.996387	1.000	-9048.78440	10063.45107
	40 mg/mL P-B-K	1856.666667	2844.996387	.984	-7699.45107	11412.78440
	10 mg/mL P-B-K/GSNO	-52811.000000*	2844.996387	.000	-62367.11774	-43254.88226
	20 mg/mL P-B-K/GSNO	-69128.666667*	2844.996387	.000	-78684.78440	-59572.54893
	40 mg/mL P-B-K/GSNO	-77707.666667*	2844.996387	.000	-87263.78440	-68151.54893
40 mg/mL P-B-K	10 mg/mL P-B-K	-1349.333333	2844.996387	.996	-10905.45107	8206.78440
	20 mg/mL P-B-K	-1856.666667	2844.996387	.984	-11412.78440	7699.45107
	10 mg/mL P-B-K/GSNO	-54667.666667*	2844.996387	.000	-64223.78440	-45111.54893
	20 mg/mL P-B-K/GSNO	-70985.333333*	2844.996387	.000	-80541.45107	-61429.21560
	40 mg/mL P-B-K/GSNO	-79564.333333*	2844.996387	.000	-89120.45107	-70008.21560
10 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	53318.333333*	2844.996387	.000	43762.21560	62874.45107
	20 mg/mL P-B-K	52811.000000*	2844.996387	.000	43254.88226	62367.11774
	40 mg/mL P-B-K	54667.666667*	2844.996387	.000	45111.54893	64223.78440
	20 mg/mL P-B-K/GSNO	-16317.666667*	2844.996387	.001	-25873.78440	-6761.54893
	40 mg/mL P-B-K/GSNO	-24896.666667*	2844.996387	.000	-34452.78440	-15340.54893
20 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	69636.000000*	2844.996387	.000	60079.88226	79192.11774
	20 mg/mL P-B-K	69128.666667*	2844.996387	.000	59572.54893	78684.78440
	40 mg/mL P-B-K	70985.333333*	2844.996387	.000	61429.21560	80541.45107
	10 mg/mL P-B-K/GSNO	16317.666667*	2844.996387	.001	6761.54893	25873.78440
	40 mg/mL P-B-K/GSNO	-8579.000000	2844.996387	.088	-18135.11774	977.11774
40 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	78215.000000*	2844.996387	.000	68658.88226	87771.11774
	20 mg/mL P-B-K	77707.666667*	2844.996387	.000	68151.54893	87263.78440
	40 mg/mL P-B-K	79564.333333*	2844.996387	.000	70008.21560	89120.45107
	10 mg/mL P-B-K/GSNO	24896.666667*	2844.996387	.000	15340.54893	34452.78440
	20 mg/mL P-B-K/GSNO	8579.000000	2844.996387	.088	-977.11774	18135.11774

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

C. Bakteri uji Polimikrobial

Uji Normalitas Optical Density (OD)

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	sediaan	Statistic	df	Sig.	Statistic	df	Sig.
Optical density	10 mg/mL P-B-K	.314	3	.	.893	3	.363
	20 mg/mL P-B-K	.314	3	.	.893	3	.363
	40 mg/mL P-B-K	.304	3	.	.907	3	.407
	10 mg/mL P-B-K/GSNO	.369	3	.	.788	3	.087
	20 mg/mL P-B-K/GSNO	.354	3	.	.821	3	.165
	40 mg/mL P-B-K/GSNO	.204	3	.	.993	3	.843
	Kontrol negatif	.177	3	.	1.000	3	.972

a. Lilliefors Significance Correction

Anova Optical Density (OD)

ANOVA

Optical density

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2100861.238	6	350143.540	218.489	.000
Within Groups	22436.000	14	1602.571		
Total	2123297.238	20			

Multiple Comparisons

Dependent Variable: Optical density
Tukey HSD

(I) sediaan	(J) sediaan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
10 mg/mL P-B-K	20 mg/mL P-B-K	.000000	32.686097	1.000	-111.60950	111.60950
	40 mg/mL P-B-K	4.666667	32.686097	1.000	-106.94284	116.27617
	10 mg/mL P-B-K/GSNO	454.000000*	32.686097	.000	342.39050	565.60950
	20 mg/mL P-B-K/GSNO	578.000000*	32.686097	.000	466.39050	689.60950
	40 mg/mL P-B-K/GSNO	787.333333*	32.686097	.000	675.72383	898.94284
	Kontrol negatif	-28.333333	32.686097	.972	-139.94284	83.27617
20 mg/mL P-B-K	10 mg/mL P-B-K	.000000	32.686097	1.000	-111.60950	111.60950
	40 mg/mL P-B-K	4.666667	32.686097	1.000	-106.94284	116.27617
	10 mg/mL P-B-K/GSNO	454.000000*	32.686097	.000	342.39050	565.60950
	20 mg/mL P-B-K/GSNO	578.000000*	32.686097	.000	466.39050	689.60950
	40 mg/mL P-B-K/GSNO	787.333333*	32.686097	.000	675.72383	898.94284
	Kontrol negatif	-28.333333	32.686097	.972	-139.94284	83.27617
40 mg/mL P-B-K	10 mg/mL P-B-K	-4.666667	32.686097	1.000	-116.27617	106.94284
	20 mg/mL P-B-K	-4.666667	32.686097	1.000	-116.27617	106.94284
	10 mg/mL P-B-K/GSNO	449.333333*	32.686097	.000	337.72383	560.94284
	20 mg/mL P-B-K/GSNO	573.333333*	32.686097	.000	461.72383	684.94284
	40 mg/mL P-B-K/GSNO	782.666667*	32.686097	.000	671.05716	894.27617
	Kontrol negatif	-33.000000	32.686097	.943	-144.60950	78.60950

10 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	-454.000000*	32.686097	.000	-565.60950	-342.39050
	20 mg/mL P-B-K	-454.000000*	32.686097	.000	-565.60950	-342.39050
	40 mg/mL P-B-K	-449.333333*	32.686097	.000	-560.94284	-337.72383
	20 mg/mL P-B-K/GSNO	124.000000*	32.686097	.025	12.39050	235.60950
	40 mg/mL P-B-K/GSNO	333.333333*	32.686097	.000	221.72383	444.94284
	Kontrol negatif	-482.333333*	32.686097	.000	-593.94284	-370.72383
20 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	-578.000000*	32.686097	.000	-689.60950	-466.39050
	20 mg/mL P-B-K	-578.000000*	32.686097	.000	-689.60950	-466.39050
	40 mg/mL P-B-K	-573.333333*	32.686097	.000	-684.94284	-461.72383
	10 mg/mL P-B-K/GSNO	-124.000000*	32.686097	.025	-235.60950	-12.39050
	40 mg/mL P-B-K/GSNO	209.333333*	32.686097	.000	97.72383	320.94284
	Kontrol negatif	-606.333333*	32.686097	.000	-717.94284	-494.72383
40 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	-787.333333*	32.686097	.000	-898.94284	-675.72383
	20 mg/mL P-B-K	-787.333333*	32.686097	.000	-898.94284	-675.72383
	40 mg/mL P-B-K	-782.666667*	32.686097	.000	-894.27617	-671.05716
	10 mg/mL P-B-K/GSNO	-333.333333*	32.686097	.000	-444.94284	-221.72383
	20 mg/mL P-B-K/GSNO	-209.333333*	32.686097	.000	-320.94284	-97.72383
	Kontrol negatif	-815.666667*	32.686097	.000	-927.27617	-704.05716
Kontrol negatif	10 mg/mL P-B-K	28.333333	32.686097	.972	-83.27617	139.94284
	20 mg/mL P-B-K	28.333333	32.686097	.972	-83.27617	139.94284
	40 mg/mL P-B-K	33.000000	32.686097	.943	-78.60950	144.60950
	10 mg/mL P-B-K/GSNO	482.333333*	32.686097	.000	370.72383	593.94284
	20 mg/mL P-B-K/GSNO	606.333333*	32.686097	.000	494.72383	717.94284
	40 mg/mL P-B-K/GSNO	815.666667*	32.686097	.000	704.05716	927.27617

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

Uji Normalitas % penghambatan biofilm

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	sediaan	Statistic	df	Sig.	Statistic	df	Sig.
% penghambatan biofilm	10 mg/mL P-B-K	.229	3	.	.982	3	.742
	20 mg/mL P-B-K	.188	3	.	.998	3	.912
	40 mg/mL P-B-K	.278	3	.	.940	3	.527
	10 mg/mL P-B-K/GSNO	.323	3	.	.879	3	.322
	20 mg/mL P-B-K/GSNO	.335	3	.	.858	3	.262
	40 mg/mL P-B-K/GSNO	.354	3	.	.821	3	.166

a. Lilliefors Significance Correction

Anova % penghambatan biofilm

ANOVA

% penghambatan biofilm

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	16781032409.611	5	3356206481.922	168.015	.000
Within Groups	239707160.667	12	19975596.722		
Total	17020739570.278	17			

Multiple Comparisons

Dependent Variable: % penghambatan biofilm

Tukey HSD

(I) sediaan	(J) sediaan	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
10 mg/mL P-B-K	20 mg/mL P-B-K	-2.666667	3649.255332	1.000	-12260.22656	12254.89322
	40 mg/mL P-B-K	-449.333333	3649.255332	1.000	-12706.89322	11808.22656
	10 mg/mL P-B-K/GSNO	-43645.000000*	3649.255332	.000	-55902.55989	-31387.44011
	20 mg/mL P-B-K/GSNO	-55496.000000*	3649.255332	.000	-67753.55989	-43238.44011
	40 mg/mL P-B-K/GSNO	-75695.333333*	3649.255332	.000	-87952.89322	-63437.77344
20 mg/mL P-B-K	10 mg/mL P-B-K	2.666667	3649.255332	1.000	-12254.89322	12260.22656
	40 mg/mL P-B-K	-446.666667	3649.255332	1.000	-12704.22656	11810.89322
	10 mg/mL P-B-K/GSNO	-43642.333333*	3649.255332	.000	-55899.89322	-31384.77344
	20 mg/mL P-B-K/GSNO	-55493.333333*	3649.255332	.000	-67750.89322	-43235.77344
	40 mg/mL P-B-K/GSNO	-75692.666667*	3649.255332	.000	-87950.22656	-63435.10678
40 mg/mL P-B-K	10 mg/mL P-B-K	449.333333	3649.255332	1.000	-11808.22656	12706.89322
	20 mg/mL P-B-K	446.666667	3649.255332	1.000	-11810.89322	12704.22656
	10 mg/mL P-B-K/GSNO	-43195.666667*	3649.255332	.000	-55453.22656	-30938.10678
	20 mg/mL P-B-K/GSNO	-55046.666667*	3649.255332	.000	-67304.22656	-42789.10678
	40 mg/mL P-B-K/GSNO	-75246.000000*	3649.255332	.000	-87503.55989	-62988.44011
10 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	43645.000000*	3649.255332	.000	31387.44011	55902.55989
	20 mg/mL P-B-K	43642.333333*	3649.255332	.000	31384.77344	55899.89322
	40 mg/mL P-B-K	43195.666667*	3649.255332	.000	30938.10678	55453.22656
	20 mg/mL P-B-K/GSNO	-11851.000000	3649.255332	.060	-24108.55989	406.55989
	40 mg/mL P-B-K/GSNO	-32050.333333*	3649.255332	.000	-44307.89322	-19792.77344
20 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	55496.000000*	3649.255332	.000	43238.44011	67753.55989
	20 mg/mL P-B-K	55493.333333*	3649.255332	.000	43235.77344	67750.89322
	40 mg/mL P-B-K	55046.666667*	3649.255332	.000	42789.10678	67304.22656
	10 mg/mL P-B-K/GSNO	11851.000000	3649.255332	.060	-406.55989	24108.55989
	40 mg/mL P-B-K/GSNO	-20199.333333*	3649.255332	.001	-32456.89322	-7941.77344
40 mg/mL P-B-K/GSNO	10 mg/mL P-B-K	75695.333333*	3649.255332	.000	63437.77344	87952.89322
	20 mg/mL P-B-K	75692.666667*	3649.255332	.000	63435.10678	87950.22656
	40 mg/mL P-B-K	75246.000000*	3649.255332	.000	62988.44011	87503.55989
	10 mg/mL P-B-K/GSNO	32050.333333*	3649.255332	.000	19792.77344	44307.89322
	20 mg/mL P-B-K/GSNO	20199.333333*	3649.255332	.001	7941.77344	32456.89322

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

D. Bakteri uji *S.aureus*

Uji Normalitas Optical Density (OD)

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Antibiofilm S.A	Statistic	df	Sig.	Statistic	df	Sig.
Optical Density	40 mg/mL P-B-K	.334	3	.	.860	3	.267
	40 mg/mL P-B-K/GSNO	.185	3	.	.998	3	.923
	Kontrol Negatif	.300	3	.	.913	3	.428

a. Lilliefors Significance Correction

Anova Optical Density (OD)

ANOVA

Optical Density

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	19199616.222	2	9599808.111	1553.507	.000
Within Groups	37076.667	6	6179.444		
Total	19236692.889	8			

Multiple Comparisons

Dependent Variable: Optical Density

Tukey HSD

		Mean Difference			95% Confidence Interval	
(I) Antibiofilm S.A	(J) Antibiofilm S.A	(I-J)	Std. Error	Sig.	Lower Bound	Upper Bound
40 mg/mL P-B-K	40 mg/mL P-B-K/GSNO	3023.666667*	64.184341	.000	2826.73148	3220.60185
	Kontrol Negatif	-144.333333	64.184341	.141	-341.26852	52.60185
40 mg/mL P-B-K/GSNO	40 mg/mL P-B-K	-3023.666667*	64.184341	.000	-3220.60185	-2826.73148
	Kontrol Negatif	-3168.000000*	64.184341	.000	-3364.93518	-2971.06482
Kontrol Negatif	40 mg/mL P-B-K	144.333333	64.184341	.141	-52.60185	341.26852
	40 mg/mL P-B-K/GSNO	3168.000000*	64.184341	.000	2971.06482	3364.93518

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

Uji Normalitas % penghambatan biofilm

Tests of Normality

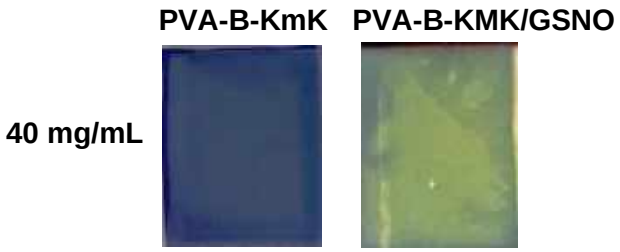
		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Antibiofilm S.A	Statistic	df	Sig.	Statistic	df	Sig.
% Penghambatan Biofilm	40 mg/mL P-B-K	.197	3	.	.996	3	.875
	40 mg/mL P-B-K/GSNO	.217	3	.	.988	3	.789

a. Lilliefors Significance Correction

Independent Samples Test

		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
% Penghambatan Biofilm	Equal variances assumed	.070	.804	-121.586	4	.000	-89578.000000	736.745320	-91623.532938	-87532.467062
	Equal variances not assumed			-121.586	3.871	.000	-89578.000000	736.745320	-91650.598165	-87505.401835

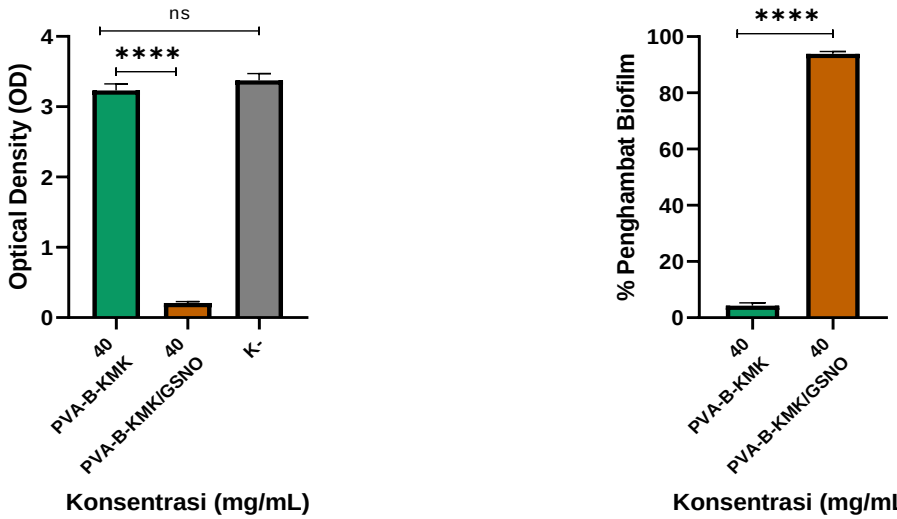
Lampiran 9. Data Antibiofilm *S.aureus*



Gambar 19. Hasil pengamatan makroskopis bakteri *S.aureus* pada *polyurethane coupon* setelah pemberian warna Kristal violet

Tabel 17. Data pengukuran Optical density (OD) dan penghambatan biofilm

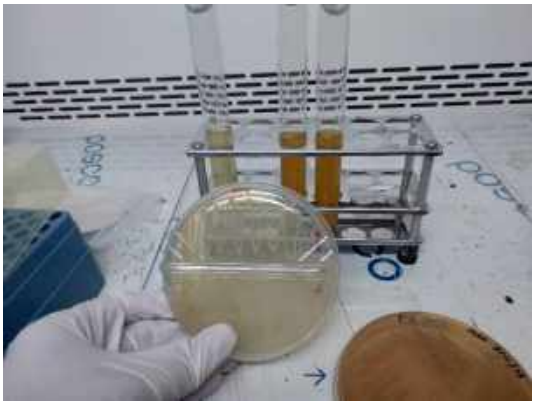
konsentrasi	replikasi	serapan	% penghambatan
PVA-B-KMK/GSNO 40 mg	1	0,206	93,955
	2	0,229	92,988
	3	0,186	94,610
Rata-rata ± SD		**0,207 ± 0,021**	**93,851 ± 0,815**
PVA-B-KMK 40 mg	1	3,297	3,257
	2	3,124	4,347
	3	3,271	5,215
Rata-rata ± SD		**3,230 ± 0,093**	**4,273 ± 0,981**
Kontrol Negatif	1	3,408	0
	2	3,226	0
	3	3,451	0
Rata-rata ± SD		**3,375 ± 0,097**	**0 ± 0**



Gambar 20. Gambar diagram hasil Aktivtas Antibiofilm pada bakteri *S.aureus*. Keterangan: signifikan = p <0,05 (*), sangat signifikan = p <0,01 (**), sangat sangat signifikan = p <0,001 (***), sangat sangat sangat signifikan = p <0,0001 (****).

Lampiran 10. Dokumentasi penelitian

Gambar 21. Hasil sintesis GSNO.



Gambar 22. Penyiapan bakteri uji

Gambar 23. Proses pengerjaan uji antibakteri dan antibiofilm