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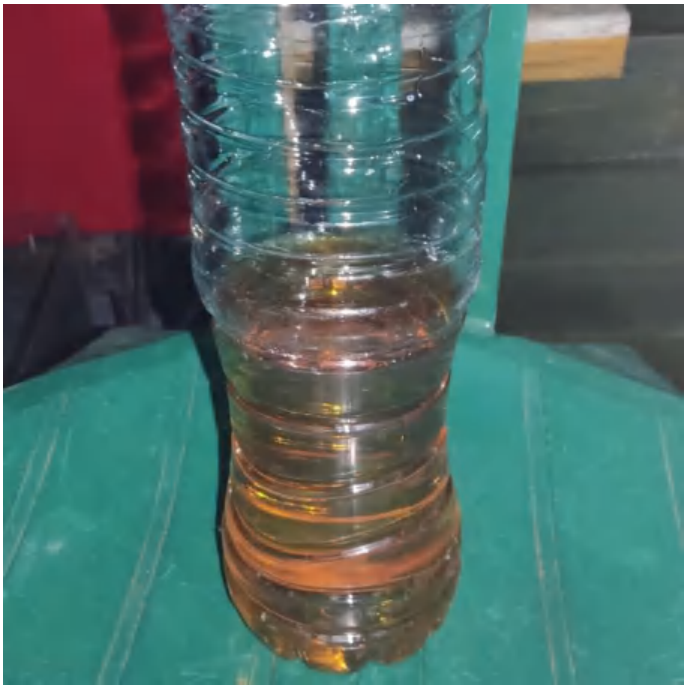
LAMPIRAN

Lampiran 1. Akuarium kelompok perlakuan

Lampiran 2. Minyak solar dan biosurfaktan

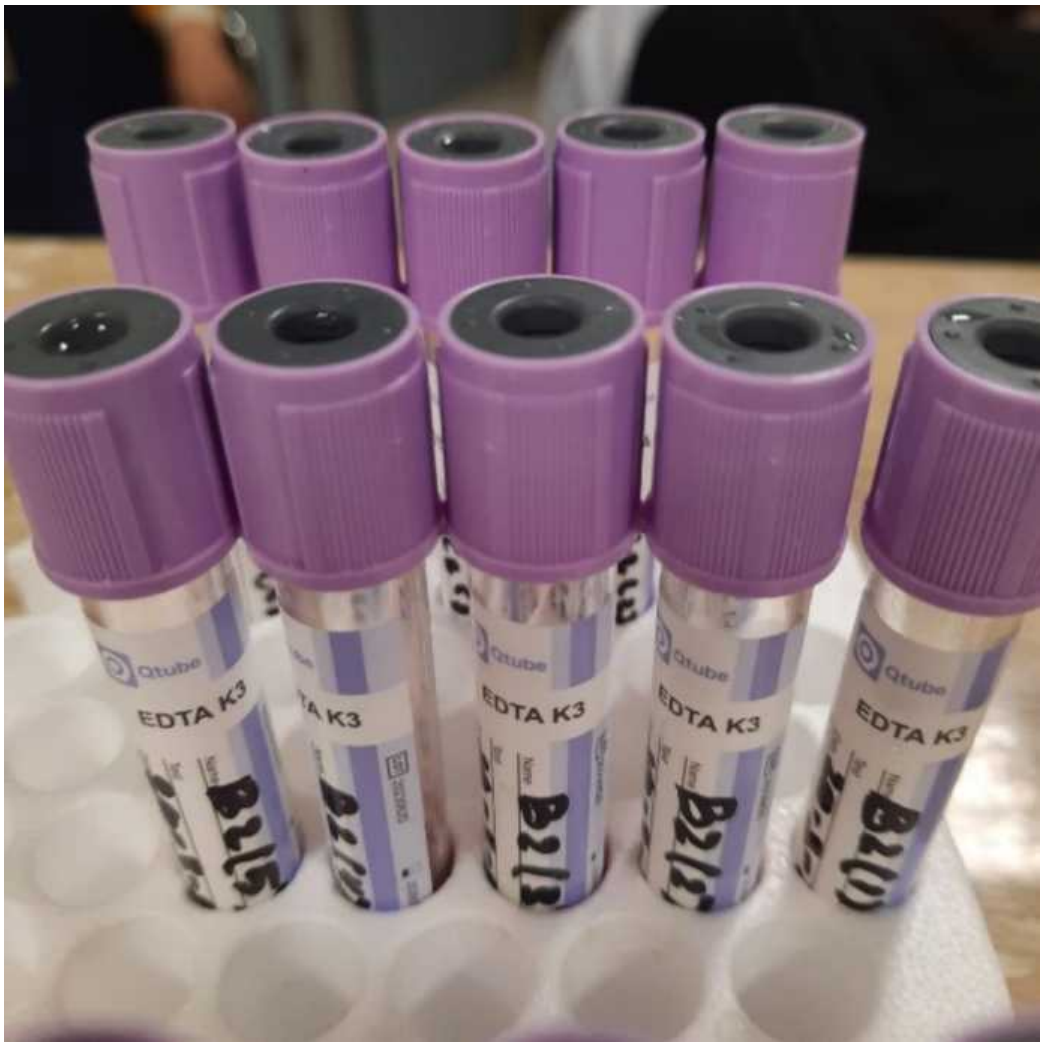


Lampiran 3. Pemberian minyak solar dan biosurfaktan






Lampiran 4. Sampel darah ikan lele sangkuriang



Lampiran 5. Alat *hematology analyzer*

Lampiran 6. Etik penelitian

KEMENTERIAN PENDIDIKAN, KEBUDAYAAN, RISET DAN TEKNOLOGI
UNIVERSITAS HASANUDDIN FAKULTAS KEDOKTERAN
KOMITE ETIK PENELITIAN UNIVERSITAS HASANUDDIN
RSPTN UNIVERSITAS HASANUDDIN
RSUP Dr. WAHIDIN SUDIROHUSODO MAKASSAR
Sekretariat : Lantai 2 Gedung Laboratorium Terpadu
JL.PERINTIS KEMERDEKAAN KAMPUS TAMALANREA KM.10 MAKASSAR 90245.
Contact Person: dr. Agussalim Bukhari.,MMed.PhD. SpGK TELP. 081241850858, 0411 5780103, Fax : 0411-581431

REKOMENDASI PERSETUJUAN ETIK

Nomor : 112/UN4.6.4.5.31/ PP36/ 2024

Tanggal: 26 Februari 2024

Dengan ini Menyatakan bahwa Protokol dan Dokumen yang Berhubungan Dengan Protokol berikut ini telah mendapatkan Persetujuan Etik :

No Protokol	UH24010065	No Sponsor	
Peneliti Utama	**Dayana Amalia**	Sponsor	
Judul Peneliti	Pengaruh Pemberian Oil Degrading Bacteria 3 (ODB 3) dan Oil Degrading Bacteria 5 (ODB 5) Penghasil Biosurfaktan Terhadap Profil Leukosit Ikan Lele Sangkuriang (Clarias Gariepinus Var. Sangkuriang) Yang Terpapar Limbah Solar		
No Versi Protokol	**1**	Tanggal Versi	**1 Februari 2024**
No Versi PSP		Tanggal Versi	
Tempat Penelitian	RS Universitas Hasanuddin Makassar		
Jenis Review	☐ Exempted ☒ Expedited ☐ Fullboard Tanggal	Masa Berlaku **26 Februari 2024** sampai **26 Februari 2025**	Frekuensi review lanjutan
Ketua KEP Universitas Hasanuddin	**Prof. dr. Muh Nasrum Massi,PhD,SpMK, Subsp. Bakt(K)**	Tanda tangan	
Sekretaris KEP Universitas Hasanuddin	**dr. Firdaus Hamid, PhD, SpMK(K)**	Tanda tangan	

Kewajiban Peneliti Utama:

- Menyerahkan Amandemen Protokol untuk persetujuan sebelum di implementasikan
- Menyerahkan Laporan SAE ke Komisi Etik dalam 24 Jam dan dilengkapi dalam 7 hari dan Lapor SUSAR dalam 72 Jam setelah Peneliti Utama menerima laporan
- Menyerahkan Laporan Kemajuan (progress report) setiap 6 bulan untuk penelitian resiko tinggi dan setiap setahun untuk penelitian resiko rendah
- Menyerahkan laporan akhir setelah Penelitian berakhir
- Melaporkan penyimpangan dari prokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan

Lampiran 7. Data hasil pemeriksaan sampel darah

No	Lele	Total WBC	Total RBC	Hb	HCT	MCV	MCH	MCHC	PLT	Neutrofil	Limfosit	Monosit	Eosinofil	Basofil
1	A-1	17550	3070000	8,5	31,90%	103,91	27,7	26,6	165000	32,10%	63,40%	3,00%	0,80%	0,70%
2	A-2	16590	3150000	8,9	30,50%	96,83	28,3	29,2	182000	29,40%	65,20%	3,40%	1,50%	0,50%
3	A-3	17900	3110000	9,6	32,20%	103,54	30,9	29,8	178000	29,70%	65,70%	2,80%	1,20%	0,60%
4	A-4	16320	3090000	9,7	29,30%	94,82	31,4	33,1	169000	30,90%	63,80%	3,60%	0,90%	0,80%
5	A-5	17840	3210000	8,3	30,90%	96,26	25,9	26,9	173000	28,00%	67,10%	2,60%	1,40%	0,90%
6	B-1	9680	1450000	2,7	11,80%	81,38	18,6	22,9	90000	56,80%	34,40%	7,70%	0,70%	0,40%
7	B-2	10150	1490000	3,3	12,50%	83,89	22,1	26,4	93000	55,40%	35,30%	8,30%	0,40%	0,60%
8	B-3	11670	1560000	3,5	12,80%	82,05	22,4	27,3	86000	53,10%	34,70%	10,80%	1,10%	0,30%
9	B-4	9780	1680000	2,9	13,70%	81,55	17,3	21,2	77000	53,90%	35,90%	8,60%	0,90%	0,70%
10	B-5	10420	1540000	3,6	13,10%	85,06	23,4	27,5	89000	54,40%	35,20%	9,40%	0,50%	0,50%
11	C-1	13490	2350000	6,3	21,10%	89,79	26,8	29,9	125000	40,50%	52,10%	6,10%	0,80%	0,50%
12	C-2	12340	2300000	5,7	20,50%	89,13	24,8	27,8	137000	42,10%	51,70%	5,30%	0,50%	0,40%
13	C-3	12440	1970000	5,5	22,90%	116,24	27,9	24,0	156000	37,30%	55,30%	5,50%	1,00%	0,90%
14	C-4	13330	2220000	5,6	21,60%	97,30	25,2	25,9	128000	34,90%	57,40%	6,20%	0,70%	0,80%
15	C-5	14760	2080000	5,8	21,70%	104,33	27,9	26,7	147000	41,70%	51,20%	5,90%	0,90%	0,30%
16	D-1	13860	1990000	5,2	19,30%	96,98	26,1	26,9	95000	40,80%	52,40%	5,50%	0,90%	0,40%
17	D-2	12130	2160000	5,8	18,80%	87,04	26,9	30,9	110000	41,40%	51,50%	6,20%	0,60%	0,30%
18	D-3	13250	1930000	5,1	19,50%	101,04	26,4	26,2	143000	38,40%	54,60%	5,70%	0,50%	0,80%
19	D-4	12080	2090000	5,7	21,50%	102,87	27,3	26,5	139000	38,50%	54,20%	5,90%	0,80%	0,60%
20	D-5	14350	1890000	4,9	20,30%	107,41	25,9	24,1	127000	39,90%	53,00%	5,60%	1,00%	0,50%

Lampiran 8. Uji normalitas

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Perlakuan	Statistic	df	Sig.	Statistic	df	Sig.
WBC	A	.263	5	.200*	.846	5	.182
	B	.260	5	.200*	.852	5	.201
	C	.212	5	.200*	.906	5	.444
	D	.238	5	.200*	.897	5	.392
RBC	A	.213	5	.200*	.939	5	.656
	B	.227	5	.200*	.944	5	.696
	C	.191	5	.200*	.944	5	.698
	D	.178	5	.200*	.950	5	.734
HB	A	.229	5	.200*	.894	5	.378
	B	.202	5	.200*	.920	5	.530
	C	.274	5	.200*	.867	5	.254
	D	.240	5	.200*	.902	5	.421
Hematokrit	A	.191	5	.200*	.952	5	.750
	B	.146	5	.200*	.997	5	.997
	C	.237	5	.200*	.960	5	.811
	D	.241	5	.200*	.932	5	.609
MCV	A	.298	5	.166	.818	5	.112
	B	.276	5	.200*	.869	5	.261
	C	.202	5	.200*	.909	5	.459
	D	.201	5	.200*	.944	5	.698
MCH	A	.214	5	.200*	.932	5	.613
	B	.298	5	.169	.875	5	.288
	C	.223	5	.200*	.866	5	.250
	D	.173	5	.200*	.959	5	.800
MC		.205	5	.200*	.908	5	.453
		.281	5	.200*	.849	5	.190
		.134	5	.200*	.997	5	.997
		.296	5	.174	.904	5	.430
Tro		.150	5	.200*	.980	5	.934

	B	.235	5	.200*	.897	5	.394
	C	.193	5	.200*	.943	5	.684
	D	.189	5	.200*	.931	5	.606
Neutrofil	A	.182	5	.200*	.986	5	.963
	B	.188	5	.200*	.972	5	.888
	C	.251	5	.200*	.890	5	.359
	D	.233	5	.200*	.900	5	.410
Limfosit	A	.197	5	.200*	.953	5	.759
	B	.169	5	.200*	.973	5	.893
	C	.304	5	.148	.861	5	.230
	D	.197	5	.200*	.956	5	.778
Monosit	A	.180	5	.200*	.952	5	.754
	B	.218	5	.200*	.944	5	.693
	C	.202	5	.200*	.920	5	.530
	D	.213	5	.200*	.939	5	.656
Eosinofil	A	.203	5	.200*	.923	5	.549
	B	.179	5	.200*	.962	5	.823
	C	.141	5	.200*	.979	5	.928
	D	.180	5	.200*	.952	5	.754
Basofil	A	.136	5	.200*	.987	5	.967
	B	.136	5	.200*	.987	5	.967
	C	.221	5	.200*	.915	5	.501
	D	.141	5	.200*	.979	5	.928

Lampiran 9. Uji homogenitas

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
WBC	Based on Mean	.307	3	16	.820
	Based on Median	.258	3	16	.854
	Based on Median and with adjusted df	.258	3	15.618	.854
	Based on trimmed mean	.330	3	16	.804
RBC	Based on Mean	2.560	3	16	.091
	Based on Median	1.425	3	16	.272
	Based on Median and with adjusted df	1.425	3	11.652	.285
	Based on trimmed mean	2.467	3	16	.099
HB	Based on Mean	2.275	3	16	.119
	Based on Median	1.173	3	16	.351
	Based on Median and with adjusted df	1.173	3	14.765	.354
	Based on trimmed mean	2.266	3	16	.120
Hematokrit	Based on Mean	.507	3	16	.683
	Based on Median	.319	3	16	.811
	Based on Median and with adjusted df	.319	3	13.871	.811
	Based on trimmed mean	.507	3	16	.683
MCV	Based on Mean	3.684	3	16	.034
	Based on Median	2.075	3	16	.144
	Based on Median and with adjusted df	2.075	3	10.029	.167
	Based on trimmed mean	3.452	3	16	.042
MCH	Based on Mean	6.200	3	16	.005
	edian	1.382	3	16	.284
	edian and with	1.382	3	8.214	.315
	mmed mean	6.015	3	16	.006
M	ean	.413	3	16	.746

	Based on Median	.155	3	16	.925
	Based on Median and with adjusted df	.155	3	14.238	.925
	Based on trimmed mean	.401	3	16	.754
Trombosit	Based on Mean	4.355	3	16	.020
	Based on Median	2.526	3	16	.094
	Based on Median and with adjusted df	2.526	3	9.026	.123
	Based on trimmed mean	4.149	3	16	.024
Neutrofil	Based on Mean	3.523	3	16	.039
	Based on Median	1.132	3	16	.366
	Based on Median and with adjusted df	1.132	3	8.024	.392
	Based on trimmed mean	3.292	3	16	.048
Limfosit	Based on Mean	5.888	3	16	.007
	Based on Median	1.286	3	16	.313
	Based on Median and with adjusted df	1.286	3	6.119	.360
	Based on trimmed mean	5.518	3	16	.009
Monosit	Based on Mean	4.274	3	16	.021
	Based on Median	1.954	3	16	.162
	Based on Median and with adjusted df	1.954	3	5.614	.228
	Based on trimmed mean	4.046	3	16	.026
Eosinofil	Based on Mean	.858	3	16	.483
	Based on Median	.638	3	16	.601
	Based on Median and with adjusted df	.638	3	14.925	.602
	Based on trimmed mean	.847	3	16	.488
E	ean	1.223	3	16	.334
	edian	.551	3	16	.655
	edian and with	.551	3	12.126	.657
	mmed mean	1.195	3	16	.343

Lampiran 10. Uji ANOVA

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
WBC	Between Groups	120795455.000	3	40265151.667	50.787	.000
	Within Groups	12685200.000	16	792825.000		
	Total	133480655.000	19			
RBC	Between Groups	6611615000000.000	3	2203871666666.667	183.809	.000
	Within Groups	191840000000.000	16	11990000000.000		
	Total	6803455000000.000	19			
HB	Between Groups	86.042	3	28.681	143.403	.000
	Within Groups	3.200	16	.200		
	Total	89.242	19			
Hematokrit	Between Groups	.084	3	.028	299.047	.000
	Within Groups	.001	16	.000		
	Total	.085	19			
	Between Groups	1006.418	3	335.473	6.452	.005
	Within Groups	831.901	16	51.994		
	Total	1838.319	19			

MCH	Between Groups	176.666	3	58.889	15.866	.000
	Within Groups	59.385	16	3.712		
	Total	236.052	19			
MCHC	Between Groups	41.568	3	13.856	2.150	.134
	Within Groups	103.108	16	6.444		
	Total	144.676	19			
Trombosit	Between Groups	19287750000.000	3	6429250000.000	39.066	.000
	Within Groups	2633200000.000	16	164575000.000		
	Total	21920950000.000	19			
Neutrofil	Between Groups	.157	3	.052	131.545	.000
	Within Groups	.006	16	.000		
	Total	.163	19			
Limfosit	Between Groups	.229	3	.076	267.725	.000
	Within Groups	.005	16	.000		
	Total	.234	19			
sit	Between Groups	.009	3	.003	63.102	.000
	Within Groups	.001	16	.000		
	Total	.009	19			

Eosinofil	Between Groups	.000	3	.000	3.292	.048
	Within Groups	.000	16	.000		
	Total	.000	19			
Basofil	Between Groups	.000	3	.000	1.052	.397
	Within Groups	.000	16	.000		
	Total	.000	19			

Lampiran 11. Uji *post hoc tukey* HSD

RBC

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
B	5	1544000.0000		
D	5		2012000.0000	
C	5		2184000.0000	
A	5			3126000.0000
Sig.		1.000	.101	1.000

HB

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
B	5	3.2000		
D	5		5.3400	
C	5		5.7800	
A	5			9.0000
Sig.		1.000	.430	1.000

Hematokrit

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
B	5	.1278		
D	5		.1988	
C	5		.2156	
A	5			.3096
Sig.		1.000	.062	1.000

MCV

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05	
		1	2
B	5	82.7860	
D	5		99.0680
A	5		99.0720
C	5		99.3580
Sig.		1.000	1.000

MCH

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05	
		1	2
B	5	20.7700	
D	5		26.5200
C	5		26.5240
A	5		28.8120
Sig.		1.000	.275

Trombosit

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
B	5	87000.0000		
D	5		122800.0000	
C	5		138600.0000	
A	5			173400.0000
Sig.		1.000	.248	1.000

WBC

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
B	5	10340.0000		
D	5		13134.0000	
C	5		13272.0000	
A	5			17240.0000
Sig.		1.000	.995	1.000

Neutrofil

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
A	5	.3002		
C	5		.3930	
D	5		.3980	
B	5			.5472
Sig.		1.000	.978	1.000

Eosinofil

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05
		1
B	5	.0072
D	5	.0076
C	5	.0078
A	5	.0116
Sig.		.061

Limfosit

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
B	5	.3510		
D	5		.5314	
C	5		.5354	
A	5			.6504
Sig.		1.000	.981	1.000

Monosit

Tukey HSD[a]

Perlakuan	N	Subset for alpha = 0.05		
		1	2	3
A	5	.0308		
D	5		.0578	
C	5		.0580	
B	5			.0896
Sig.		1.000	1.000	1.000

RIWAYAT HIDUP PENULIS

Penulis lahir dengan nama lengkap Dayana Amalia Darsan di Makassar pada tanggal 11 Februari 2001. Penulis merupakan anak pertama dari pasangan suami istri Drs. Darsan Abu dan Ir. Anni Anwar, MP. Penulis memulai Pendidikan di TK Handayani pada tahun 2005-2007 dan melanjutkan pendidikan di SD Inpres Baddoka pada tahun 2007-2013. Kemudian, penulis melanjutkan pendidikan di SMP Negeri 12 Makassar pada tahun 2013-2016. Setelah itu, penulis melanjutkan pendidikan di SMA Negeri 5 Makassar pada tahun 2016-2019. Tahun 2020, penulis melanjutkan pendidikan di Universitas Hasanuddin pada Program Studi Pendidikan Dokter Hewan melalui jalur SBMPTN. Semasa perkuliahan, penulis aktif menjadi pengurus harian dan dewan pengawas di organisasi internal Himpunan Mahasiswa Kedokteran Hewan (HIMAKAHA) FK-UNHAS pada periode 2022/2023 dan 2023/2024. Penulis juga aktif dalam kegiatan akademik dan menjadi bagian dari Tim Asisten Laboratorium Diagnosa Klinik pada tahun 2023. Penulis menyusun skripsi dengan judul **"Pengaruh Pemberian Biosurfaktan Terhadap *Complete Blood Count* Ikan Lele Sangkuriang (*Clarias gariepinus var. sangkuriang*) Yang Terpapar Limbah Minyak Solar".**