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LAMPIRAN

Lampiran 1 : Sertifikat biakan murni *Pseudomonas putida* FNCC-0071



Lampiran 2 : Sertifikat veteriner tikus Wistar 36 ekor


PEMERINTAH KOTA BANDUNG
DINAS PANGAN DAN PERTANIAN
 Jalan. Arjuna No. 45 Telp. (022) 6015102 Fax. 6015975 Bandung 40174

SERTIFIKAT VETERINER
 VETERINARY CERTIFICATE
 No. 524.3/3673 -Dispangan/2019


Yang bertanda tangan di bawah ini Drh. Elise Wieke PK Dokter Hewan Dinas Pangan dan Pertanian Kota Bandung.
 The undersigned
 Veterinarian

Menerangkan
 Here by certify
 Bahwa pada hari ini Senin Tanggal 9 Desember 2019
 That on this day date
 Telah memeriksa hewan seperti disebut di bawah :
 Examined the following animal (s)

No.	Jenis Hewan Species	Bangsa Breed	Jumlah Total	Jenis Kelamin Sex		Umur Age	Tanda-tanda Special sign	Ket Remark
				Jantan Male	Betina Female			
1.	Tikus	Wistar	36 Ekor	36 Ekor	-	10 Minggu	Putih	Sehat

Dan ternyata hewan tersebut sehat dan bebas dari penyakit hewan menular
 And found that the above mentioned animal(s) healthy and free from contagious disease.
 Surat Keterangan Kesehatan Hewan ini berlaku untuk 14 (empat belas) hari sejak diterbitkan

Keterangan :
 Record
 Nama Pemilik : Aa Zulianto.
 Owner's Name
 Alamat Pemilik : Kel. Cisaranten Wetan. Kec. Cinambo - Kota Bandung
 Owner's Address
 Daerah Asal : Kota Bandung - Jawa Barat
 Place of Origin
 Daerah Tujuan : ~~Bandung~~ Dr. Jumadi
 Placee Universitas Makassar


 Dr. Elise Wieke PK
 NIP. 19671025 199803 2 002



Lampiran 3 : Rekomendasi persetujuan etik



**KEMENTERIAN RISET, TEKNOLOGI DAN PENDIDIKAN TINGGI
UNIVERSITAS HASANUDDIN
FAKULTAS KEDOKTERAN
RSPTN UNIVERSITAS HASANUDDIN
RSUP Dr. WAHIDIN SUDIROHUSODO MAKASSAR
KOMITE ETIK PENELITIAN KESEHATAN**

Sekretariat : Lantai 3 Gedung Laboratorium Terpadu
JL.PERINTIS KEMERDEKAAN KAMPUS TAMALANREA KM.10 MAKASSAR 90245.
Contact Person: dr. Agussalim Bukhari, MMed, PhD, SpGK TELP. 081225704670 e-mail : agussalimbukhari@yahoo.com

REKOMENDASI PERSETUJUAN ETIK

Nomor : 270/UN4.6.4.5.31/ PP36/ 2019

Tanggal: 17 April 2019

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

No Protokol	UH19010037	No Sponsor	
Peneliti Utama	Drs. Jumadi, M.Si	Sponsor	
Judul Peneliti	Kajian Jagung Biofortifikasi Terhadap Status Besi Tikus Wistar Anemia		
No Versi Protokol	2	Tanggal Versi	8 April 2019
No Versi PSP		Tanggal Versi	
Tempat Penelitian	Laboratorium Biologi Universitas Dayanu Ikhsanuddin, Baubau		
Jenis Review	<input type="checkbox"/> Exempted <input checked="" type="checkbox"/> Expedited <input type="checkbox"/> Fullboard Tanggal	Masa Berlaku 17 April 2019 sampai 17 April 2020	Frekuensi review lanjutan
Wakil Ketua Komisi Etik Penelitian	Nama Prof.Dr.dr. Suryani As'ad, M.Sc.,Sp.GK (K)	Tanda tangan	
Sekretaris Komisi Etik Penelitian	Nama dr. Agussalim Bukhari, M.Med.,Ph.D.,Sp.GK (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 Laporan 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 protokol yang disetujui (protocol deviation / violation)
- Mematuhi semua peraturan yang ditentukan



Lampiran 4 : Hasil analisis sampel jagung manis (perlakuan)



**Kementerian
Perindustrian**
REPUBLIK INDONESIA

**BADAN PENELITIAN DAN PENGEMBANGAN INDUSTRI
LABORATORIUM PENGUJI BBIHP MAKASSAR**

Jalan Prof. Dr. H. Abdurrahman Basalamah, MA No.28 Makassar 90231

Telp. (0411) 441207 Fax. (0411) 441135 Website: www.bbhip.kemenperin.go.id E-mail: bbhip@kemenperin.go.id

LAPORAN PENGUJIAN

Nomor : 2.7935/LU-BBIHP/XII/2018

Nomor Analisis : P. 7076
 Tanggal Penerimaan : 21 November 2018
 Nama Pelanggan : Jumadi
 Alamat : FKM UNIDAYAN
 Nama Contoh : Jagung
 Keterangan Contoh : Kode 1240.1460.2, Keadaan Contoh Baik, Jagung Manis Provit A, Sampel Perlakuan, Untuk Analisis Kimia
 Pengambilan Contoh : -
 Berita Acara : -
 Tanggal Analisis : 21 November 2018
 Tanggal Penerbitan : 10 Desember 2018



Setelah dilakukan pengujian, diperoleh hasil sebagai berikut :

Parameter	Satuan	Hasil	Metode Uji
Besi (Fe)	mg/Kg	10,1117	SNI 19-2896-1992 Butir 3.3.2
Seng (Zn)	mg/kg	11,3389	SNI 01-2896-1998 Butir 5

Wakil Manajer Teknis 1,

St. Sarkis
ST. SARKIS



Optimization Software:
www.balesio.com

Lampiran 5 : Hasil analisis sampel jagung manis (kontrol)



**Kementerian
Perindustrian**
REPUBLIK INDONESIA

**BADAN PENELITIAN DAN PENGEMBANGAN INDUSTRI
LABORATORIUM PENGUJI BBIHP MAKASSAR**

Jalan Prof. Dr. H. Abdurrahman Basalamah, MA No.28 Makassar 90231
Telp: (0411) 441207 Fax: (0411) 441135 Website: www.bbihp.kemenperin.go.id E-mail: bbihp@kemenperin.go.id

LAPORAN PENGUJIAN
Nomor : 2.7934/LU-BBIHP/XII/2018

Nomor Analisis : P. 7075
Tanggal Penerimaan : 21 November 2018
Nama Pelanggan : Jumadi
Alamat : FKM UNIDAYAN
Nama Contoh : Jagung
Keterangan Contoh : Kode 1240.1460.1, Keadaan Contoh Baik, Jagung Manis Provit A, Sampel Kontrol, Untuk Analisis Kimia
Pengambilan Contoh : -
Berita Acara : -
Tanggal Analisis : 21 November 2018
Tanggal Penerbitan : 10 Desember 2018



Setelah dilakukan pengujian, diperoleh hasil sebagai berikut :

Parameter	Satuan	Hasil	Metode Uji
Besi (Fe)	mg/Kg	8,5130	SNI 19-2896-1992 Butir 3.3.2
Seng (Zn)	mg/kg	6,9251	SNI 01-2896-1998 Butir 5



Wakil Manajer Teknis 1,

St. SARKI AH



Lampiran 6

ANALISIS STATISTIK PENGARUHU ASUPAN JBF TERHADAP LAJU PERUBAHAN KADAR Hb TIKUS WISTAR BETINA ANEMIA

Perlakuan	Hb-to	Hb-t7
R01	11.3	13.2
R02	11.2	9.7
R03	9.6	10.2
R04	11.9	12.2
R05	10.6	12
R11	9.9	14.2
R12	11.5	16.7
R13	10.9	17.6
R14	10.3	10.9
R21	11.9	13.7
R22	11.4	11.4
R23	9.9	12.1
R24	10.9	15.4
R25	10.6	13.4
R31	10.4	9.7
R32	10.4	9.6
R33	9.8	10.2
R34	12.1	10.1
R35	11	10.3
R41	10.1	13.3
R42	11.2	9.2
R43	10.9	11.3
R44	10.5	12.4
R45	11.7	10.8

ANOVA: Pengaruh asupan JBF terhadap laju peningkatan kadar Hb

ANOVA

Hb	Sum of Squares	df	Mean Square	F	Sig.
ten Groups	3.010	4	.752	5.210	.005
Groups	2.744	19	.144		
	5.754	23			



Multiple Comparisons

Dependent Variable: Hb

LSD

(I) JBF	(J) JBF	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.8871350*	.2549329	.003	-1.420716	-.353554
	3	-.2457200	.2403530	.319	-.748785	.257345
	4	.1857200	.2403530	.449	-.317345	.688785
	5	.0028800	.2403530	.991	-.500185	.505945
2	1	.8871350*	.2549329	.003	.353554	1.420716
	3	.6414150*	.2549329	.021	.107834	1.174996
	4	1.0728550*	.2549329	.000	.539274	1.606436
	5	.8900150*	.2549329	.002	.356434	1.423596
3	1	.2457200	.2403530	.319	-.257345	.748785
	2	-.6414150*	.2549329	.021	-1.174996	-.107834
	4	.4314400	.2403530	.089	-.071625	.934505
	5	.2486000	.2403530	.314	-.254465	.751665
4	1	-.1857200	.2403530	.449	-.688785	.317345
	2	-1.0728550*	.2549329	.000	-1.606436	-.539274
	3	-.4314400	.2403530	.089	-.934505	.071625
	5	-.1828400	.2403530	.456	-.685905	.320225
5	1	-.0028800	.2403530	.991	-.505945	.500185
	2	-.8900150*	.2549329	.002	-1.423596	-.356434
	3	-.2486000	.2403530	.314	-.751665	.254465
	4	.1828400	.2403530	.456	-.320225	.685905

*. The mean difference is significant at the .05 level.

Rearat Laju Peningkatan Kadar Hb

Descriptives

Hb

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	5	.077140	.1864232	.0833710	-.154335	.308615	-.2143	.2714
2	4	.964275	.8108798	.4054399	-.326016	2.254566	.0857	2.0429
3	5	.322860	.2329230	.1041663	.033648	.612072	.0000	.6429
4	5	-.108580	.1214509	.0543145	-.259381	.042221	-.2857	.0571
5	5	.074260	.2985165	.1335007	-.296397	.444917	-.2857	.4571
Total	24	.236896	.5001719	.1020972	.025692	.448100	-.2857	2.0429



Lampiran 7

Pengaruh asupan JBF terhadap peningkatan sel darah merah (SDM)

Tikus Wistar betina anemia

Perlakuan	Σ SDM-1	Log 10 (SDM-1)	Σ SDM-2	Log 10 (SDM-2)	%V	%V Hr
R11	5,693,957	6.76	6,651,348	6.82	0.17	0.02
R12	5,643,568	6.75	4,887,733	6.69	-0.13	-0.02
R13	4,837,344	6.68	5,139,678	6.71	0.06	0.01
R14	5,996,291	6.78	6,147,458	6.79	0.03	0.00
R15	5,341,234	6.73	6,046,680	6.78	0.13	0.02
R01	4,988,511	6.70	7,155,238	6.85	0.43	0.06
R02	5,693,957	6.76	8,414,963	6.93	0.48	0.07
R03	5,492,401	6.74	8,868,464	6.95	0.61	0.09
R04	5,190,067	6.72	5,492,401	6.74	0.06	0.01
R21	5,996,291	6.78	6,903,293	6.84	0.15	0.02
R22	5,744,346	6.76	5,744,346	6.76	0.00	0.00
R23	4,988,511	6.70	6,097,069	6.79	0.22	0.03
R24	5,492,401	6.74	7,759,906	6.89	0.41	0.06
R25	5,341,234	6.73	6,752,126	6.83	0.26	0.04
R31	5,240,456	6.72	4,887,733	6.69	-0.07	-0.01
R32	5,240,456	6.72	4,837,344	6.68	-0.08	-0.01
R33	4,938,122	6.69	5,139,678	6.71	0.04	0.01
R34	6,097,069	6.79	5,089,289	6.71	-0.17	-0.02
R35	5,542,790	6.74	5,190,067	6.72	-0.06	-0.01

Descriptives

SDM

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
1	5	.0060	.01673	.00748	-.0148	.0268	-.02	.02
2	4	.0575	.03403	.01702	.0033	.1117	.01	.09
3	5	.0300	.02236	.01000	.0022	.0578	.00	.06
4	5	-.0080	.01095	.00490	-.0216	.0056	-.02	.01
	5	.0100	.03162	.01414	-.0293	.0493	-.03	.05
	24	.0175	.03124	.00638	.0043	.0307	-.03	.09



ANOVA

SDM

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.011	4	.003	4.879	.007
Within Groups	.011	19	.001		
Total	.022	23			

Multiple Comparisons

Dependent Variable: SDM

LSD

(I) JBF	(J) JBF	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-.05150*	.01620	.005	-.0854	-.0176
	3	-.02400	.01527	.133	-.0560	.0080
	4	.01400	.01527	.371	-.0180	.0460
	5	-.00400	.01527	.796	-.0360	.0280
2	1	.05150*	.01620	.005	.0176	.0854
	3	.02750	.01620	.106	-.0064	.0614
	4	.06550*	.01620	.001	.0316	.0994
	5	.04750*	.01620	.009	.0136	.0814
3	1	.02400	.01527	.133	-.0080	.0560
	2	-.02750	.01620	.106	-.0614	.0064
	4	.03800*	.01527	.022	.0060	.0700
	5	.02000	.01527	.206	-.0120	.0520
4	1	-.01400	.01527	.371	-.0460	.0180
	2	-.06550*	.01620	.001	-.0994	-.0316
	3	-.03800*	.01527	.022	-.0700	-.0060
	5	-.01800	.01527	.253	-.0500	.0140
5	1	.00400	.01527	.796	-.0280	.0360
	2	-.04750*	.01620	.009	-.0814	-.0136
	3	-.02000	.01527	.206	-.0520	.0120
	4	.01800	.01527	.253	-.0140	.0500

*. The mean difference is significant at the .05 level.



Lampiran 8

Pengaruh asupan JBF terhadap laju peningkatan bobot tubuh Wistar anemia

Perlakuan	Wo	W7
R01	190	191
R02	184	186
R03	214	199
R04	184	181
R05	172	178
R11	191	184
R12	185	189
R13	194	190
R14	208	199
R21	191	187
R22	191	180
R23	207	203
R24	183	186
R25	195	191
R31	186	202
R32	194	209
R33	195	207
R34	179	204
R35	182	199
R41	172	172
R42	197	224
R43	203	197
R44	202	201
R45	168	171

ANOVA Bobot badan (BB) Wistar Anemia

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.000	4	.000	6.263	.002
Within Groups	.000	19	.000		
Total	.000	23			



Multiple Comparisons

Dependent Variable: BB
LSD

(I) JBF	(J) JBF	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
		Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound
1	2	.00175	.00385	.655	-.0063	.0098
	3	.00200	.00363	.588	-.0056	.0096
	4	-.01400(*)	.00363	.001	-.0216	-.0064
	5	-.00420	.00363	.261	-.0118	.0034
2	1	-.00175	.00385	.655	-.0098	.0063
	3	.00025	.00385	.949	-.0078	.0083
	4	-.01575(*)	.00385	.001	-.0238	-.0077
	5	-.00595	.00385	.139	-.0140	.0021
3	1	-.00200	.00363	.588	-.0096	.0056
	2	-.00025	.00385	.949	-.0083	.0078
	4	-.01600(*)	.00363	.000	-.0236	-.0084
	5	-.00620	.00363	.104	-.0138	.0014
4	1	.01400(*)	.00363	.001	.0064	.0216
	2	.01575(*)	.00385	.001	.0077	.0238
	3	.01600(*)	.00363	.000	.0084	.0236
	5	.00980(*)	.00363	.014	.0022	.0174
5	1	.00420	.00363	.261	-.0034	.0118
	2	.00595	.00385	.139	-.0021	.0140
	3	.00620	.00363	.104	-.0014	.0138
	4	-.00980(*)	.00363	.014	-.0174	-.0022

* The mean difference is significant at the .05 level.



Lampiran 9

Analisis Chi Square; Hubungan makanan dengan kejadian anemia tikus wistar betina selama 14 hari perlakuan dengan JBF dan JNB 15 BB

Makanan * Kejadian Crosstabulation

			Kejadian		Total
			Anemia	Normal	
Makanan	JBF	Count	7	3	10
		% within Makanan	70.0%	30.0%	100.0%
		% within Kejadian	53.8%	42.9%	50.0%
		% of Total	35.0%	15.0%	50.0%
	JNB	Count	6	4	10
		% within Makanan	60.0%	40.0%	100.0%
		% within Kejadian	46.2%	57.1%	50.0%
		% of Total	30.0%	20.0%	50.0%
Total	Count	13	7	20	
	% within Makanan	65.0%	35.0%	100.0%	
	% within Kejadian	100.0%	100.0%	100.0%	
	% of Total	65.0%	35.0%	100.0%	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.220 ^b	1	.639		
Continuity Correction ^a	.000	1	1.000		
Likelihood Ratio	.220	1	.639		
Fisher's Exact Test				1.000	.500
Linear-by-Linear Association	.209	1	.648		
N of Valid Cases	20				

a. Computed only for a 2x2 table

b. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 3.50.

$$\text{Nilai Prevalensi} = \frac{7}{10} : \frac{6}{10}$$

Nilai Prevalensi= 1.17 (>1, faktor Risiko Terjadinya Anemia pada Wistar Betina)

Sbr: Prof. Dr.dr. Sudigda Sastraasmoro
Dasar-dasar Metodologi Klinis, p.130-144



Lampiran 10

Analysis of Variance (ANOVA) of the plant biomass, number of roots, and primary root length of corn seeds

		ANOVA				
		Sum of Squares	Df	Mean Square	F	Sig.
W	Between Groups	.000	3	.000	.299	.825
	Within Groups	.001	8	.000		
	Total	.001	11			
RC	Between Groups	.917	3	.306	.611	.627
	Within Groups	4.000	8	.500		
	Total	4.917	11			
RL	Between Groups	43.297	3	14.432	4.190	.047*
	Within Groups	27.553	8	3.444		
	Total	70.850	11			

*Mean different is significant at $p < 0.05$

Note: W: (Biomass of the plant); RC (Number of Roots); RL (Length of Roots)

ANOVA and LSD of Length of Roots of Corn Plant

		ANOVA				
		Sum of Squares	Df	Mean Square	F	Sig.
Roots						
	Between Groups	54.087	3	18.029	5.758	.004
	Within Groups	75.143	24	3.131		
	Total	129.230	27			



Multiple Comparisons

Dependent Variable: Roots

LSD

(I) Putida	(J) Putida	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	-1.586	.946	.107	-3.54	.37
	3	-1.286	.946	.187	-3.24	.67
	4	-3.857(*)	.946	.000	-5.81	-1.91
2	1	1.586	.946	.107	-.37	3.54
	3	.300	.946	.754	-1.65	2.25
	4	-2.271(*)	.946	.024	-4.22	-.32
3	1	1.286	.946	.187	-.67	3.24
	2	-.300	.946	.754	-2.25	1.65
	4	-2.571(*)	.946	.012	-4.52	-.62
4	1	3.857(*)	.946	.000	1.91	5.81
	2	2.271(*)	.946	.024	.32	4.22
	3	2.571(*)	.946	.012	.62	4.52

* The mean difference is significant at the .05 level.



RIWAYAT HIDUP

1. Nama Lengkap : Drs. Jumadi, M.Si.
2. Tempat/Tgl Lahir : Awerange, 7 Maret 1965
3. NIP : 196503071993031005
4. Pekerjaan : Dosen Kopertis Wil. 9 DPK Universitas Dayanu Ikhsanuddin
5. Pangkat/Gol. : Pembina/IVa
6. Jabatan : Lektor kepala
7. Alamat : Jl. Bonekom No. 4, Kota Baubau, Sulawesi Tenggara
8. Keluarga:
 - a. Ayah Kandung : H. Muhammadong (Almarhum)
 - b. Ibu Kandung : Hj. I Boddiman, 78 Tahun
 - c. Istri : Dra. Rosliana, ASN, Guru SMA Negeri I Batauga, Kab. Buton Selatan
 - d. Anak kandung:
 - 1) Muhammad Afif Firas, S,Ds., Mahasiswa S2 Jurusan Desain ITB
 - 2) Afifah Safira, Mahasiswa Jurusan Farmasi, UMI Makassar, Semester 6
 - 3) Fadil Muhammad, Siswa SMA Negeri I Baubau. Kelas XII
 - 4) Putri Rahmawati, Siswi SMA Negeri I Baubau, Kelas XI
9. Pendidikan :
 - a. Pendidikan Biologi IKIP Ujungpandang, Tahun 1986
 - b. Biologi, ITB Bandung, 1998
 - c. Ilmu Kesehatan Masyarakat, UH, 2016- Skr
10. Karya Ilmiah 5 Tahun Terakhir:
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