

## DAFTAR PUSTAKA

- [AOAC] Association of Official Analytical Chemist. 2005. Official Method of Analysis of The Association of Official Analytical of Chemist. Arlington, Virginia, USA: Association of Official Analytical Chemist, Inc.
- Adewumi, A. A., Adewole, H. A., Olaleye, V. F. (2014). Proximate & elemental composition of the fillets of some fish species in OsinmoReservoir, Nigeria. *The Agriculture and Biology Journal of North America*, 5(3): 109-117.
- Alhana., Suptijah, Pipih., Tarman., Kustiariyah. 2015. Ekstraksi Dan Karakteristik Kolagen Dari Daging Teripang Gamma. *JPHIPI* 2015, Volume 18 Nomor 2. DOI: 10.17844/jphipi.2015.18.2.150.
- Amir, Nursinah., Syahrul., Djamaluddin, Nursyamsi. 2020. Ikan Sapu-Sapu (*Pterygoplichthys pardalis*) Di Kabupaten Wajo Propinsi Sulawesi Selatan: Kandungan Logam Berat Timbal (Pb), Merkuri (Hg) dan Arsen (As). *Jurnal Agribisnis Perikanan (E-ISSN 2598-8298/P-ISSN 1979-6072)*.
- Anonimus. 2020. Handout Mata Kuliah Pengetahuan Bahan Pangan. Universitas Negeri Yogyakarta. Yogyakarta.
- Anshori, Jamaluddin Al, S.Si. 2005. Materi Ajar : Spektrofotometri Serapan Atom. Universitas Padjadjaran. Bandung.
- Ariansyah, K.A., K. Yuliaty, dan S. Hanggita R.J. 2012. Analisis Kandungan Logam Berat (Pb, Hg, Cu Dan As) Pada Kerupuk Kemplang Di Desa Tebing Gerinting Utara, Kecamatan Indralaya Selatan, Kabupaten Ogan Ilir. *Fishtech*, Vol. I No. 01, November 2012: 69-77.
- Arias, Garcia, Navarro, Linares G. 2004. Effect of Different Treatment and Storage On The Proximate Compotition and Protein Quality in Canned Tuna. *Archivos Latino americanos De Nutricion*. 54(1):112-117.
- Asnawi. 2018. Uji Biologis Penaran Ikan Sapu Sapu (*Hypostomus plecostomus*) Sebagai Pakan Itik Mojosari. [Tesis]. Fakultas Peternakan Universitas Mataram.
- Astawan, Made. 2008. Sehat Dengan Hidangan Hewani. Jakarta: Penebar Swadaya.
- Apituley, Daniel A. N., Noor, Zuheid., Darmaji, Purnama., Suparmo, Suparmo., 2005. Oksidasi protein daging merah dan putih pada ikan tongkol putih (*Thunnus sp*) oleh sistim katalis logam  $CuSO_4/H_2O_2$ . *Jurnal Agritech* Vol. 23 No. 4 halaman 180-185.
- Bangun, J.M. 2005. Kandungan Logam Berat Timbal (Pb) Dan Kadmium (Cd) Dalam Air, Sedimen Dan Organ Tubuh Ikan Sokang (*Triacanthus nieuhofi*) Di Perairan Ancol, Teluk Jakarta. Unpublished Skripsi. Bogor: Departemen Manajemen Sumberdaya Perairan Fakultas Perikanan Dan Ilmu Kelautan Institut Pertanian Bogor.
- Bijukumar A, Smrithy R Sureshkumar U, George S. 2015. Invasion of South American suckermouth armoured catfishes *Pterygoplichthys* spp. (Loricariidae) in Kerala, India-a case study. *J. of Threatened Taxa* 3:6987-6995.

- Chaidir A. 2001. Pengaruh pencucian Daging Lumat (*minced fish*) Ikan Sapu Sapu (*Hypostomus* sp.) Terhadap Kualitas *minced fish* Dalam Pembuatan Bakso Ikan. [Skripsi]. Bogor: Jurusan Teknologi Halis Perikanan, Institut Pertanian Bogor.
- Clark, R. 1986. Marine pollution. Third edition Clarendon Press. Oxford.
- Darmono. 1995. Logam Dalam Sistem Biologi Makhluk Hidup. Universitas Indonesia. Jakarta.
- Darmono. 2001. Lingkungan Hidup Dan Pencemaran. Universitas Indonesia. Jakarta.
- Dhika LR. 2013. Kandungan logam berat Kadmium (Cd) dalam Daging Ikan Sapu Sapu (*Pterygoplichthys pardalis*) Di Sungai Ciliwung. Departemen Manajemen Sumber Daya Perairan Fakultas Perikanan dan Ilmu Kelautan Institut Pertanian Bogor, Bogor.
- Effendie MI. 1997. *Biologi Perikanan*. Yayasan Pustaka Nusantara. Bogor 157 pp.
- Elfidasari, D., Prihatini, W., Puspitasari, R. L. 2018. Bioteknologi Ikan Sapu Sapu Di Sepanjang Daerah Aliran Sungai Ciliwung. Fakultas Sains dan Teknologi Universitas Al-Azhar Indonesia November 2018.
- Elfidasari, D., Qoyyimah, F. D., Fahmi, M. R., dan Puspitasari, R. L.. 2020. Variasi Ikan Sapu-Sapu (*Loricariidae*) Berdasarkan Karakter Morfologi Di Perairan Ciliwung. Jurnal Al-Azhar Indonesia Seri Sains dan Teknologi 3(4): 221-225.
- Fishbase. 2015. Scientific names where Genus equals Pterygoplichthys. [Online], Available:[http://fishbase.org/Nomenclature/ScientificNameSearchList.php?crit1\\_fieldname=SYNONYMS.SynGenus&crit1\\_fieldtype=CHAR&crit1\\_operator=EQUAL&crit1\\_value=pterygoplichthys&crit2\\_fieldname=SYNONYMS.SynSpecies](http://fishbase.org/Nomenclature/ScientificNameSearchList.php?crit1_fieldname=SYNONYMS.SynGenus&crit1_fieldtype=CHAR&crit1_operator=EQUAL&crit1_value=pterygoplichthys&crit2_fieldname=SYNONYMS.SynSpecies).
- Ghufran, M. H., Kordi K. 2008. Budi Daya Perairan Buku Kesatu. PT Citra Aditya Bakti. Bandung.
- Hasnidar., Tamsil A., Akram AM., Hidayat T. 2021. Analisis Kimia Ikan Sapu Sapu (*Pterygoplichthys pardalis* Casteln health Perikanan Indonesia 2021, 24(1): 78-88.
- Heath, AG. 1987. Water Pollution and Fish Physiology. Boston. CRC. 245 p
- Hermanto, S., Hudzaifah, M.R., Muawanah, A. 2014. Karakteristik Fisiokimia Gelatin Kulit Ikan Sapu Sapu (*Hyposarcus pardalis*) Hasil Ekstraksi Asam. Jurnal Kimia Valensi Vol. 4 No. 2, November 2014 (109-120). ISSN : 1978-8193.
- Hill, AM dan Lodge, DM. 1999. Replacement of resident crayfishes by an ecotic crayfish: the roles of competition and predation. Ecol. App. 9(2):678-690.
- Hutasoid DY, Yusni E, Lesmana L. 2014. Pengaruh Penambahan Tepung Ikan Sapu Sapu (*Lyposarcus Pardalis*) Pada Pakan Komersil Terhadap Pertumbuhan Ikan Patin (*Pangasius* Sp.).
- Ismi, L.N., Elfidasari, D., Puspitasari, R.L., Sugoro, I. 2019. Kandungan 10 Jenis Logam Berat pada Daging Ikan Sapu Sapu (*Pterygoplichtys pardalis*) Asal Sungai Ciliwung Wilayah Jakarta. Jurnal Al-Azhar Indonesia Seri Sains dan Teknologi vol. 5 No. 2.

- Istanti I. 2005. Pengaruh Penyimpanan Terhadap Karakteristik Kerupuk Ikan Sapu Sapu (*Hyposarcus pardalis*). [Skripsi]. Bogor: Fakultas Perikanan dan Ilmu Kelautan, Institut pertanian Bogor.
- Jacoeb, AM., Nurjannah, Sitanggung, Laurensius. 2015. PROKSIMAT DAN ASAM LEMAK JUVENIL IKAN MAS (*Cyprinus carpio*) PADA BERBAGAI UMUR PANEN. Departemen Teknologi Hasil Perairan, Fakultas Perikanan dan Ilmu Kelautan, Institut Pertanian Bogor. ISSN: 2086-8049. *Dinamika Maritim* Volume V(1) (46-51).
- Kantun W., Malik AA., Harianti. 2015. Kelayakan Limbah Padat Tuna Loin Madidihang *Thunnus albacares* Untuk Bahan Baku Produk Diversifikasi. *JPHIPI* 2015, Volume 18 Nomor 2. DOI: 10.17844/jphipi.2015.18.3.303.
- Kotellat, M., A.J.Whitten., S.N. Kartikasari dan S. Wirjoatmodjo. 1993. *Freshwater Fishes of Western Indonesia and Sulawesi*. Periplus Editions Limited. Jakarta: Ivii+293 Irlm.
- Latuconsina, NS. 2021. Penentuan Spesies, Proporsi Bagian Tubuh dan Logam Berat Ikan Sapu Sapu di Danau Tempe. Departemen Perikanan. Fakultas Kelautan dan Perikanan. Universitas Hasanuddin, Makassar.
- Maligan, Jaya. 2014. Analisis Lemak dan Minyak. *Teknologi Hasil Pertanian*, Universitas Brawijaya: Malang.
- Mallet, J. 2017. Hybrid speciation. *Nature* 446:279-283.
- Mariotti, F., Tome, D. and Mirand, P.P. 2008. Converting nitrogen into protein—Beyond 6.25 and Jones' factors. *Crit. Rev. Food Sci.*, 48:177-184.
- Munandar, K., Eurika, N. 2016. Keanekaragaman Ikan yang Bernilai Ekonomi dan Kandungan Logam Berat Pb dan Cd pada Ikan Sapu-Sapu di Sungai Bedadung Jember. *Proceeding Biology Education Conference*, 13(1), 717–722.
- Munandar, Kuku. 2016. Kandungan Logam Berat Pb dan Cd pada Ikan Sapu Sapu yang Tertangkap di Sungai Bedadung Kabupaten Jember. *Prosiding Seminar Nasional II Tahun 2016, Kerjasama Prodi Pendidikan Biologi FKIP dengan Pusat Studi Lingkungan dan Kependudukan (PSLK) Universitas Muhammadiyah Malang*. Universitas Muhammadiyah Malang. Malang.
- Nico, LG dan Martin, RT. 2012. The South American armored catfish, *Pterygoplichthys anisitsi* (Pisces: Loricariidae), in Teas, with comment on foreign fish introduction in the American Southwest. *The Southwest Naturalist* 46(1):98-104.
- Nurfitriani, S. 2017. Boiakumulasi logam berat timbel (Pb) pada ikan Nila (*Oreochomis niloticus* Linn.) di tambak sekitar muara Sungai Pangkajene Kabupaten Pangkajene dan Kepulauan (Pangkep). *Program Studi Kedokteran Hewan. Fakultas Kedokteran Hewan Universitas Hasanuddin, Makassar*.
- Nurjannah, Nitibaskara R, Madiah E. 2005. Pengaruh Penambahan Bahan Pengikat Terhadap karakteristik Fisik Otak-otak Ikan Sapu Sapu (*Liposarcus pardalis*). *Buletin Teknologi Hasil Perikanan*. 3(1):1-11.

- Page, LM. dan Robins, RH. 2006. Identification of sailfin catfishes (Teleostei:Loricariidae) in South-Eastern Asia. *The Raffles Bulletin of Zoology* 54:455-457.
- Palar, H. 2004. Pencemaran Toksikologi Logam Berat. PT Rineka Cipta. Jakarta.
- Palar, H. 2008. Pencemaran Toksikologi Logam Berat. PT Rineka Cipta. Jakarta.
- Poernomo, D., Supjitah, P., Rahmawati, D. 2006. Karakteristik fisika kimia gel ikan sapu sapu (*Pterygoplichthys pardalis*) dari bahan baku surimi. *Dalam Prosiding Seminar Nasional Perikanan Indonesia*. Sekolah Tinggi Perikanan, Jakarta.
- Putra, Guswanda., Hasan, Bustari., dan Sumarto. 2019. Karakteristik Kimia dan Sensoring Daging Ikan Gurami (*Osphronemus gouramy*) dari Ukuran Berbeda. *Teknologi Hasil Perikanan Fakultas Perikanan dan Kelautan Universitas Riau, Pekanbaru*. Journal homepage: <https://ejournal.unri.ac.id/index.php/JT>. ISSN Printed: 0126-4265. ISSN Online: 2654-2714.
- Putranto, T. T. (2016). Pencemaran logam berat Merkuri (Hg) pada air tanah. *Teknik*, 32(1). 62-71. <https://doi.org/10.14710/teknik.v32i1.1690>
- Putri, A.A. 2021. Randemen, penerimaan konsumen dan mutu organoleptik abon ikan sapu sapu (*Pterygoplichthys pardalis*) dari Danau Tempe Kabupaten Wajo. Departemen Perikanan. Fakultas Kelautan dan Perikanan. Universitas Hasanuddin, Makassar.
- Rao, R. K., Sunchu, V. 2017. A report on *Pterygoplichthys pardalis* Amazon Sailfin Suckermouth Catfishes in Freshwater Tanks at Telangana state, India. *International Journal of Fisheries and Aquatic Studies* 5(2): 294-254.
- Rasmussen RS, Ostefeld TH. 2000. Effect of growth rate on quality traits and feed utilisation of rainbow trout (*Oncorhynchus mykiss*) and brook trout (*Salvelinus fontinalis*). *Aquaculture*. 184:327-337.
- Ratmini, N.A. 2009. Kandungan Logam Berat Timbal (Pb), Merkuri (Hg) Dan Cadmium (Cd) Pada Daging Ikan Sapu-Sapu (*Hyposarcus pardalis*) Di Sungai Ciliwung Stasiun Srengseng, Condet Dan Manggarai. *Vis Vitalis*, Vol. 02 No. 1, Maret 2009.
- Restu. 2012. Pembuatan bakso ikan toman (*Channa micropeltes*). *Jurnal Ilmu Hewani Tropika* 1(1): 1-5.
- SNI. 2006. Cara uji kimia – Bagian 4 : Penentuan kadar protein dengan metode total nitrogen pada produk perikanan. SNI 01-2354.3-2006. Badan Standarisasi Nasional. ICS 67.050. Jakarta.
- SNI. 2009. Batas maksimum cemaran logam berat dalam pangan. SNI 7387:2009. Badan Standarisasi Nasional. ICS 67.220.20.
- SNI. 2010. Cara uji kimia – Bagian 1 : Pengujian kadar abu dan abu tak larut dalam asam pada produk perikanan. SNI 2354.1:2010. Badan Standarisasi Nasional. ICS 67.050. Jakarta.

- SNI. 2011. Cara uji kimia – Bagian 5 : Penentuan kadar logam berat Timbal (Pb) dan Kadmium (Cd) pada produk perikanan. SNI 2354.5:2011. Badan Standarisasi Nasional. ICS 67.050. Jakarta.
- SNI. 2015. Cara uji kimia – Bagian 2 : Pengujian kadar air pada produk perikanan.SNI2354.2:2015. Badan Standarisasi Nasional. ICS 67.050. Jakarta.
- SNI. 2016. Cara Uji Kimia – Bagian 6 : Penentuan kadar logam berat merkuri (Hg) pada produk perikanan. SNI 2354.6: 2016. Badan Standarisasi Nasional. ICS 67.050. Jakarta.
- SNI. 2017. Cara uji kimia – Bagian 3 : Penentuan kadar lemak total pada produk perikanan.SNI 2354-3: 2017. Badan Standarisasi Nasional. ICS 67.050. Jakarta.
- Suwetja. 2011. Biokimia Hasil Perikanan. Media Prima Aksara. Jakarta.
- Suzuki, T. 1991. Fish and Krill Protein: Processing Technology. Applied Science. London : Publishers Ltd.
- Taftazani, A. 2007. Distribusi konsentrasi logam berat Hg dan Cr pada sampel lingkungan perairan Surabaya. Proceeding PPI–PDIPTN BATAN, Yogyakarta, Indonesia.
- Titasari, M., Efizon, D., Pulungan, C. P. 2016. Stomach Content Analysis of *Pterygoplichthys pardalis* from The Air Hitam River, Payung Sekaki District, Riau Province, Jurnal Online Mahasiswa Fakultas Perikanan Dan Ilmu Kelautan, 3(1), 1-14.
- Trisawati R. 2007. Pemanfaatan Surimi Ikan Sapu Sapu (*Hyposarcus pardalis*) dalam Pembuatan Empek-empek. Program Studi Teknologi Hasil Perikanan Fakultas Perikanan Dan Ilmu Kelautan. Institut Pertanian Bogor.
- Widowati, W. 2008. Efek toksikologi logam: pencegahan dan penanggulangan pencemaran. PT Andi Offset. Yogyakarta.
- Winarno, FG. 1986. Kimia Pangan dan Gizi. PT. Gramedia. Jakarta.  
<https://jurnaldanmajalah.wordpress.com/2011/01/08/no-11-volume-ii-tahun-2011>.
- Winarno. 2004. Kimia Pangan dan Gizi. Gramedia Pustaka Utama. Jakarta.  
<http://labvirtual.agroindustri.upi.edu/analisis-kadar-air>.
- Yi, Y. J, Yang, Z. F, Zhang, S. H. 2011. Ecological Risk Assessment of Heavy Metals in Sediment and Human Health Risk Assessment of Heavy Metals in Fishes in the Middle and Lower Reaches of the Yangtze River Basin. Proceedia Environmental Sciences 8<sup>th</sup> Edition: 1699-1707.
- Yulindra T, Dwi TS, Suprayitno E. 2013. Pengaruh konsentrasi residu daging ekstraksi albumin ikan gabus (*Ophiocephalus striatus*) yang berbeda terhadap kualitas sosis ikan. *THPi Student Journal* 1(2): 51-60.

## LAMPIRAN

Lampiran 1. Uji Statistik menggunakan Uji ANOVA Daging Merah

### Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
AIR	KECIL	3	77.9533	.11676	.06741	77.6633	78.2434	77.85	78.08
	SEDANG	3	78.7100	.07000	.04041	78.5361	78.8839	78.64	78.78
	BESAR	3	76.4267	.06658	.03844	76.2613	76.5921	76.37	76.50
	Total	9	77.6967	1.01012	.33671	76.9202	78.4731	76.37	78.78
ABU	KECIL	3	1.3533	.30989	.17892	.5835	2.1231	1.08	1.69
	SEDANG	3	.7400	.03606	.02082	.6504	.8296	.70	.77
	BESAR	3	.9167	.06506	.03756	.7550	1.0783	.85	.98
	Total	9	1.0033	.31646	.10549	.7601	1.2466	.70	1.69
PROTEIN	KECIL	3	11.1333	.04509	.02603	11.0213	11.2453	11.09	11.18
	SEDANG	3	11.2600	.03606	.02082	11.1704	11.3496	11.23	11.30
	BESAR	3	11.7067	.06028	.03480	11.5569	11.8564	11.65	11.77
	Total	9	11.3667	.26415	.08805	11.1636	11.5697	11.09	11.77
LEMAK	KECIL	3	7.3333	.10504	.06064	7.0724	7.5943	7.23	7.44
	SEDANG	3	5.2800	.28000	.16166	4.5844	5.9756	5.00	5.56
	BESAR	3	3.0667	.09074	.05239	2.8413	3.2921	3.00	3.17
	Total	9	5.2267	1.85455	.61818	3.8011	6.6522	3.00	7.44
KARBOHIDRAT	KECIL	3	2.4033	.30501	.17610	1.6456	3.1610	2.10	2.71
	SEDANG	3	4.0100	.21000	.12124	3.4883	4.5317	3.80	4.22
	BESAR	3	7.8833	.14468	.08353	7.5239	8.2427	7.79	8.05
	Total	9	4.7656	2.44772	.81591	2.8841	6.6470	2.10	8.05

**ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
AIR	Between Groups	8.117	2	4.058	530.129	.000
	Within Groups	.046	6	.008		
	Total	8.163	8			
ABU	Between Groups	.598	2	.299	8.833	.016
	Within Groups	.203	6	.034		
	Total	.801	8			
PROTEIN	Between Groups	.544	2	.272	117.187	.000
	Within Groups	.014	6	.002		
	Total	.558	8			
LEMAK	Between Groups	27.319	2	13.660	419.582	.000
	Within Groups	.195	6	.033		
	Total	27.515	8			
KARBOHIDRAT	Between Groups	47.614	2	23.807	451.846	.000
	Within Groups	.316	6	.053		
	Total	47.931	8			

**Post Hoc Tests**

### Multiple Comparisons

Tukey HSD

Dependent Variable	(I) UKURAN	(J) UKURAN	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
AIR	KECIL	SEDANG	-.75667*	.07144	.000	-.9759	-.5375
		BESAR	1.52667*	.07144	.000	1.3075	1.7459
	SEDANG	KECIL	.75667*	.07144	.000	.5375	.9759
		BESAR	2.28333*	.07144	.000	2.0641	2.5025
	BESAR	KECIL	-1.52667*	.07144	.000	-1.7459	-1.3075
		SEDANG	-2.28333*	.07144	.000	-2.5025	-2.0641
ABU	KECIL	SEDANG	.61333*	.15023	.015	.1524	1.0743
		BESAR	.43667	.15023	.061	-.0243	.8976
	SEDANG	KECIL	-.61333*	.15023	.015	-1.0743	-.1524
		BESAR	-.17667	.15023	.508	-.6376	.2843
	BESAR	KECIL	-.43667	.15023	.061	-.8976	.0243
		SEDANG	.17667	.15023	.508	-.2843	.6376
PROTEIN	KECIL	SEDANG	-.12667*	.03935	.042	-.2474	-.0059
		BESAR	-.57333*	.03935	.000	-.6941	-.4526
	SEDANG	KECIL	.12667*	.03935	.042	.0059	.2474
		BESAR	-.44667*	.03935	.000	-.5674	-.3259
	BESAR	KECIL	.57333*	.03935	.000	.4526	.6941
		SEDANG	.44667*	.03935	.000	.3259	.5674
LEMAK	KECIL	SEDANG	2.05333*	.14732	.000	1.6013	2.5054
		BESAR	4.26667*	.14732	.000	3.8146	4.7187
	SEDANG	KECIL	-2.05333*	.14732	.000	-2.5054	-1.6013
		BESAR	2.21333*	.14732	.000	1.7613	2.6654
	BESAR	KECIL	-4.26667*	.14732	.000	-4.7187	-3.8146
		SEDANG	-2.21333*	.14732	.000	-2.6654	-1.7613
KARBOHIDRAT	KECIL	SEDANG	-1.60667*	.18742	.000	-2.1817	-1.0316
		BESAR	-5.48000*	.18742	.000	-6.0551	-4.9049
	SEDANG	KECIL	1.60667*	.18742	.000	1.0316	2.1817
		BESAR	-3.87333*	.18742	.000	-4.4484	-3.2983
	BESAR	KECIL	5.48000*	.18742	.000	4.9049	6.0551
		SEDANG	3.87333*	.18742	.000	3.2983	4.4484

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

### Homogeneous Subsets

AIR

Tukey HSD

UKURAN	N	Subset for alpha = 0.05		
		1	2	3
BESAR	3	76.4267		
KECIL	3		77.9533	
SEDANG	3			78.7100
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.



### ABU

Tukey HSD

UKURAN	N	Subset for alpha = 0.05	
		1	2
SEDANG	3	.7400	
BESAR	3	.9167	.9167
KECIL	3		1.3533
Sig.		.508	.061

Means for groups in homogeneous subsets are displayed.

### PROTEIN

Tukey HSD

UKURAN	N	Subset for alpha = 0.05		
		1	2	3
KECIL	3	11.1333		
SEDANG	3		11.2600	
BESAR	3			11.7067
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

### LEMAK

Tukey HSD

UKURAN	N	Subset for alpha = 0.05		
		1	2	3
BESAR	3	3.0667		
SEDANG	3		5.2800	
KECIL	3			7.3333
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

### KARBOHIDRAT

Tukey HSD

UKURAN	N	Subset for alpha = 0.05		
		1	2	3
KECIL	3	2.4033		
SEDANG	3		4.0100	
BESAR	3			7.8833
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Lampiran 2. Uji Statistik menggunakan Uji ANOVA Daging Putih

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
AIR	KECIL	3	78.3600	.11790	.06807	78.0671	78.6529	78.26	78.49
	SEDANG	3	79.4233	.09074	.05239	79.1979	79.6487	79.34	79.52
	BESAR	3	79.4467	.11930	.06888	79.1503	79.7430	79.31	79.53
	Total	9	79.0767	.54599	.18200	78.6570	79.4963	78.26	79.53
ABU	KECIL	3	.9267	.03055	.01764	.8508	1.0026	.90	.96
	SEDANG	3	.6833	.03055	.01764	.6074	.7592	.65	.71
	BESAR	3	.5100	.04000	.02309	.4106	.6094	.47	.55
	Total	9	.7067	.18364	.06121	.5655	.8478	.47	.96
PROTEIN	KECIL	3	12.5500	.07211	.04163	12.3709	12.7291	12.47	12.61
	SEDANG	3	12.1467	.07506	.04333	11.9602	12.3331	12.07	12.22
	BESAR	3	12.4000	.05000	.02887	12.2758	12.5242	12.35	12.45
	Total	9	12.3656	.18575	.06192	12.2228	12.5083	12.07	12.61
LEMAK	KECIL	3	6.4433	.11719	.06766	6.1522	6.7344	6.31	6.53
	SEDANG	3	5.4000	.07000	.04041	5.2261	5.5739	5.33	5.47
	BESAR	3	5.0100	.63459	.36638	3.4336	6.5864	4.28	5.43
	Total	9	5.6178	.71918	.23973	5.0650	6.1706	4.28	6.53
KARBOHIDRAT	KECIL	3	1.7200	.09644	.05568	1.4804	1.9596	1.61	1.79
	SEDANG	3	2.3467	.02517	.01453	2.2842	2.4092	2.32	2.37
	BESAR	3	2.3000	.09849	.05686	2.0553	2.5447	2.22	2.41
	Total	9	2.1222	.31035	.10345	1.8837	2.3608	1.61	2.41

**ANOVA**

		Sum of Squares	df	Mean Square	F	Sig.
AIR	Between Groups	2.312	2	1.156	95.365	.000
	Within Groups	.073	6	.012		
	Total	2.385	8			
ABU	Between Groups	.263	2	.131	113.740	.000
	Within Groups	.007	6	.001		
	Total	.270	8			
PROTEIN	Between Groups	.249	2	.125	28.052	.001
	Within Groups	.027	6	.004		
	Total	.276	8			
LEMAK	Between Groups	3.295	2	1.648	11.731	.008
	Within Groups	.843	6	.140		
	Total	4.138	8			
KARBOHIDRAT	Between Groups	.731	2	.366	55.871	.000
	Within Groups	.039	6	.007		
	Total	.771	8			

**Post Hoc Tests**

### Multiple Comparisons

Tukey HSD

Dependent Variable	(I) UKURAN	(J) UKURAN	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
AIR	KECIL	SEDANG	-1.06333*	.08990	.000	-1.3392	-.7875
		BESAR	-1.08667*	.08990	.000	-1.3625	-.8108
	SEDANG	KECIL	1.06333*	.08990	.000	.7875	1.3392
		BESAR	-.02333	.08990	.964	-.2992	.2525
	BESAR	KECIL	1.08667*	.08990	.000	.8108	1.3625
		SEDANG	.02333	.08990	.964	-.2525	.2992
ABU	KECIL	SEDANG	.24333*	.02776	.000	.1582	.3285
		BESAR	.41667*	.02776	.000	.3315	.5018
	SEDANG	KECIL	-.24333*	.02776	.000	-.3285	-.1582
		BESAR	.17333*	.02776	.002	.0882	.2585
	BESAR	KECIL	-.41667*	.02776	.000	-.5018	-.3315
		SEDANG	-.17333*	.02776	.002	-.2585	-.0882
PROTEIN	KECIL	SEDANG	.40333*	.05443	.001	.2363	.5703
		BESAR	.15000	.05443	.074	-.0170	.3170
	SEDANG	KECIL	-.40333*	.05443	.001	-.5703	-.2363
		BESAR	-.25333*	.05443	.008	-.4203	-.0863
	BESAR	KECIL	-.15000	.05443	.074	-.3170	.0170
		SEDANG	.25333*	.05443	.008	.0863	.4203
LEMAK	KECIL	SEDANG	1.04333*	.30599	.033	.1045	1.9822
		BESAR	1.43333*	.30599	.008	.4945	2.3722
	SEDANG	KECIL	-1.04333*	.30599	.033	-1.9822	-.1045
		BESAR	.39000	.30599	.458	-.5489	1.3289
	BESAR	KECIL	-1.43333*	.30599	.008	-2.3722	-.4945
		SEDANG	-.39000	.30599	.458	-1.3289	.5489
KARBOHIDRAT	KECIL	SEDANG	-.62667*	.06605	.000	-.8293	-.4240
		BESAR	-.58000*	.06605	.000	-.7827	-.3773
	SEDANG	KECIL	.62667*	.06605	.000	.4240	.8293
		BESAR	.04667	.06605	.769	-.1560	.2493
	BESAR	KECIL	.58000*	.06605	.000	.3773	.7827
		SEDANG	-.04667	.06605	.769	-.2493	.1560

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

### Homogeneous Subsets

AIR

Tukey HSD

UKURAN	N	Subset for alpha = 0.05	
		1	2
KECIL	3	78.3600	
SEDANG	3		79.4233
BESAR	3		79.4467
Sig.		1.000	.964

Means for groups in homogeneous subsets are displayed.

### ABU

Tukey HSD

UKURAN	N	Subset for alpha = 0.05		
		1	2	3
BESAR	3	.5100		
SEDANG	3		.6833	
KECIL	3			.9267
Sig.		1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

### PROTEIN

Tukey HSD

UKURAN	N	Subset for alpha = 0.05	
		1	2
SEDANG	3	12.1467	
BESAR	3		12.4000
KECIL	3		12.5500
Sig.		1.000	.074

Means for groups in homogeneous subsets are displayed.

### LEMAK

Tukey HSD

UKURAN	N	Subset for alpha = 0.05	
		1	2
BESAR	3	5.0100	
SEDANG	3	5.4000	
KECIL	3		6.4433
Sig.		.458	1.000

Means for groups in homogeneous subsets are displayed.

### KARBOHIDRAT

Tukey HSD

UKURAN	N	Subset for alpha = 0.05	
		1	2
KECIL	3	1.7200	
BESAR	3		2.3000
SEDANG	3		2.3467
Sig.		1.000	.769

Means for groups in homogeneous subsets are displayed.

Lampiran 3. Uji Statistik menggunakan Uji t-student

A. Kadar Air

- Ukuran Kecil

**T-Test**

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 AIRMK & AIRPK	3	.999	.031

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 AIRMK	77.9533	3	.11676	.06741
AIRPK	78.3600	3	.11790	.06807

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 AIRMK - AIRPK	-.40667	.00577	.00333	-.42101	-.39232	-122.000	2	.000

- Ukuran Sedang

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMS	78.7100	3	.07000	.04041
DPS	79.4233	3	.09074	.05239

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMS & DPS	3	.606	.585

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMS - DPS	-.71333	.07371	.04256	-.89644	-.53022	-16.762	2	.004

- Ukuran Besar

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMB	76.4267	3	.06658	.03844
DPB	79.4467	3	.11930	.06888

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMB & DPB	3	.646	.553

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMB - DPB	-3.02000	.09165	.05292	-3.24767	-2.79233	-57.073	2	.000

B. Kadar Abu

- Ukuran Kecil

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMK	1.3533	3	.30989	.17892
DPK	.9267	3	.03055	.01764

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMK & DPK	3	.778	.432

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMK - DPK	.42667	.28676	.16556	-.28569	1.13903	2.577	2	.123

- Ukuran Sedang

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMS	.7400	3	.03606	.02082
DPS	.6833	3	.03055	.01764

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMS & DPS	3	-.454	.700

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMS - DPS	.05667	.05686	.03283	-.08459	.19792	1.726	2	.226

- Ukuran Basar

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMB	.9167 <sup>a</sup>	3	.06506	.03756
DPB	.9167 <sup>a</sup>	3	.06506	.03756

a. The correlation and t cannot be computed because the standard error of the difference is 0.

C. Kadar Protein

- Ukuran Kecil

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMK	11.1333	3	.04509	.02603
DPK	12.5500	3	.07211	.04163

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMK & DPK	3	.953	.195

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMK - DPK	-1.41667	.03215	.01856	-1.49652	-1.33681	-76.332	2	.000

- Ukuran Sedang

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMS	11.2600	3	.03606	.02082
DPS	12.1467	3	.07506	.04333

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMS & DPS	3	-.240	.846

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMS - DPS	-.88667	.09074	.05239	-1.11207	-.66126	-16.925	2	.003



- Ukuran Besar

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMB	11.7067	3	.06028	.03480
DPB	12.4000	3	.05000	.02887

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMB & DPB	3	.415	.728

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMB - DPB	-.69333	.06028	.03480	-.84307	-.54360	-19.923	2	.003

D. Kadar Lemak

- Ukuran Kecil

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMK	7.3333	3	.10504	.06064
DPK	6.3833	3	.22030	.12719

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMK & DPK	3	.118	.925

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMK - DPK	.95000	.23259	.13429	.37220	1.52780	7.074	2	.019

- Ukuran Sedang

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMS	5.2800	3	.28000	.16166
DPS	5.4000	3	.07000	.04041

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMS & DPS	3	.500	.667

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMS - DPS	-.12000	.25239	.14572	-.74697	.50697	-.824	2	.497

- Ukuran Besar

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMS	5.2800	3	.28000	.16166
DPS	5.4000	3	.07000	.04041

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMS & DPS	3	.500	.667

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMS - DPS	-.12000	.25239	.14572	-.74697	.50697	-.824	2	.497

E. Kadar Karbohidrat

- Ukuran Kecil

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMK	2.4033	3	.30501	.17610
DPK	1.7200	3	.09644	.05568

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMK & DPK	3	.772	.439

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMK - DPK	.68333	.23861	.13776	.09060	1.27607	4.960	2	.038

- Ukuran Sedang

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMS	4.0100	3	.21000	.12124
DPS	2.3467	3	.02517	.01453

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMS & DPS	3	.397	.740

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMS - DPS	1.66333	.20133	.11624	1.16320	2.16346	14.310	2	.005

- Ukuran Besar

**Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 DMB	7.8833	3	.14468	.08353
DPB	2.3000	3	.09849	.05686

**Paired Samples Correlations**

	N	Correlation	Sig.
Pair 1 DMB & DPB	3	.982	.119

**Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 DMB - DPB	5.58333	.05132	.02963	5.45586	5.71081	188.452	2	.000





Lampiran 4. Sampel Analisa Logam Berat



Lampiran 5. Sampel Analisa Proksimat

