

DAFTAR PUSTAKA

- Abun. 2008. Hubungan Mikroflora dengan Metabolisme dalam Saluran Pencernaan Unggas dan Monogastrik. Makalah Ilmiah. Fakultas Peternakan Universitas Padjajaran, Jatinagor.
- Allen, S.J., Martinez, E. G., Gregorio, G.V., Dans, L.V. 2011. Probiotics for treating acute infectious diarrhea. John Wiley & Sons Ltd. UK.
- Alloui. M.N. Szczurek, W., Swiatkiewicz, S. 2013. The usefulness of prebiotics and probiotics in modern poultry nutrition: a review. Annals of Animal Science 13(1): 17-32.
- Asmawati, Sonjaya H, Natsir A, Pakiding W. 2015. Native chicken embryo quality improvement through in ovo feeding. Asian Journal Microbiol Biotechnol Environ Science. 17(1):69–74.
- Astuti, D.W., Fatimah, S., Fikriyyah, R. 2014. Penetapan kadar klorida pada air sumur di Stikes Guna Bangsa Yogyakarta tahun 2013. Stikes Guna Bangsa Yogyakarta.
- Andriani, A.D., Lokapirnasari, W.P., Karimah, B., Hidanah, S., Al-Arif, M.A., Soeharsono, Harijani, N. 2020. Efektifitas probiotik *Lactobacillus casei* dan *Lactobacillus rhamnosus* sebagai pengganti Antibiotic Growth Promoter terhadap total kolesterol, low density lipoprotein dan high density lipoprotein ayam broiler. Jurnal Medik Veteriner 3(1): 114-122.
- Aritonang, S.N., Roza, E. Rossi, E. 2019. Probiotik dan Prebiotik dari Kedelai untuk Pangan Fungsional. Indomedia Pustaka: Sidoarjo.
- Azhar, M. 2015. Performa Ayam Kampung dengan Pemberian Asam Amino Arginin menggunakan Teknik *In Ovo Feeding*. Tesis. Program Pascasarjana. Universitas Hasanuddin. Makassar.
- Azhar, M., Mirnawati, Sara, U., Rahardja, D.P., Pakiding, W. 2019. Pengaruh *in ovo feeding* L-Arginine terhadap konsumsi pakan, pertambahan berat badan, dan konversi pakan ayam kampung. Jurnal Peternakan Lokal 1(2): 16-20.
- Azhar, M., Rahmawati, Sara, U., Taufik, M. 2022. Respons organ saluran pencernaan dan morfologi usus halus ayam lokal dengan *in ovo feeding* menggunakan L-Arginine. Jurnal Ilmu dan Industri Peternakan 8(1): 1-10.
- Badan Pusat Statistik. 2021. Statistik Indonesia; Statistical Yearbook of Indonesia 2021.

- Baggott, G.K. 2001. Development of extra-embryonic membranes and fluid compartments. In: Deeming, D.C. (ed.) Perspectives in Fertilisation and Embryonic Development in Poultry. Lincolnshire, UK: Ratite Conference Books, pp. 23-29.
- Baurhoo, B., Letellier, A., Zhao, X., Ruiz-Feria, C.A. 2007. Cecal population of Lactobacilli and Bifidobacteria and Escherichia coli populations after in vivo Escherichia coli challenge in birds fed diets with purified lignin or mannanoligosaccharides. *Poultry Science* 86.
- Bednarczyk M, Dunislawska A, Stadnicka K, Grochowska E. 2021. Chicken embryo as a model in epigenetic research. *Poult Sci [Internet]*. 100(7) : 101164. Available from: <https://doi.org/10.1016/j.psj.2021.101164>.
- Bezkorovainy, A. 2001. Probiotics: determinants of survival and growth in the gut. *Am J Clin Nutr* 73.
- Bhattacharyya A, Majumdar S, Bhanja SK, Mandal AB, Kadam M. 2018. Effect of maternal dietary manipulation and in ovo injection of nutrients on the hatchability indices, post-hatch growth, feed consumption, feed conversion ratio and immunocompetence traits of turkey poult. *J Appl Anim Res.* 46(1):287–94.
- Chen, M.J., Zhou, J.Y., Chen, Y.J., Wang, X.Q., Yan, H.C., and Gao, C.Q. 2021. The in ovo injection of methionine improves intestinal cell proliferation and differentiation in chick embryos by activating the JAK2/STAT3 signaling pathway. *Animal Nutrition*, 7(4), 1031–1038. <https://doi.org/10.1016/j.aninu.2021.03.009>.
- Dai, D., Wu, S., Zhang, H., Qi, G., Wang, J. 2020. Dynamic alterations in early intestinal development, microbiota and metabolome induced by *in ovo* feeding of *L*-arginine in a layer chick model. *Journal of Animal Science and Biotechnology* 11(19): 1-16.
- Dita, I.N.A.B., Rukmini, N.K.S., Yudiastari, N.M. 2021. Pengaruh pemberian asam amino lisin dan metionin terhadap berat bagian-bagian karkas ayam kampung. *Gema Agro* 26(2) :78-82.
- Du M, Ford SP, Zhu MJ. 2017. Optimizing livestock production efficiency through maternal nutritional management and fetal developmental programming. *Anim Front.* 7(3):5–11.
- Edowai, E., Tumbal, E.L.S., Maker, F.M. 2019. Penampilan sifat kualitatif dan kuantitatif ayam kampung di distrik nabire kabupaten nabire. *Jurnal Fapertanak* 4(1) : 50-57.

- Fahik, V.F., Lisnahan, C.V., Bira, G.F. 2021. Pengaruh suplementasi *L-Arginin* dalam pakan terhadap organ pencernaan ayam broiler. *Journal of Animal Science* 6(4): 56-59.
- Fajrih, N., Khoiruddin, M., Fanani, A.F. 2020. Pertumbuhan dan status Kesehatan broiler yang diberi umbi gembili sebagai prebiotik inulin. *Jurnal Peternakan Indonesia* 22(2): 141-149.
- Fathima S., Al Hakeem W.G., Selvaraj R.K., Shanmugasundaram, R. (2024). Beyond protein synthesis: the emerging role of arginine in poultry nutrition and host-microbe interactions. *Front. Physiol.* 14:1326809. <https://doi.org/10.3389/fphys.2023.1326809>
- Foni, A., Lisnahan, C.V., Nahak, O.R. 2020. Pengaruh suplementasi L-Lysine HCl terhadap pertambahan berat badan, konsumsi pakan dan efisiensi penggunaan pakan ayam broiler. *Journal of Tropical Animal Science and Technology* 2(2): 8-16.
- Friedman, M. 1989. *Absorption and Utilization of Amino Acids*. CRC Press: Boca Raton London New York.
- Hamasalim, H.J. 2016. Synbiotic as feed additives relating to animal health and performance. *Advances in Microbiology* 6: 288-302.
- Hartono, E.F., Iriyanti, N., Suhermiyati, S. 2016. Efek penggunaan sinbiotik terhadap kondisi mikroflora dan histologi usus ayam Sentul jantan. *Jurnal Agripet* 16(2): 97-105.
- Hartono, M., Santosa, P.M., Ermawati, R., Sirat, M.M.P. 2021. The effect of black cumin (*Nigella sativa*) supplementation though drinking water on the histology of small intestine and large intestine of boiler chickens. *Jurnal Kedokteran Hewan* 15(3): 92-96.
- Haryati, T. 2011. Probiotik dan prebiotik sebagai pakan imbuhan nonruminansia. *Jurnal Wartazoa* 21(3): 125-132.
- Hassan F., Arshad M.A., Hassan S., Bilal, R.M., Saeed M., Rehman M.S. (2021). Physiological role of Arginine in growth performance, gut health and immune response in broilers: a review, *World's Poult Sci J*, 77. <https://doi.org/10.1080/00439339.2021.1925198>
- Hidayat, S.C.M., Harimurti, S., Yusiat, L.M. 2016. Pengaruh suplementasi probiotik bakteri asam laktat terhadap histomorfologi usus dan performan puyuh jantan. *Buletin Peternakan* 40(2): 101-106.
- Horiza, H., Azhar, M., Efendi, J. Ekstraksi dan karakterisasi inulin dari umbi dahlia (*Dahlia sp. L*) segar dan disimpan. *Journal Eksakta* 18(1): 31-39.

- Iji, P.A., Huughes, R.J., Choct, M., Tivey, D.R. 2001. Intestinal structure and function of broiler chicken on wheat-based diets supplemented with a microbial enzyme. Asian-Australasian Journal of Animal Sciences.
- Indrawan, P.M., Suwitari, N.K.E., Suariani, L. 2021. Pengaruh pemberian lisin dan metionin dalam ransum terhadap penampilan ayam kampung. Jurnal Gema Agro 26(1): 27-32.
- Kadja, E.F., BaleTherik, J.F., Sanam, M.U.E. 2018. Pengaruh pemberian dekok daun sirsak, kunyit putih, dan daun kersen serta kombinasinya dalam air minum terhadap performans dan kolesterol darah ayam petelur jantan yang diinfeksi bakteri *Escherichia coli*. Jurnal Kajian Veteriner 6(1): 38-55.
- Kaleka, N. 2015. Beternak Ayam Kampung Super Ayam Jawa Super Tanpa Bau. Arcitra – Yogyakarta.
- Kestaria, Nur H, Malik B. 2016. Pengaruh Substitusi Pakan Komersil Dengan Tepung Ampas Kelapa Terhadap Performa Ayam Kampung. Jurnal Peternak Nusantara. 2(1):43–8.
- Kogoya, D., Mandey, J.S., Rumokoy, L.J., Regar, M.N. 2019. Penambahan daun gedi (*Abelmoschus Manihot (L) Medik*) sebagai “additive” dalam air minum dan pengaruhnya terhadap performans ayam kampung super. Zootec 39(1): 82-92.
- Kozłowska I., Marć-Pieńkowska J., Bednarczyk M. (2016). Beneficial aspects of inulin supplementation as a fructooligosaccharide prebiotic in monogastric animal nutrition – A Review. Ann. Anim. Sci.,16 (2): 315–331. <https://doi.org/10.1515/aoas-2015-0090>
- Krismiyanto, L., Suthama, N., Wahyuni, H.I. 2021. Populasi bakteri usus halus dan performan ayam kampung Silangan kampung-leghorn akibat ditambahkan ekstrak umbi dahlia dalam ransum. Jurnal Agripet 21(2): 157-164.
- Labatar, S.C., Supriyanto, A., Zurahmah, N. 2021. Pengaruh pemberian fermentasi buah maja (*Aegle marmelos*) sebagai probiotik untuk pertumbuhan ayam kampung di Kampung Udapi Hilir Prafi Kabupaten Manokwari Provinsi Papua Barat. Journal of Livestock Science and Production 5(1): 314-321.
- Lestari, Maskur, Jan.R., Tozi, T., Kasip, L.M., Muhsinin, M. 2020. Studi karakteristik sifat kualitatif dan morfometrik induk ayam kampung dengan berbagai tipe jengger di pulau lombok. Jurnal Ilmu dan Teknologi Peternakan Indonesia 6(1): 24-32.

- Lisnahan, C.V., Dethan, A.A., Bani, P.W. 2021. Budidaya ayam kampung pada kelompok ibu rumah tangga sion kefamenanu NTT. Jurnal Pengabdian Masyarakat 4(1): 1-12.
- Lisnahan, C.V., Wihandoyo, Zuprizal, Harimurti, S. 2019. Morfologi usus ayam kampung umur 20 minggu yang disuplementasi DL-Metionin dan L-Lisin HCl dalam pakan. Journal of Tropical Animal Science and Technology 1(2): 14-21.
- Macfarlane, G.T., Steed, H., Macfarlane, S. 2008. Bacterial metabolism and health-related effects of galacto-oligosaccharides and other prebiotics. Journal of Applied Microbiology 104: 305-344.
- Mafruchati, M. 2023. Analisis Bahan Kimia terhadap Perkembangan Embrio. Zifatama Jawara: Sidoarjo.
- Mahfud, I. dan Fahrizqi, E.B., 2020. Pengembangan model latihan keterampilan motorik melalui olahraga tradisional untuk siswa sekolah dasar. Sport Science and Education Journal Universitas Teknarat Indonesia.
- Mousa M.A., Asman A.S., Ali R.M.J., Sayed R.K.A., Majrashi K.A., Fakiha K.G., Alhotan R.A., Selim S. 2023. Impacts of Dietary Lysine and Crude Protein on Performance, Hepatic and Renal Functions, Biochemical Parameters, and Histomorphology of Small Intestine, Liver, and Kidney in Broiler Chickens. *Vet. Sci.* 10(2), 98. <https://doi.org/10.3390/vetsci10020098>
- Nataamijaya AG. 2010. Pengembangan potensi ayam lokal untuk menunjang peningkatan kesejahteraan petani. J Penelit dan Pengemb Pertan. 29 No.4 (10): 131–8.
- Nuraini, A.W.T., Rosidah, A., Damayanti, D.S. 2023. Respon perubahan morfologi villi dan kripta ileum terhadap pemberian kombucha daun sirsak, bunga telang, dan kombinasi keduanya. Fakultas Kedokteran. Universitas Islam Malang.
- O'Sullivan, L., Murphy, B., McLoughlin, P., Duggan, P., Lawlor, P.G., Hughes, H., Gardiner, G.E. Prebiotics from marine macroalgae for human and animal health applications. *Marine Drugs* 8: 2038-2064.
- Prabakar, G., Pavulraj, S., Shanmuganathan, S., Kirubakaran, A., Mohana, N. 2016. *Early nutrition and its importance in poultry: a review*. Indian J. Animal Nutr. 33 (3): 245-252.
- Pratama, R.I.W., Haryoto, B., Tugiyanti, E. 2022. Penggunaan asam laktat sebagai acidifier dalam pakan yang mengandung probiotik terhadap

- indeks telur dan massa telur ayam sentul. Journal of Animal Science and Technology 4(2): 161-168.
- Puspita, R.C., Widiathi, R.I., Karsanto, R.M.N. 2022. Hubungan kadar kreatinin dengan klorida pada pasien gagal ginjal kronik di RSUD Dr. Moewardi Surakarta. Setia Budi Conference on Innovation in Health, Accounting, and management Sciences 2022.
- Puspitaningrum, T., Mahfudz, L.D., Nasoetion, M.H. 2021. Potensi bawang putih (*Allium sativum*) dan *Lactobacillus acidophilus* sebagai sinbiotik untuk meningkatkan performans ayam broiler. Jurnal Sain Peternakan Indonesia 16(2): 210-214.
- Putra, A.N. 2010. Kajian Probiotik dan Sinbiotik untuk Meningkatkan Kinerja Pertumbuhan Ikan Nila (*Oreochromis niloticus*). Tesis. Institut Pertanian Bogor.
- Rahardja, D. P. 2021. Early nutrition programming – an approach for improving production performance of Indonesian native chicken – Kampung chicken. The 3rd International Conference of Animal Science and Technology. IOP Conf. Series: earth and Environmental Science 788.
- Rahardja, D.P., Yusuf, M., Prahesti, K.I., SriLesteri, V. 2022. Efficacy of early nutrition programming for improving the performance of kampung chicken. European Journal of Veterinary Medicine 2(5): 9-15.
- Rahmawati, Y.A.Y., Rokhana, E., Rahmawati, N. 2022. Efektivitas penggunaan sinbiotik sebagai pengganti antibiotic terhadap performa produksi bebek hibrida. Prosiding Seminar Nasional Cendekia Peternakan.
- Rajab. 2013. Hubungan bobot telur dengan fertilitas, daya tetas, dan bobot anak ayam kampung. Agrinimal [Internet]. 3(2):56–60. Available from: <https://ejournal.unpatti.ac.id>.
- Refandy, A., Asmawati, Idrus, M. 2022. Peningkatan efisiensi pakan dan IOFC ayam KUB fase grower terhadap emersion larutan asam amino berbasis maggot BSF (*Hermetia illucens*) dengan konsentrasi yang berbeda dalam pakan. Jurnal Ilmu dan Teknologi Peternakan Terpadu 2(2): 129-135.
- Roberfroid, M.B. 2000. prebiotics and probiotics: are they functional food?. The American Journal of Clinical Nutrition 71.
- Salmanzadeh, M., Ebrahimnezhad, Y., Shahryar, H.A., Lotfi, A. 2011. The effects of *in ovo* injection of L-threonine in broiler chicken breeder eggs

- on characters of hatching and growth performance broiler chickens. European Journal of Experimental Biology 1(4): 164-168.
- Satimah, S., Yunianto, V.D., Wahyono, F. 2019. Bobot relative dan panjang usus halus ayam broiler yang diberi ransum menggunakan cangkang telur mikropartikel dengan suplementasi probiotik *Lactobacillus sp.* Jurnal Sain Peternakan Indonesia 14(4): 396-403. <https://doi.org/10.31186/jspi.id.14.4.396-403>
- Setyawan, A. A., Sukanto, Widyastuti, E. 2014. Populasi bakteri asam laktat pada budidaya ikan nila yang diberi pakan fermentasi limbah pertanian dengan suplemen eceng gondok dan probiotik. Scripta Biologica 1(1): 91-95.
- Sitompul, S. 2004. Analisis asam amino dalam tepung ikan dan bungkil kedelai. Buletin Teknik Pertanian 9(1): 33-37.
- Sukmawati, N.M.S., Sampurna, I.P., Wirapartha, M., Siti, N.W., Ardika, I.N. 2015. Penampilan dan komposisi fisik karkas ayam kampung yang diberi jus daun papaya terfermentasi dalam ransum komersial. Majalah Ilmiah Peternakan 18(2): 39-43.
- Sumarsih, S., Sulistiyanto, B., Sutrisno., Rahayu, E.S. 2012. Peran probiotik bakteri asam laktat terhadap produktivitas unggas. Jurnal Litbang Provinsi Jawa Tengah 10 (1): 1-9.
- Sunaryanto, R., Martius, E., Marwoto, B. 2014. Uji kemampuan *Lactobacillus casei* sebagai agensia probiotik. Jurnal Bioteknologi dan Biosains Indonesia 1(1): 9-14.
- Syaefullah, B.L., Herawati, M., Timur, N.P.V.T., Bachtiar, E.E., Maulana, F. 2019. *Income over feed cost* pada ayam kampung yang diberi nanoenkapsulasi minyak buah merah (*Pandanus cocoideus*) via water intake. Jurnal Triton 10(2): 54-61.
- Tong, B.C., Barbul, A. 2004. Cellular and physiological effects of arginine. Mini-Reviews in Medicinal Chemistry 4: 823-832.
- Umasugi, A., Tumbol, R.A., Kreckhoff, R.L., Manoppo, H., Pangemanan, N.P.L., Ginting, E.L. 2018. Penggunaan bakteri probiotik untuk pencegahan infeksi bakteri *Streptococcus agalactiae* pada ikan nila, *Oreochromis niloticus*. Budidaya Perairan 6(2): 39-44.
- Uni, Z., and P.R. Ferket. 2003. Enhancement of Developement of Oviparous Species by In Ovo Feeding. U.S.
- Uni, Z., dan P. R. Ferket. 2004. Methods for early nutrition and their potential. World's J. Poult. Sci. 60:101-111.

- Utama, C.S., Zuprizal, Hanim, C., Wihandoyo. 2020. Effects of probiotic, prebiotic, and synbiotic mixed culture based on wheat pollard on productivity of kampung's chicken. *Jurnal Ilmu Ternak dan Veteriner*. 25(4): 195-205.
- Utomo, J.W., Sudjarwo, E., Hamiyanti, A.A. 2014. Pengaruh pertambahan tepung darah pada pakan terhadap konsumsi pakan, pertambahan bobot badan, konversi pakan serta umur pertama kali bertelur burung puyuh. *Jurnal Ilmu-Ilmu Peternakan* 24(2): 41-48.
- Wamur, M.F.E., Dethan, A.A., Lisnahan, C.V. 2022. Kualitas makro semen ayam kampung yang disuplementasi L-Arginine dan L-Lysine HCl dalam pakan. *Journal of Animal Science* (2): 27-31.
- Wang, Y.B., Han, J.Z. 2008. The role of probiotic cell wall hydrophobicity in bioremediation of aquaculture. *Aquaculture* 269: 349-54.
- Widanarni, Noermala, J.I., Sukenda. 2014. Prebiotik, probiotik, dan sinbiotik untuk mengendalikan koinfeksi *Vibrio harveyi* dan IMNV pada udang vaname. *Jurnal Akuakultur Indonesia* 13(1): 11-20.
- Yaqoob M.U., Wang G., Wang M. (2022). An updated review on probiotics as an alternative of antibiotics in poultry — A review. *Anim Biosci*. 35(8):1109-1120. <https://doi.org/10.5713/ab.21.0485>
- Yu, L. L., Gao, T., Zhao, M. M., Lv, P. A., Zhang, L., Li, J. L., Jiang, Y., Gao, F., and Zhou, G. H. 2018. Effects of in ovo feeding of L-arginine on breast muscle growth and protein deposition in post-hatch broilers. *Animal*, 12 (11), 2256–2263. <https://doi.org/10.1017/S1751731118000241>
- Yuniza, A., Nuraini, Hafiz, S. 2011. Pengaruh penambahan lisin dalam ransum terhadap berat hidup, karkas dan potongan karkas ayam kampung. *Jurnal Peternakan Indonesia* 13(3) : 199-204.
- Zulfa, H.A., Safira, D, Mawarni, T.A., Saragih, H.T.S.G. 2021. Efek ekstrak etanolik jamuk kuping pada performa pertumbuhan dan morfologi usus halus ayam jawa super. *Jurnal Veteriner* 22(2) : 237-245.
- Zulfanita, Roisu., Eny. M., Dyah. P. Utami. 2016. Pembatasan Ransum Berpengaruh Terhadap Pertambahan Bobot Badan Ayam Broiler Pada Periode Pertumbuhan. Fakultas Pertanian. Universitas Muhammadiyah. Purworejo. 1(7):59 – 67.

LAMPIRAN

LAMPIRAN

Lampiran 1. Hasil Analisis Sidik Ragam Berat Tetas

Tests of Between-Subjects Effects

Dependent Variable:BTts

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	54.441 ^a	4	13.610	1.498	.207
Intercept	100625.429	1	100625.429	1.108E4	.000
IOF	54.441	4	13.610	1.498	.207
Error	1053.758	116	9.084		
Total	109788.111	121			
Corrected Total	1108.200	120			

a. R Squared = .049 (Adjusted R Squared = .016)

Lampiran 2. Hasil Analisis Sidik Ragam Berat Badan 1-4 minggu

Tests of Between-Subjects Effects

Dependent Variable:BB4mg

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5170.690 ^a	9	574.521	3.418	.001
Intercept	3254776.810	1	3254776.810	1.936E4	.000
IOF	1658.340	4	414.585	2.466	.051
NN	1528.810	1	1528.810	9.094	.003
IOF * NN	1983.540	4	495.885	2.950	.024
Error	15129.500	90	168.106		
Total	3275077.000	100			
Corrected Total	20300.190	99			

a. R Squared = .255 (Adjusted R Squared = .180)

BB4mg

IOF	N	Subset	
		1	2
Duncan ^a	P1	20	1.7705E2
	P2	20	1.7725E2
	P0	20	1.7725E2
	P3	20	1.8370E2
	P4	20	1.8680E2
	Sig.		.143 .452

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 168.106.

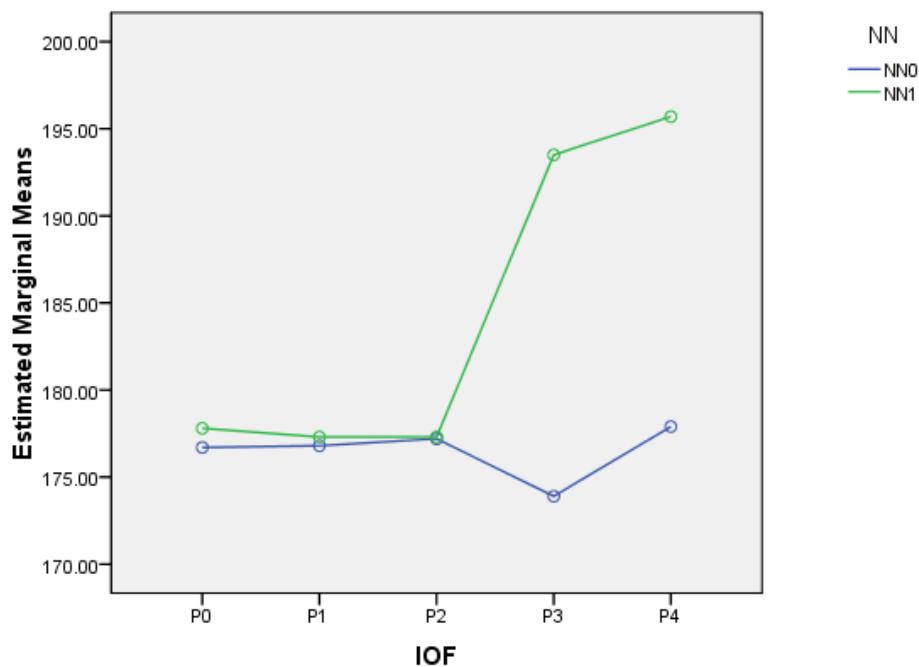
a. Uses Harmonic Mean Sample Size = 20.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.814
DMRT		11.520

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	176.5198	188.0399	a
NN1	184.3580	195.8781	b

Estimated Marginal Means of BB4mg



Lampiran 3. Hasil Analisis Sidik Ragam Berat Badan 1-8 minggu

Tests of Between-Subjects Effects

Dependent Variable:BB8mg

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	87324.766 ^a	9	9702.752	23.224	.000
Intercept	2.268E7	1	2.268E7	5.430E4	.000
IOF	76242.017	4	19060.504	45.623	.000
NN	7465.824	1	7465.824	17.870	.000
IOF * NN	3616.925	4	904.231	2.164	.079
Error	37600.770	90	417.786		
Total	2.281E7	100			
Corrected Total	124925.537	99			

a. R Squared = .699 (Adjusted R Squared = .669)

BB8mg

IOF	N	Subset			
		1	2	3	4
Duncan ^a	P0	20	4.4640E2		
	P1	20	4.5423E2	4.5423E2	
	P2	20		4.6545E2	
	P3	20			4.9450E2
	P4	20			5.2082E2
	Sig.		.229	.086	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 417.786.

a. Uses Harmonic Mean Sample Size = 20.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.814
DMRT		18.189

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	467.6420	485.8306	a
NN1	484.9226	503.1111	b

Lampiran 4. Hasil Analisis Sidik Ragam Konsumsi Pakan 1-4 minggu

Tests of Between-Subjects Effects

Dependent Variable:KP4mg

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1.216 ^a	9	.135	1.042	.413
Intercept	30037.743	1	30037.743	2.317E5	.000
IOF	1.068	4	.267	2.060	.093
NN	.051	1	.051	.394	.532
IOF * NN	.097	4	.024	.186	.945
Error	11.666	90	.130		
Total	30050.624	100			
Corrected Total	12.882	99			

a. R Squared = .094 (Adjusted R Squared = .004)

Lampiran 5. Hasil Analisis Sidik Ragam Konsumsi Pakan 1-8 minggu

Tests of Between-Subjects Effects

Dependent Variable:KP8mg

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	31.248 ^a	9	3.472	.729	.681
Intercept	309057.053	1	309057.053	6.490E4	.000
IOF	22.746	4	5.687	1.194	.319
NN	4.722	1	4.722	.992	.322
IOF * NN	3.780	4	.945	.198	.939
Error	428.587	90	4.762		
Total	309516.887	100			
Corrected Total	459.834	99			

a. R Squared = .068 (Adjusted R Squared = -.025)

Lampiran 6. Hasil Analisis Sidik Ragam Konsumsi Minum 1-4 minggu

Tests of Between-Subjects Effects

Dependent Variable:KM4mg

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	696.617 ^a	9	77.402	8.298	.000
Intercept	88014.276	1	88014.276	9.435E3	.000
IOF	139.658	4	34.915	3.743	.007
NN	435.390	1	435.390	46.675	.000
IOF * NN	121.569	4	30.392	3.258	.015
Error	839.522	90	9.328		
Total	89550.415	100			
Corrected Total	1536.139	99			

a. R Squared = .453 (Adjusted R Squared = .399)

KM4mg

IOF	N	Subset	
		1	2
Duncan ^a	P0	20	27.3855
	P1	20	29.7755
	P2	20	30.0665
	P3	20	30.4280
	P4	20	30.6805
	Sig.		.401
		1.000	

Means for groups in homogeneous subsets are displayed.

Based on observed means.

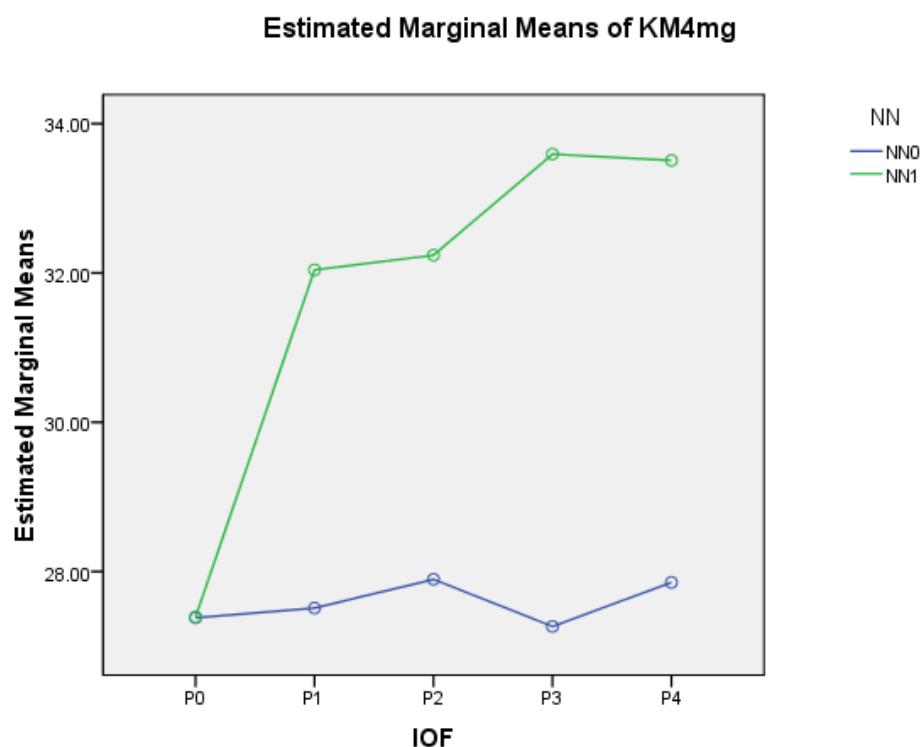
The error term is Mean Square(Error) = 9.328.

a. Uses Harmonic Mean Sample Size = 20.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.814
DMRT		2.718

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	27.5806	30.2983	a
NN1	31.7537	34.4715	b



Lampiran 7. Hasil Analisis Sidik Ragam Konsumsi Minum 1-8 minggu

Tests of Between-Subjects Effects

Dependent Variable:KM8mg

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	7089.364 ^a	9	787.707	5.460	.000
Intercept	801635.506	1	801635.506	5.557E3	.000
IOF	2687.760	4	671.940	4.658	.002
NN	3759.529	1	3759.529	26.060	.000
IOF * NN	642.075	4	160.519	1.113	.356
Error	12983.802	90	144.264		
Total	821708.673	100			
Corrected Total	20073.166	99			

a. R Squared = .353 (Adjusted R Squared = .288)

KM8mg

IOF	N	Subset	
		1	2
Duncan ^a	P1	20	84.9795
	P0	20	85.2200
	P2	20	85.7380
	P3	20	95.4065
	P4	20	96.3265
	Sig.		.853 .809

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 144.264.

a. Uses Harmonic Mean Sample Size = 20.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.814
DMRT		10.688

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	83.4026	94.0908	a
NN1	95.6656	106.3538	b

Lampiran 8. Hasil Analisis Sidik Ragam Konversi Pakan 1-4 minggu

Tests of Between-Subjects Effects

Dependent Variable:FCR1sp4mg

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1.265 ^a	9	.141	1.708	.099
Intercept	1074.594	1	1074.594	1.306E4	.000
IOF	.543	4	.136	1.649	.169
NN	.271	1	.271	3.298	.073
IOF * NN	.451	4	.113	1.369	.251
Error	7.407	90	.082		
Total	1083.265	100			
Corrected Total	8.672	99			

a. R Squared = .146 (Adjusted R Squared = .060)

Lampiran 9. Hasil Analisis Sidik Ragam Konversi Pakan 1-8 minggu

Tests of Between-Subjects Effects

Dependent Variable:FCR1sp8mg

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	16.811 ^a	9	1.868	13.265	.000
Intercept	4982.242	1	4982.242	3.538E4	.000
IOF	16.715	4	4.179	29.678	.000
NN	.036	1	.036	.259	.612
IOF * NN	.059	4	.015	.104	.981
Error	12.673	90	.141		
Total	5011.726	100			
Corrected Total	29.483	99			

a. R Squared = .570 (Adjusted R Squared = .527)

FCR1sp8mg

IOF	N	Subset		
		1	2	3
Duncan ^a	P4	20	6.3325	
	P3	20		6.8830
	P1	20		7.2955
	P2	20		7.3690
	P0	20		7.4125
	Sig.		1.000	1.000
				.358

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = .141.

a. Uses Harmonic Mean Sample Size = 20.000.

Lampiran 10. Hasil Analisis Sidik Rasio Panjang/Berat Usus (Duodenum)

Tests of Between-Subjects Effects

Dependent Variable:Duodenum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	18.028 ^a	9	2.003	21.421	.000
Intercept	926.406	1	926.406	9.907E3	.000
IOF	14.129	4	3.532	37.773	.000
NN	2.560	1	2.560	27.380	.000
IOF * NN	1.339	4	.335	3.581	.017
Error	2.805	30	.094		
Total	947.240	40			
Corrected Total	20.834	39			

a. R Squared = .865 (Adjusted R Squared = .825)

Duodenum

IOF	N	Subset	
		1	2
Duncan ^a	Kontrol -	8	4.2200
	kontrol + (NaCl)	8	4.3238
	Arg 0,5% + NaCl	8	4.4512
	Arg 1% + NaCl	8	5.4825
	Arg 2% + NaCl	8	5.5850
	Sig.		
		.163	.508

Means for groups in homogeneous subsets are displayed.

Based on observed means.

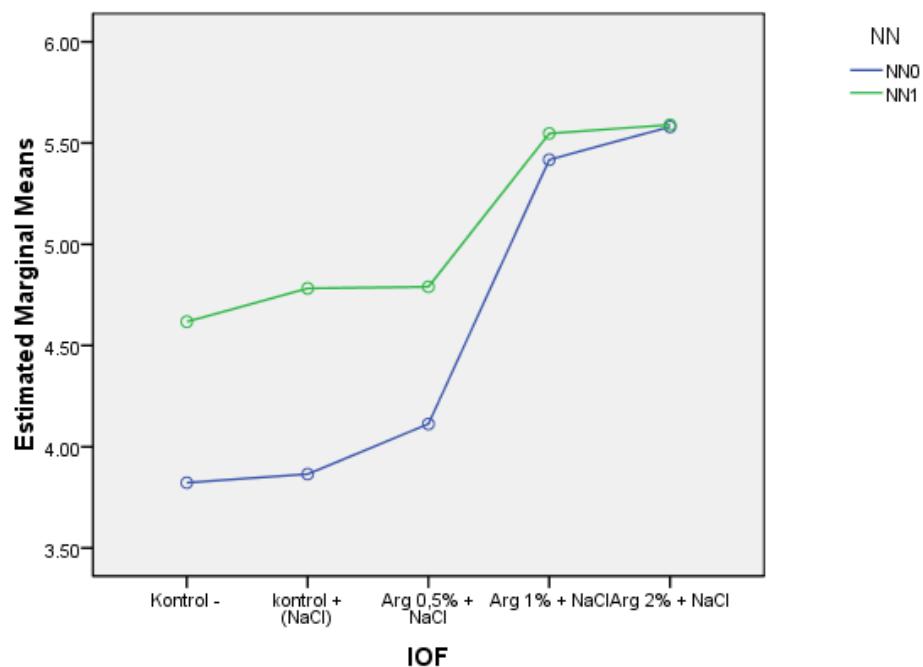
The error term is Mean Square(Error) = .094.

a. Uses Harmonic Mean Sample Size = 8.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.888
DMRT		3.979

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	4.5595	8.5384	a
NN1	5.0653	9.0442	b

Estimated Marginal Means of Duodenum

Lampiran 11. Hasil Analisis Sidik Rasio Panjang/Berat Usus (Jejenum)

Tests of Between-Subjects Effects

Dependent Variable:Jejenum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	14.470 ^a	9	1.608	38.685	.000
Intercept	1553.762	1	1553.762	3.738E4	.000
IOF	9.851	4	2.463	59.258	.000
NN	3.411	1	3.411	82.060	.000
IOF * NN	1.208	4	.302	7.269	.000
Error	1.247	30	.042		
Total	1569.479	40			
Corrected Total	15.717	39			

a. R Squared = .921 (Adjusted R Squared = .897)

Jejenum

IOF	N	Subset		
		1	2	3
Duncan ^a	Kontrol -	8	5.8012	
	Arg 0,5% + NaCl	8	5.8625	
	kontrol + (NaCl)	8	5.8900	
	Arg 1% + NaCl	8		6.5425
	Arg 2% + NaCl	8		7.0662
	Sig.		.419	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

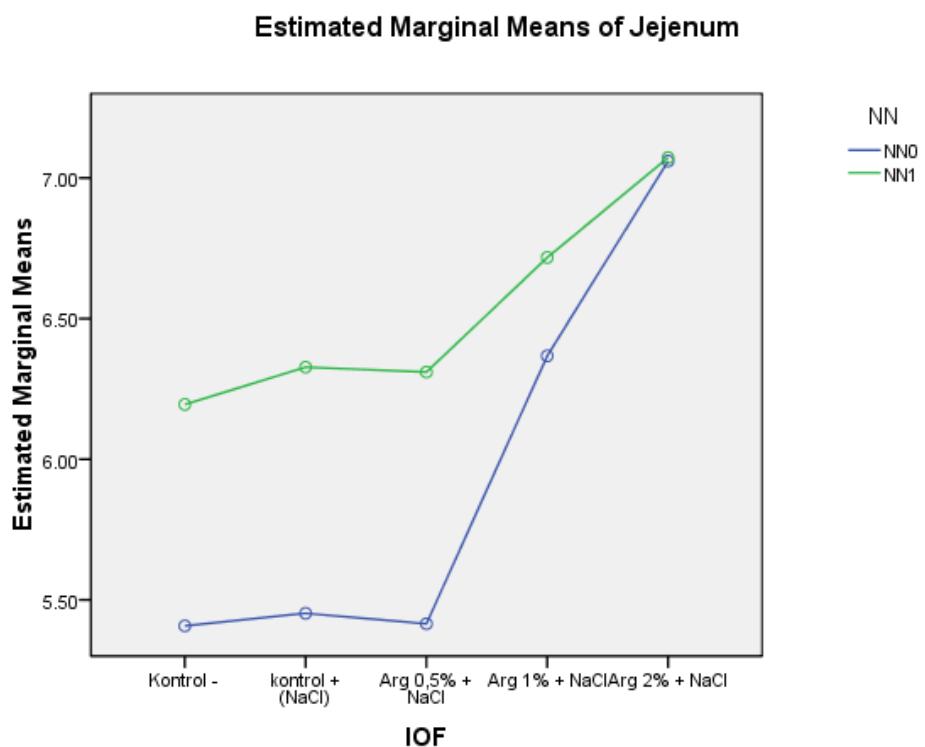
The error term is Mean Square(Error) = .042.

a. Uses Harmonic Mean Sample Size = 8.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.888
DMRT		5.118

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	5.9405	11.0585	a
NN1	6.5245	11.6425	b



Lampiran 12. Hasil Analisis Sidik Rasio Panjang/Berat Usus (Ileum)

Tests of Between-Subjects Effects

Dependent Variable:Ileum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	13.542 ^a	9	1.505	22.008	.000
Intercept	1897.231	1	1897.231	2.775E4	.000
IOF	.131	4	.033	.478	.752
NN	13.410	1	13.410	196.138	.000
IOF * NN	.002	4	.000	.006	1.000
Error	2.051	30	.068		
Total	1912.824	40			
Corrected Total	15.593	39			

a. R Squared = .868 (Adjusted R Squared = .829)

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.888
DMRT		3.262

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	5.9405	9.2029	a
NN1	6.5245	9.7869	b

Lampiran 13. Hasil Analisis Sidik Rasio Panjang/Berat Usus (Sekum)

Tests of Between-Subjects Effects

Dependent Variable:Sekum

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9.308 ^a	9	1.034	16.494	.000
Intercept	2619.704	1	2619.704	4.178E4	.000
IOF	5.480	4	1.370	21.849	.000
NN	3.739	1	3.739	59.633	.000
IOF * NN	.089	4	.022	.353	.840
Error	1.881	30	.063		
Total	2630.893	40			
Corrected Total	11.189	39			

a. R Squared = .832 (Adjusted R Squared = .781)

Sekum

IOF	N	Subset	
		1	2
Duncan ^a	Kontrol -	8	7.6950
	kontrol + (NaCl)	8	7.7712
	Arg 0,5% + NaCl	8	7.9238
	Arg 1% + NaCl	8	8.5225
	Arg 2% + NaCl	8	8.5512
	Sig.		.093 .820

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = .063.

a. Uses Harmonic Mean Sample Size = 8.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.888
DMRT		3.826

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	7.7867	11.6122	a
NN1	8.3981	12.2236	b

Lampiran 14. Hasil Analisis Sidik Rasio Panjang/Berat Usus (Usus Besar)

Tests of Between-Subjects Effects

Dependent Variable:UsusBesar

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	6.930 ^a	9	.770	13.950	.000
Intercept	1249.812	1	1249.812	2.264E4	.000
IOF	2.467	4	.617	11.173	.000
NN	2.762	1	2.762	50.031	.000
IOF * NN	1.702	4	.425	7.707	.000
Error	1.656	30	.055		
Total	1258.398	40			
Corrected Total	8.586	39			

a. R Squared = .807 (Adjusted R Squared = .749)

UsusBesar

IOF	N	Subset	
		1	2
Duncan ^a	Kontrol -	8	5.2700
	kontrol + (NaCl)	8	5.3062
	Arg 0,5% + NaCl	8	5.7538
	Arg 1% + NaCl	8	5.7750
	Arg 2% + NaCl	8	5.8438
	Sig.	.760	.477

Means for groups in homogeneous subsets are displayed.

Based on observed means.

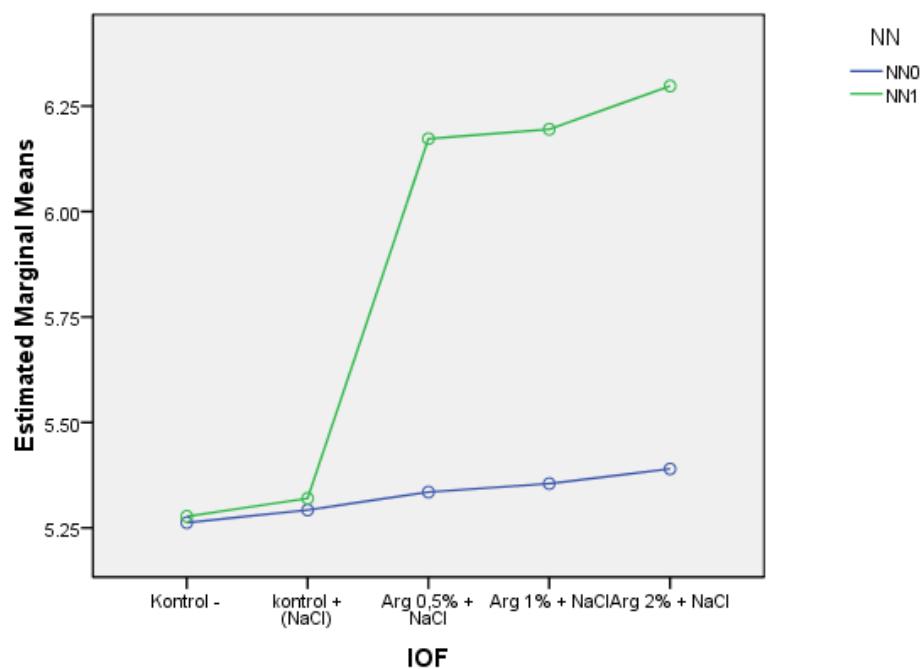
The error term is Mean Square(Error) = .055.

a. Uses Harmonic Mean Sample Size = 8.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.888
DMRT		2.646

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	5.3272	7.9737	a
NN1	5.8525	8.4989	b

Estimated Marginal Means of Usus Besar

Lampiran 15. Hasil Analisis Sidik Rasio Histo Morfometrik Ileum (Tinggi Vili)

Tests of Between-Subjects Effects

Dependent Variable:TinggiVili

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	774499.152 ^a	9	86055.461	64.704	.000
Intercept	2.776E7	1	2.776E7	2.087E4	.000
IOF	749222.142	4	187305.536	140.833	.000
NN	14396.902	1	14396.902	10.825	.001
IOF * NN	10880.108	4	2720.027	2.045	.091
Error	199497.082	150	1329.981		
Total	2.874E7	160			
Corrected Total	973996.235	159			

a. R Squared = .795 (Adjusted R Squared = .783)

TinggiVili

IOF	N	Subset	
		1	2
Duncan ^a	Kontrol -	32	3.5297E2
	Kontrol + (NaCl)	32	3.6062E2
	Arg 0,5% + NaCl	32	3.6948E2
	Arg 1% + NaCl	32	4.9087E2
	Arg 2% + NaCl	32	5.0877E2
	Sig.		.089 .051

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 1329.981.

a. Uses Harmonic Mean Sample Size = 32.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.800
DMRT		32.291

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	407.0550	439.3460	a
NN1	426.0267	458.3177	b

Lampiran 16. Hasil Analisis Sidik Rasio Histo Morfometrik Ileum (Kedalaman Kripta)

Tests of Between-Subjects Effects

Dependent Variable: KedKripta

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	49895.839 ^a	9	5543.982	23.287	.000
Intercept	3786467.000	1	3786467.000	1.590E4	.000
IOF	47357.584	4	11839.396	49.731	.000
NN	1435.144	1	1435.144	6.028	.015
IOF * NN	1103.111	4	275.778	1.158	.332
Error	35710.272	150	238.068		
Total	3872073.111	160			
Corrected Total	85606.111	159			

a. R Squared = .583 (Adjusted R Squared = .558)

KedKripta

IOF	N	Subset		
		1	2	3
Duncan ^a	Arg 0,5% + NaCl	32	1.3784E2	
	Kontrol -	32	1.3952E2	
	Kontrol + (NaCl)	32	1.4341E2	
	Arg 1% + NaCl	32		1.6783E2
	Arg 2% + NaCl	32		1.8057E2
	Sig.		.176	1.000
				1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = 238.068.

a. Uses Harmonic Mean Sample Size = 32.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.800
DMRT		13.662

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	150.8408	164.5026	a
NN1	156.8306	170.4925	b

Lampiran 17. Hasil Analisis Sidik Rasio Histo Morfometrik Ileum (Luas Permukaan)

Tests of Between-Subjects Effects

Dependent Variable:VSA

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	.012 ^a	9	.001	179.347	.000
Intercept	.252	1	.252	3.281E4	.000
IOF	.011	4	.003	344.004	.000
NN	.001	1	.001	131.657	.000
IOF * NN	.001	4	.000	26.613	.000
Error	.001	150	7.672E-6		
Total	.265	160			
Corrected Total	.014	159			

a. R Squared = .915 (Adjusted R Squared = .910)

VSA

IOF	N	Subset			
		1	2	3	4
Duncan ^a	Kontrol -	32	.0320		
	Kontrol + (NaCl)	32	.0322		
	Arg 0,5% + NaCl	32		.0351	
	Arg 1% + NaCl	32			.0487
	Arg 2% + NaCl	32			.0503
	Sig.		.685	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

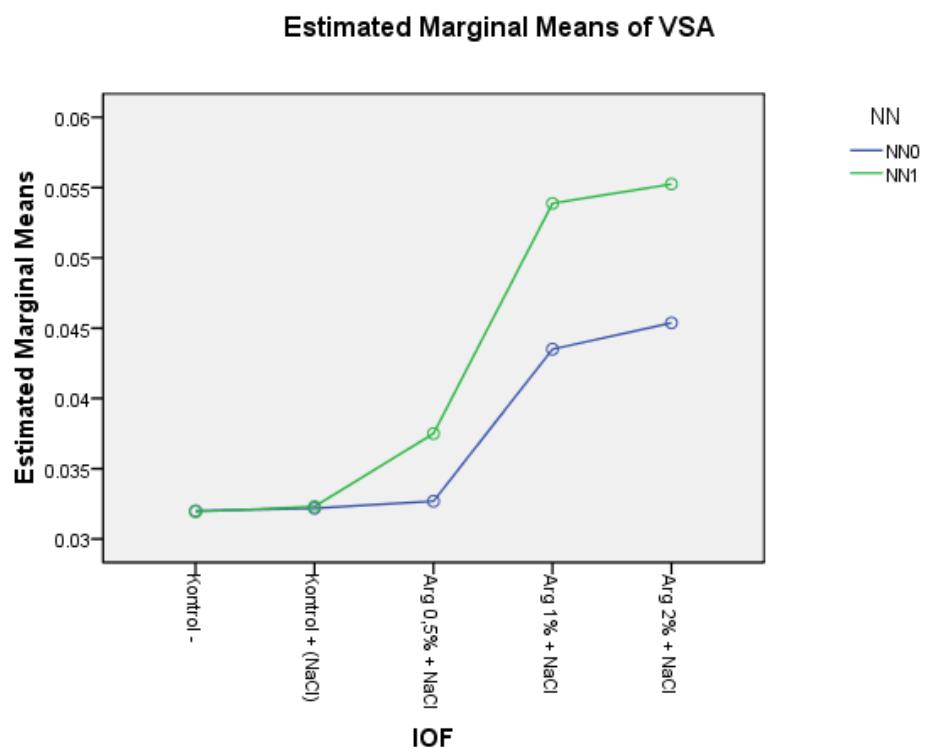
The error term is Mean Square(Error) = 7.67E-006.

a. Uses Harmonic Mean Sample Size = 32.000.

Uji Manual Duncan NN

Tabel Duncan 0,05%		2
		2.800
DMRT		0.002

Perlakuan	Rataan	Rataan+DMRT	Simbol
NN0	0.0372	0.0396	a
NN1	0.0422	0.0446	b



Lampiran 18. Hasil Analisis Sidik Rasio Histo Morfometrik Ileum (Rasio TV/KK)

Tests of Between-Subjects Effects

Dependent Variable:RatioVHCD

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	4.855 ^a	9	.539	16.289	.000
Intercept	1191.410	1	1191.410	3.597E4	.000
IOF	4.818	4	1.205	36.370	.000
NN	.003	1	.003	.076	.783
IOF * NN	.035	4	.009	.261	.903
Error	4.968	150	.033		
Total	1201.234	160			
Corrected Total	9.824	159			

a. R Squared = .494 (Adjusted R Squared = .464)

RatioVHCD

IOF	N	Subset		
		1	2	3
Duncan ^a	Kontrol + (NaCl)	32	2.5253	
	Kontrol -	32	2.5439	
	Arg 0,5% + NaCl	32		2.7300
	Arg 2% + NaCl	32		2.9197
	Arg 1% + NaCl	32		2.9251
	Sig.		.684	1.000
				.904

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = .033.

a. Uses Harmonic Mean Sample Size = 32.000.

Lampiran 19. Dokumentasi Penelitian

Proses pemisahan organ pencernaan



Organ pencernaan mulai dari esofagus hingga usus besar



Proses pembersihan organ pencernaan



Proses pemisahan segmen usus halus



Memasukkan segmen usus halus (ileum) ke dalam wadah berisi larutan formalin

RIWAYAT HIDUP



Eka Azharyanti lahir pada tanggal 23 Desember 1997 di Watampone, Kabupaten Bone, Provinsi Sulawesi Selatan, yang merupakan anak tunggal dari pasangan Bapak Baharuddin, S.Pd., M.Pd. dan Ibu Asmiati AS. Pendidikan formal yang telah ditempuh yakni TK Kartika Wirabuana Lappariaja Tahun 2003-2004, SD Negeri 144 Liliriawang Kec. Bengo, Kab. Bone hingga pertengahan tahun 2007, dan kemudian pindah ke SD Negeri Panciro hingga selesai pada Tahun 2010, SMP Negeri 4 Sungguminasa Tahun 2010-2013, SMA Negeri 1 Galesong Utara (sekarang SMA Negeri 4 Takalar) Tahun 2013-2016, dan mengambil pendidikan jenjang Strata-1 (S-1) di Fakultas Peternakan, Universitas Hasanuddin, Makassar Tahun 2016-2020. Sekarang melanjutkan pendidikan jenjang Strata-2 (S-2) di Universitas Hasanuddin, Makassar, Program Studi Ilmu dan Teknologi Peternakan.