

DAFTAR PUSTAKA

- Abdullah., G. D., E. Suprijatna, dan Isroli. 2018. Pengaruh frekuensi pemberian pakan dan periode pemberian pakan terhadap hematologis ayam buras super umur 3 – 12 minggu. *Jurnal Sain Peternakan Indonesia*. 13: 1689–1699.
- Adibmoadi, M., B. Navidshad, J. Seifdavati, dan M. Royan. 2006. Effect of dietary garlic meal on histological structure of small intestine in broiler chickens. *Journal of Poultry Science*. 43: 378–383.
- Ahsan, U., E. Kuter, I. Raza, B. H. Köksal, Cengiz, M. Yıldız, P. K. Kızanlık, M. Kaya, O. Tatlı, dan Sevim. 2018. Dietary supplementation of different levels of phytogetic feed additive in broiler diets: The dynamics of growth performance, caecal microbiota, and intestinal morphometry. *Brazilian Journal of Poultry Science*. 20: 737–746.
- Akbarian, A., A. Golian, A. Gilani, H. Kermanshahi, S. Zhaleh, A. Akhavan, S. De Smet, dan J. Michiels. 2013. Effect of feeding citrus peel extracts on growth performance, serum components, and intestinal morphology of broilers exposed to high ambient temperature during the finisher phase. *Livestock Science*. 157: 490–497.
- Al-Noori, M. A., A. B. Hossain, A. H. A. AL-Maahidy, dan S. T. J. A. Rawi. 2011. The effect of dietary curcuma longa powder (turmeric) supplementation on some blood parameters and carcass traits of broiler chickens. *Al-Anbar Journal Veterinary Science*. 4: 69–74.
- Al-Shammari, K. I. A., J. Batkowska, dan M. M. Gryzińska. 2017. Effect of various concentrations of an anise seed powder (*Pimpinella anisum* L) supplement on selected hematological and biochemical parameters of broiler chickens. *Revista Brasileira de Ciencia Avicola*. 19: 41–46.
- Alfian, Dasrul, dan Azhar. 2017. Jumlah eritrosit, kadar hemoglobin dan nilai hematokrit pada ayam bangkok, ayam kampung dan ayam peranakan. *Jurnal Ilmiah Mahasiswa Veteriner*. 01: 533–539.
- Amad, A. A., K. R. Wendler, dan J. Zentek. 2013. Effects of a phytogetic feed additive on growth performance, selected blood criteria and jejunal morphology in broiler chickens. *Emirates Journal of Food and Agriculture*. 25: 549–554.
- Anonim. 2007. *Caesalpinia sappan* Available at <http://ecocrop.fao.org/ecocrop/srv/en/cropView?id=4006> Accession date 30 Agustus 2018.
- Asfar, S., S. Abdeen, H. Dashti, M. Khoursheed, H. Al-Sayer, T. Mathew, dan A. Al-Bader. 2003. Effect of green tea in the prevention and reversal of fasting-induced intestinal mucosal damage. *Nutrition*. 19: 536–540.

- Astuti, F. K., W. Busono, dan O. Sjojfan. 2015. Pengaruh penambahan probiotik cair dalam pakan terhadap penampilan produksi pada ayam pedaging. *Indonesian Journal of Environment and Sustainable Development*. 6: 99–104.
- Astuti, M. 1981. Rancangan percobaan dan analisis statistik Fakultas Peternakan. Universitas Gadjah Mada, Yogyakarta.
- Attia, Y. A., dan M. A. Al-Harhi. 2015. Nigella seed oil as an alternative to antibiotic growth promoters for broiler chickens. *European Poultry Science*. 79: 1–13.
- Awad, W., K. Ghareeb, dan J. Böhm. 2008. Intestinal structure and function of broiler chickens on diets supplemented with a synbiotic containing *Enterococcus faecium* and oligosaccharides. *International Journal of Molecular Sciences*. 9: 2205–2216.
- Ayu, I. D. A., P. Apsari, dan I. M. S. Arta. 2010. Gambaran darah merah ayam buras yang terinfeksi leucocytozoon. *Jurnal Veteriner*. 11: 114–118.
- Azeez, O. I., F. O. Olayemi, dan J. R. Olanweraju. 2011. Age and sex influences on the haematology and erythrocyte osmotic fragility of the nigerian turkey. *Research Journal of Veterinary Science*. 4: 43–49.
- Bah, C. S. F., A. E. D. A. Bekhit, A. Carne, dan M. A. Mcconnell. 2013. Slaughterhouse blood: an emerging source of bioactive compounds. *Comprehensive Reviews in Food Science and Food Safety*. 12: 314–331.
- Benjamin, M. M. 1978. *Outline of veterinary clinical pathology* 3rd edition. Iowa State University Press.
- Bikrisima, S. H. L., L. D. Mahfudz, dan N. Suthama. 2013. Ketahanan tubuh ayam broiler pada kondisi tropis yang diberi jambu biji merah (*psidium guajava*) sebagai sumber antioksidan immune response of broiler chickens in tropical condition given dietary red guava (*psidium guajava*). *Agromedia*. 31: 46–57.
- Blum, S., dan E. J. Schiffrin. 2003. Intestinal microflora and homeostasis of the mucosal immune response: implications for probiotic bacteria?. *Current Issues in Intestinal Microbiology*. 4: 53–60.
- Bobiniene, R., M. Miškinienė, D. Gudavičiute, dan Z. Mackiewicz. 2014. Health indicators of the poultry drinking water treated with electromagnetic vibrations. *Veterinarija ir Zootechnika*. 67: 10–15.
- Borras, A., J. Cabrera, dan J. C. Senar. 2010. Hematocrit variation in response to altitude changes in wild birds: a repeated-measures design. *The Condor*. 112: 622–626.
- Brilianto, I., T. A. Sarjana, dan R. Murwani. 2019. Pengaruh zonasi dalam kandang closed house terhadap profil darah merah ayam broiler. *Jurnal*

- Peternakan Indonesia (Indonesian Journal of Animal Science). 21: 59–63.
- Brundige, D. R., E. A. Maga, K. C. Klasing, dan J. D. Murray. 2008. Lysozyme transgenic goats' milk influences gastrointestinal morphology in young pigs. *The Journal of Nutrition*. 138: 921–926.
- Burlikowska, K., A. Piotrowska, dan R. Szymeczko. 2010. Effect of dietary fat type on performance, biochemical indices and fatty acids profile in the blood serum of broiler chickens. *Journal of Animal and Feed Sciences*. 19: 440–451.
- Buzala, M., A. Słomka, B. Janicki, M. B. Ponczek, dan E. Żekanowska. 2017. Review: the mechanism of blood coagulation, its disorders and measurement in poultry. *Livestock Science*. 195: 1–8.
- Campbell, T. W., dan C. K. Ellis. 2007. *Avian and exotic animal hematology and cytologi*. Third Edit. Blackwell Publishing, Australia.
- Cejas, E., S. Pinto, F. Prosdócimo, M. Batallé, H. Barrios, G. Tellez, dan M. de Franceschi. 2011. Evaluation of quebracho red wood (*schinopsis lorentzii*) polyphenols vegetable extract for the reduction of coccidiosis in broiler chicks. *International Journal of Poultry Science*. 10: 344–349.
- Cheng, Y. H., J. P. Goff, J. L. Sell, M. E. Dallorso, S. Gil, S. E. Pawlak, dan R. L. Horst. 2004. Utilizing *solanum glaucophyllum* alone or with phytase to improve phosphorus utilization in broilers. *Poultry Science*. 83: 406–413.
- Chiang, G., W. Q. Lu, X. S. Piao, J. K. Hu, L. M. Gong, dan P. A. Thacker. 2010. Effects of feeding solid-state fermented rapeseed meal on performance , nutrient digestibility , intestinal ecology and intestinal morphology of broiler chickens. *Asian Australasian Journal of Animal Sciences*. 23: 263–271.
- Corzo, A., M. T. Kidd, G. T. Pharr, dan S. C. Burgess. 2004. Initial mapping of the chicken blood plasma proteome. *International Journal of Poultry Science*. 3: 157–162.
- Davis, A. K., K. C. Cook, dan S. Altizer. 2004. Leukocyte profiles in wild house finches with and without mycoplasmal conjunctivitis, a recently emerged bacterial disease. *EcoHealth Journal Consortium*. 1: 362–373.
- Davis, A. K., D. L. Maney, dan J. C. Maerz. 2008. The use of leukocyte profiles to measure stress in vertebrates: A review for ecologists. *Functional Ecology*. 22: 760–772.
- Deko, M. K., I. H. Djunaidi, dan M. H. Natsir. 2018. Efek penggunaan tepung umbi dan kulit bawang putih (*Allium sativum* Linn) sebagai feed additive terhadap penampilan produksi ayam petelur. *Jurnal Ilmu-Ilmu Peternakan*. 28: 192–202.

- Demir, E., Ş. Sarica, M. A. Özcan, dan M. Suiçmez. 2005. The use of natural feed additives as alternative to an antibiotic growth promoter in broiler diets. *Archiv fur Geflugelkunde*. 69: 110–116.
- Dono, N. D. 2012. Nutritional strategies to improve enteric health and growth performance of poultry in the post antibiotic era. Ph.D. Thesis. University of Glasgow, Scotland.
- Dono, N. D. 2013. Turmeric (*Curcuma longa* Linn) supplementation as an alternative to antibiotics in poultry diets. *Wartazoa*. 23: 41–49.
- Drake, A. D., S. E. Heuer, T. G. Kimball, T. O. Peters, dan H. D. Chapman. 2001. Peripheral blood leukocyte response and macrophage function during *Eimeria adenoides* infection in turkey poults. *The Student Journal of Dale Bumpers College of Agricultural, Food and Life Sciences*. 2: 13–20.
- Dryden, G. W., M. Song, dan C. McClain. 2008. Polyphenols and gastrointestinal diseases. *National Institutes of Health Public Acces*. 23: 1–7.
- Duka, M. Y., B. Hadisutanto, dan Helda. 2015. Status hematologis broiler umur 6 minggu yang diberi ransum komersial dan probio fm plus. *Jurnal Kajian Veteriner*. 3: 165–174.
- Ebrahimzadeh, S. K., B. Navidshad, P. Farhoomand, dan F. M. Aghjehgheshlagh. 2018. Effects of exogenous tannase enzyme on growth performance, antioxidant status, immune response, gut morphology and intestinal microflora of chicks fed grape pomace. *South African Journal of Animal Sciences*. 48: 324–336.
- El-Kelawy, M. I., A. S. ELnaggar, dan E. Abdelkhalek. 2018. Productive performance, blood parameters and immune response of broiler chickens supplemented with grape seed and medicago sativa as natural sources of polyphenols. *Egyptian Poultry Science Journal*. 38: 269–288.
- Elinav, E., J. Henao-Mejia, dan R. A. Flavell. 2013. Integrative inflammasome activity in the regulation of intestinal mucosal immune responses. *Mucosal Immunology*. 6: 4–13.
- Etikaningrum, dan Iwantoro S. 2017. Kajian residu antibiotika pada produk ternak unggas di indonesia. *Jurnal Ilmu Produksi dan Teknologi Hasil Peternakan*. 05: 29–33.
- Etim, N. A. N., U. Akpabio, R. O. Okpongete, dan E. E. A. Offiong. 2014. Do diets affect haematological parameters of poultry?. *British Journal of Applied Science & Technology*. 4: 1952–1965.
- Ezzat, W., M. Shoeib, S. Mousa, A. Bealish, dan Z. Ibrahiem. 2011. Impact of betaine, vitamin c and folic acid supplementations to the diet on productive and reproductive performance of matrouh poultry strain

- under Egyptian summer condition. *Egypt Poultry Science Journal*. 31: 521–37.
- Fadliah, M. 2014. Kualitas organoleptik dan pertumbuhan bakteri pada susu pasteurisasi dengan penambahan kayu secang (*Caesalpinia sappan* L) selama penyimpanan. Universitas Hasanuddin.
- Fagarasan, S., dan T. Honjo. 2003. Intestinal iga synthesis: regulation of front-line body defences. *Nature Reviews Immunology*. 3: 63–72.
- Fanani, A. F., N. Fajrih, dan W. L. Salido. 2019. Penggunaan minyak ikan dalam ransum ayam kampung terhadap profil lemak darah. *Jurnal Ilmu dan Teknologi Peternakan Tropis*. 1: 14–19.
- Farahat, M., F. Abdallah, T. Abdel-Hamid, dan A. Hernandez-Santana. 2016. Effect of supplementing broiler chicken diets with green tea extract on the growth performance, lipid profile, antioxidant status and immune response. *British Poultry Science*. 57: 714–722.
- Fulton, R. M., B. N. Nersessian, dan W. M. Reed. 2002. Prevention of salmonella enteritidis infection in commercial ducklings by oral chicken egg-derived antibody alone or in combination with probiotics. *Poultry Science*. 81: 34–40.
- Gadde, U., H. D. Chapman, T. R. Rathinam, dan G. F. Erf. 2009. Acquisition of immunity to the protozoan parasite *eimeria adenoeides* in turkey poults and the peripheral blood leukocyte response to a primary infection. *Poultry Science*. 88: 2346–2352.
- Gao, J., H. J. Zhang, S. H. Yu, S. G. Wu, I. Yoon, J. Quigley, Y. P. Gao, dan G. H. Qi. 2008. Effects of yeast culture in broiler diets on performance and immunomodulatory functions. *Poultry Science*. 87: 1377–1384.
- Gholami-Ahangaran, M., dan N. Zia-Jahromi. 2014. Effect of nanosilver on blood parameters in chickens having aflatoxicosis. *Toxicology and Industrial Health*. 30: 192–196.
- Gilani, S. M. H., S. Zehra, Faiz-UI-hassan, S. Galani, dan A. Ashraf. 2018. Effect of natural growth promoters on immunity, and biochemical and haematological parameters of broiler chickens. *Tropical Journal of Pharmaceutical Research*. 17: 627–633.
- Girish, C. K., dan T. K. Smith. 2008. Effects of feeding blends of grains naturally contaminated with *Fusarium* mycotoxins on small intestinal morphology of Turkeys. *Poultry Science*. 87: 1075–1082.
- Godstime, O., E. Felix, J. Augustina, dan E. Christopher. 2014. Mechanisms of antimicrobial actions of phytochemicals against enteric pathogens – a review. *Journal of Pharmaceutical, Chemical and Biological Sciences*. 2: 77–85.
- Greenberg, M., M. Dodds, dan M. Tian. 2008. Compounds show effectiveness against oral bacteria by a quantitative structure - activity

- relationship study. *Journal of Agricultural and Food Chemistry*. 56: 11151–11156.
- Griggs, J. P., dan J. P. Jacob. 2005. Alternatives to antibiotics for organic poultry production. *Poultry Science Association*. 14: 750–756.
- Grunwald, E. W., dan M. P. Richards. 2006. Mechanisms of heme protein-mediated lipid oxidation using hemoglobin and myoglobin variants in raw and heated washed muscle. *Journal of Agricultural and Food Chemistry*. 54: 8271–8280.
- Habibu, B., L. S. Yaqub, I. A. Ahmed, M. U. Kawu, H. U. Buhari, M. Tauheed, dan H. I. Isa. 2013. Erythrocyte osmotic fragility and haematologic parameters of three breeds of 9-week-old broiler chickens. *International Journal of Poultry Science*. 12: 277–279.
- Hashemi, S. R., I. Zulkifli, H. Davoodi, M. Hair Bejo, dan T. C. Loh. 2014. Intestinal histomorphology changes and serum biochemistry responses of broiler chickens fed herbal plant (*euphorbia hirta*) and mix of acidifier. *Iranian Journal of Applied Animal Science*. 4: 95–103.
- Ho, S. J., Y. L. Jung, dan J. L. Sang. 2007. In-vitro study on the hemorheological characteristics of chicken blood in microcirculation. *Korea Australia Rheology Journal*. 19: 89–95.
- Horn, N. L., S. S. Donkin, T. J. Applegate, dan O. Adeola. 2009. Intestinal mucin dynamics: response of broiler chicks and white pekin ducklings to dietary threonine. *Poultry Science*. 88: 1906–1914.
- Hughes, R. J. 2003. *Energy Metabolism of Chickens*. Thèse.
- Iriyanti, N., dan S. Suhermiyati. 2015. Pemanfaatan susu afkir sebagai probiotik dan aplikasinya dalam pakan terhadap profil hematologis dan lemak darah ayam broiler. *Prosiding Seminar Nasional Teknologi dan Agribisnis Peternakan (Seri III): Pengembangan Peternakan Berbasis Sumberdaya Lokal Untuk Menghadapi Masyarakat Ekonomi Asean (MEA)*. Fakultas Peternakan Universitas Jenderal Soedirman, Purwokerto, September 2015.: 230–236.
- Iriyanti, N., T. Yuwanta, Zuprizal, dan S. Keman. 2005. Pengaruh penggunaan asam lemak rantai panjang dalam pakan terhadap penampilan dan profil lemak darah serta gambaran ovarium ayam kampung betina. *Buletin Peternakan*. 29: 177–184.
- Isroli, E. Widiastuti, T. Yudiarti, dan S. Sugiharto. 2009. Observasi beberapa variabel hematologis ayam kedu pada pemeliharaan intensif. *Seminar Nasional Kebangkitan Peternakan*.: 548–557.
- Jagani, S., R. Chelikani, dan D. S. Kim. 2009. Effects of phenol and natural phenolic compounds on biofilm formation by *pseudomonas aeruginosa*. *Biofouling*. 25: 321–324.
- Julian, R. J. 2007. The response of the heart and pulmonary arteries to

- hypoxia, pressure, and volume A short review. *Poultry Science*. 86: 1006–1011.
- Jung, E. G., K. Il Han, H. J. Kwon, B. B. Patnaik, W. J. Kim, G. M. Hur, K. W. Nam, dan M. D. Han. 2015. Anti-inflammatory activity of sappanchalcone isolated from caesalpinia sappan I in a collagen-induced arthritis mouse model. *Archives of Pharmacal Research*. 38: 973–983.
- Kabir, A. 2013. Blood chemistry analyses of japanese quail (*coturnix coturnix japonica*). *Scholarly Journal of Agricultural Science*. 3: 132–136.
- Karangiya, V. K., H. H. Savsani, S. S. Patil, D. D. Garg, K. S. Murthy, N. K. Ribadiya, dan S. J. Vekariya. 2016. Effect of dietary supplementation of garlic, ginger and their combination on feed intake, growth performance and economics in commercial broilers. *Veterinary World*. 9: 245–250.
- Kavoi, B. M., D. W. Gakuya, P. N. Mbugua, dan S. G. Kiama. 2016. Effects of dietary moringa oleifera leaf meal supplementation on chicken intestinal structure and growth performance. *Journal of Morphological Sciences*. 33: 186–192.
- Kawalilak, L. T., A. M. Ulmer Franco, dan G. M. Fasenko. 2010. Impaired intestinal villi growth in broiler chicks with unhealed navels. *Poultry Science*. 89: 82–87.
- Keary, I. D., S. S. Diarra, B. Saleh, P. R. Bova, O. A. Ramat, dan D. Tochukwu. 2011. Growth, hematology and serology of broiler chickens fed different cultivars of sorghum as replacement for maize in the semi-arid zone of Nigeria. *International Journal of Poultry Science*. 10: 608–612.
- Khattak, F., A. Ronchi, P. Castelli, dan N. Sparks. 2014. Effects of natural blend of essential oil on growth performance, blood biochemistry, cecal morphology, and carcass quality of broiler chickens. *Poultry Science*. 93: 132–137.
- Kusnadi, E. 2007. Pengaruh penambahan pegagan (*centella asiatica*) dan vitamin c terhadap kandungan hemoglobin dan hematokrit darah ayam broiler yang mengalami cekaman panas. *Jurnal Ilmu Ternak*. 7: 140–144.
- Kusnadi, E. 2008. Pengaruh temperatur kandang terhadap konsumsi ransum dan komponen darah ayam broiler. *Journal of the Indonesian Tropical Animal Agriculture*. 33: 196–202.
- Lipiński, K., M. Mazur, Z. Antoszkiewicz, dan C. Purwin. 2017. Polyphenols in monogastric nutrition - a review. *Annals of Animal Science*. 17: 41–58.

- Liu, C., L. F. Zhang, M. L. Song, H. G. Bao, C. J. Zhao, dan N. Li. 2009. Highly efficient dissociation of oxygen from hemoglobin in tibetan chicken embryos compared with lowland chicken embryos incubated in hypoxia. *Poultry Science*. 88: 2689–2694.
- Loh, T. C., N. T. Thanh, H. L. Foo, M. Hair-Bejo, dan B. K. Azhar. 2010. Feeding of different levels of metabolite combinations produced by *Lactobacillus plantarum* on growth performance, fecal microflora, volatile fatty acids and villi height in broilers. *Animal Science Journal*. 81: 205–214.
- Lutfiana, K., T. Kurtini, dan M. Hartono. 2015. Pengaruh pemberian probiotik dari mikroba lokal terhadap gambaran darah ayam petelur. *Jurnal Ilmiah Peternakan Terpadu*. 3: 151–156.
- Markovic, R., M. Krstic, dan B. Petrujkic. 2009. Effect of different growth promoters on broiler performance and gut morphology Efecto de diferentes promotores de crecimiento en el desarrollo y morfología intestinal de pollos broiler. *Arch Med Vet*. 169: 163–169.
- Maulana, I., H. I. Wahyuni, dan T. Yudiarti. 2019. Pengaruh penambahan ekstrak tomat sebagai air minum terhadap profil darah putih ayam broiler yang diinfeksi bakteri e coli. *Seminar Nasional Dalam Rangka Dies Natalis UNS Ke 43 Tahun 2019*. 3: 34–41.
- Miles, R. D., G. D. Butcher, P. R. Henry, dan R. C. Littell. 2006. Effect of antibiotic growth promoters on broiler performance, intestinal growth parameters, and quantitative morphology. *Poultry Science*. 85: 476–485.
- Miroshnikov, S. A., E. V. Yausheva, E. A. Sizova, D. B. Kosyan, dan I. M. Donnik. 2017. Research of opportunities for using iron nanoparticles and amino acids in poultry nutrition. *International Journal of Geomate*. 13: 124–131.
- Moghaddam Nassiri, H., S. Salari, J. Arshami, A. Golian, dan M. Maleki. 2012. Evaluation of the nutritional value of sunflower meal and its effect on performance, digestive enzyme activity, organ weight, and histological alterations of the intestinal villi of broiler chickens. *Journal of Applied Poultry Research*. 21: 293–304.
- Moniello, G., F. Bovera, I. L. Solinas, G. Piccolo, W. Pinna, dan A. Nizza. 2005. Effect of age and blood collection site on the metabolic profile of ostriches. *South African Journal of Animal Sciences*. 35: 268–272.
- Montagne, L., J. R. Pluske, dan D. J. Hampson. 2003. A review of interactions between dietary fibre and the intestinal mucosa , and their consequences on digestive health in young non-ruminant animals. *Animal Feed Science and Technology*. 108: 95–117.
- Morera, D., dan S. A. Mackenzie. 2011. Is there a direct role for erythrocytes in the immune response?. *Veterinary Research*.: 42–89.

- Moura, M., C. Machado, L. Porfírio, dan R. Freire. 2004. Effects of ochratoxin a on broiler leukocytes. *Brazilian Journal of Poultry Science*. 6: 187–190.
- Mueller, M., D. Weinmann, S. Toegel, W. Holzer, F. M. Unger, dan H. Viernstein. 2016. Compounds from caesalpinia sappan with anti-inflammatory properties in macrophages and chondrocytes. *Food and Function*. 7: 1671–1679.
- Murray, R. K., D. A. Bender, K. M. Botham, P. J. Kennelly, V. W. Rodwell, dan P. A. Weil. 2002. *Biokimia harper*. Halaman (dr. R. Soeharsono, dr. F. Sandra, dan D. H. O. Ong, Ed.). 29 edisi. Penerbit Buku Kedokteran.
- Mushawwir, A., dan D. Latipudin. 2011. Beberapa parameter biokimia darah ayam ras petelur fase grower dan layer dalam lingkungan “upper zonathermoneutral”. *Indonesian Journal of Animal Science*. 13: 191–198.
- Mutschler, D. rer. nat. D. med. E. 1999. *Dinamika obat*. Halaman (Dr. Kosasih Padmawinata, Ed.). Kelima edisi. Penerbit: ITB.
- Nahavandinejad, M., A. Seidavi, L. Asadpour, dan R. Payan-Carreira. 2014. Blood biochemical parameters of broilers fed differently thermal processed soybean meal. *Revista MVZ Cordoba*. 19: 4301–4315.
- Nirmal, N. P., M. S. Rajput, R. G. S. V. Prasad, dan M. Ahmad. 2015. Brazilin from caesalpinia sappan heartwood and its pharmacological activities: a review. *Asian Pacific Journal of Tropical Medicine*. 8: 421–430.
- Oloyede, O. B., J. B. Minari, dan N. O. Muhammad. 2010. Evaluation of growth characteristics and haematological indices of broiler-chicks fed raw and processed bambara groundnut seed as a component of poultry feed. *International Journal of Poultry Science*. 9: 652–655.
- Oviedo-Rondón, E. O. 2019. Holistic view of intestinal health in poultry. *Animal Feed Science and Technology*. 250: 1–8.
- Owens, B., L. Tucker, M. A. Collins, dan K. J. McCracken. 2008. Effects of different feed additives alone or in combination on broiler performance, gut microflora and ileal histology. *British Poultry Science*. 49: 202–212.
- Oyewole, B. ., E. A. Rotimi, F. O. Antony, dan J. Adewumi. 2017. Performance and blood parameters of starter broilers fed diets containing cashew pulp meal. *Journal of Agricultural and Agritechnology*. 3: 87–92.
- Özkan, S., M. Çabuk, dan Y. Konca. 2004. Leukocyte responses to acute heat stress in turkey toms either fed restricted or ad libitum during growth period. *XXII World’s Poultry Congress.*: 1–4.
- Pandian., C., T. M., A. V. Omprakash, D. Thyagarajan, dan M. Babu. 2012.

Effect of season on haematological profile and erythrocyte indices in white leghorn layers. *Tamilnadu Journal of Veterinary and Animal Sciences*. 8: 389–392.

Pandian, C., M. thanga Pandiyan, A. Sunderesan, dan A. V. Omprakash. 2012. Haematological profile and erythrocyte indices in different breeds of poultry. *International Journal of Livestock Research*. 2: 89.

Paul, M. S., S. Paolucci, N. Barjesteh, R. D. Wood, dan S. Sharif. 2013. Chicken erythrocytes respond to toll-like receptor ligands by up-regulating cytokine transcripts. *Research in Veterinary Science*. 95: 87–91.

Paul, S. K., G. Halder, M. K. Mondal, dan G. Samanta. 2007. Effect of organic acid salt on the performance and gut health of broiler chicken. *Journal of Poultry Science*. 44: 389–395.

Pires, D. L., E. B. Malheiros, dan I. C. Boleli. 2007. Influence of sex, age, and fasting on blood parameters and body, bursa, spleen and yolk sac weights of broiler chicks. *Brazilian Journal of Poultry Science*. 9: 233–240.

Rahadian, A., A. Mushawwir, dan K. A. Kamil. 2014. Profil protein total dan trigliserida darah ayam petelur fase layer pada temperature humidity index yang berbeda. *Universitas Padjadjaran*.: 0–6.

Reron, Z. R. P., R. Sutrisna, dan Siswanto. 2016. Pengaruh ransum berkadar protein kasar berbeda terhadap jumlah eritrosit, kadar hemoglobin dan hematokrit itik jantan. *Jurnal Ilmiah Peternakan Terpadu*. 4: 176–181.

Rusadi, W. H. R., T. Yudiarti, dan Sugiharto. 2017. Profil protein dalam serum darah ayam broiler yang diberi pakan dengan tambahan probiotik bacillus plus vitamin dan mineral. *Prosiding Seminar Nasional Teknologi dan Agribisnis Peternakan V*.: 40–53.

Sabir, A. 2005. Aktivitas antibakteri flavonoid propolis trigona sp terhadap bakteri *Streptococcus mutans* (in vitro). *Dental Journal*. 38: 135–141.

Saili, T., R. Aka, F. A. Auza, W. L. Salido, A. M. Sari, K. Hijau, B. Tridharma, dan J. H. E. A. Mokodompit. 2019. Kolesterol , asam urat , dan glukosa darah ayam buras yang diberi pakan dengan ramuan herbal dan ekstrak kerang bakau (*polymesoda erosa*). *Jurnal Ilmu dan Teknologi Peternakan Tropis*. 6: 225–231.

Santos, R. R., A. Awati, P. J. Roubos-van den Hil, M. H. G. Tersteeg-Zijderveld, P. A. Koolmees, dan J. Fink-Gremmels. 2015. Quantitative histo-morphometric analysis of heat-stress-related damage in the small intestines of broiler chickens. *Avian Pathology*. 44: 19–22.

Santoso, U., dan Suharyanto. 2011. Penggunaan ekstrak saropus androgynus untuk meningkatkan efisiensi produksi dan mutu telur pada

- peternakan ayam arab petelur. *Jurnal Sain Peternakan Indonesia*. 6: 41–46.
- Senthikumar, N., S. Murugesan, N. Bhanu, S. Supriya, dan C. Rajeshkannan. 2011. Biochemical estimation and antimicrobial activities of the extracts of *Caesalpinia sappan* Linn. *Bangladesh Journal of Scientific and Industrial Research*. 46: 429–436.
- Setiawan, P., T. Saraswati, dan S. M. Mardiaty. 2017. Kadar hemoglobin dan jumlah eritrosit puyuh jepang (*Coturnix coturnix japonica* L) setelah pemberian tepung kunyit (*Curcuma longa* L) dan tepung ikan dalam pakan. *Jurnal Pro-Life*. 4: 339–346.
- Setiyanto, I., S. Sugiharto, dan H. I. Wahyuni. 2017. Pengaruh penambahan aditif kunyit terhadap profil darah putih pada ayam kampung super. *Prosiding Seminar Teknologi Agribisnis Peternakan (Stap)*. 5: 281–287.
- Sheoran, N. V., dan B. S. Tewatia. 2017. Organic acids as alternatives to antibiotic growth promoters in poultry. *The Pharma Innovation Journal*. 6: 164–169.
- Silva, M. A. da, B. M. de S. Pessotti, S. F. Zanini, G. L. Colnago, M. R. A. Rodrigues, L. de C. Nunes, M. S. Zanini, dan I. V. F. Martins. 2009. Intestinal mucosa structure of broiler chickens infected experimentally with *Eimeria tenella* and treated with essential oil of oregano. *Ciência Rural*. 39: 1471–1477.
- Sinha, S., S. Muzamil, B. Ahmad, M. U. Rehman, dan A. Quadri. 2017. Ameliorative effect of aloe vera supplementation in poultry feed. *Journal of Animal Research*. 7: 85.
- Srinivasan, R., G. G. Selvam, S. Karthik, K. Mathivanan, R. Baskaran, M. Karthikeyan, M. Gopi, dan C. Govindasamy. 2012. In vitro antimicrobial activity of *Caesalpinia sappan* L. *Asian Pacific Journal of Tropical Biomedicine*. 2: 136–139.
- Sugiharto, S. 2016. Role of nutraceuticals in gut health and growth performance of poultry. *Journal of the Saudi Society of Agricultural Sciences*. 15: 99–111.
- Sumardi, Sutyarso, G. N. Susanto, T. Kurtini, M. Hartono, dan R. E. Puspitaningsih N.W. 2016. Pengaruh probiotik terhadap kolesterol darah pada ayam petelur (layer). *Jurnal Kedokteran Hewan - Indonesian Journal of Veterinary Sciences*. 10: 128–131.
- Sun, X., A. McElroy, K. E. Webb, A. E. Sefton, dan C. Novak. 2005. Broiler performance and intestinal alterations when fed drug-free diets. *Poultry Science*. 84: 1294–1302.
- Surveswaran, S., Y. Cai, H. Corke, dan M. Sun. 2007. Systematic evaluation of natural phenolic antioxidants from 133 Indian medicinal

plants. *Food Chemistry*. 102: 938–953.

Suzuki, K., S. ah Ha, M. Tsuji, dan S. Fagarasan. 2007. Intestinal IgA synthesis: A primitive form of adaptive immunity that regulates microbial communities in the gut. *Seminars in Immunology*. 19: 127–135.

Tekeli, A. 2014. Effects of ascites (Pulmonary Hypertension Syndrome) on blood gas, blood oximetry parameters and heart sections of broilers grown at high altitude. *Journal of Animal and Plant Sciences*. 24: 998–1002.

Thompson, K. L., dan T. J. Applegate. 2006. Feed withdrawal alters small-intestinal morphology and mucus of broilers. *Poultry Science*. 85: 1535–1540.

Usman, A., K. A. Kamil, dan A. Mushawwir. 2016. Profil hematologis ayam petelur yang diberi kitosan dan tanpa kitosan pada kondisi “upper thermoneutral zone”. Universitas Padjadjaran.: 1–9.

Viveros, A., S. Chamorro, M. Pizarro, I. Arija, C. Centeno, dan A. Brenes. 2011. Effects of dietary polyphenol-rich grape products on intestinal microflora and gut morphology in broiler chicks. *Poultry Science*. 90: 566–578.

Wetwitayaklung, P., T. Phaechamud, dan S. Keokitichai. 2005. The antioxidant activity of caesalpinia sappan I heartwood in various ages. *Naresuan University Journal*. 13: 43–52.

Wicaksono, B. D., E. T. Arung, dan F. Sandra. 2008. Aktivitas antikanker dari kayu secang. *Cermin Dunia Kedokteran*. 35: 133–137.

Winarti, C., dan N. Nurdjanah. 2005. Peluang tanaman rempah dan obat sebagai sumber pangan fungsional. *Jurnal Litbang Pertanian*. 24: 47–55.

Wulandari, S., E. Kusumanti, dan I. Isroli. 2014. Jumlah total leukosit dan diferensial leukosit ayam broiler setelah penambahan papain kasar dalam ransum. *Animal Agriculture*. 3: 517–522.

Xia, M. S., C. H. Hu, dan Z. R. Xu. 2004. Effects of copper-bearing montmorillonite on growth performance, digestive enzyme activities, and intestinal microflora and morphology of male broilers. *Poultry Science*. 83: 1868–1875.

XU, Z. R., C. H. Hu, M. S. Xia, X. A. Zhan, dan M. Q. Wang. 2004. Effects of copper-bearing montmorillonite on growth performance, digestive enzyme activities, and intestinal microflora and morphology of male broilers. *Poultry Science*. 83: 1868–1875.

Yamauchi, K., M. Samanya, K. Seki, N. Ijiri, dan N. Thongwittaya. 2006. Influence of dietary sesame meal level on histological alterations of the intestinal mucosa and growth performance of chickens. *Journal of*

Applied Poultry Research. 15: 266–273.

Yazdani, A., S. L. Poorbaghi, H. Habibi, S. Nazifi, F. Rahmani Far, dan M. Sepehrimanesh. 2013. Dietary berberis vulgaris extract enhances intestinal mucosa morphology in the broiler chicken (gallus gallus). *Comparative Clinical Pathology*. 22: 611–615.

Yosi, F., dan S. Sandi. 2014. Pemanfaatan asap cair sebagai bahan aditif dan implikasinya terhadap sistem imun dan mortalitas ayam broiler. *Jurnal Peternakan Sriwijaya*. 3: 28–34.

Yuniwanti, E. Y. W. 2015. Profil darah ayam broiler setelah vaksinasi ai dan pemberian berbagai kadar vco. *Buletin Peternakan dan Fisiologi*. 23: 38–46.

Zhang, H., C. X. Wu, Y. Chamba, dan Y. Ling. 2007. Blood characteristics for high altitude adaptation in tibetan chickens. *Poultry Science*. 86: 1384–1389.

Zhang, X., L. Zhao, F. Cao, H. Ahmad, G. Wang, dan T. Wang. 2013. Effects of feeding fermented ginkgo biloba leaves on small intestinal morphology, absorption, and immunomodulation of early lipopolysaccharide-challenged chicks. *Poultry Science*. 92: 119–130.