



DAFTAR PUSTAKA

- Adewole, F. A., L. T. Egbeyle., D. A. Ekunseitan., K. O. Bello., O. A. Lala & S. A. Famakinde. 2021. Effect of strain and sex on haematological and serum biochemical indices of tropical indigenous chickens. Nigerian Journal of Animal Production. 48(2), 18–26.
- Alfian, Dasrul, dan Azhar. 2017. Jumlah eritrosit, kadar hemoglobin dan nilai hematokrit pada ayam bangkok, ayam kampung dan ayam peranakan. Jurnal Ilmiah Mahasiswa Veteriner. Vol. 1 (3): 533-539.
- Akbar, M, R, L., D. M. Suci., dan L. Wijayanti. 2017. Evaluasi kualitas pellet pakan itik yang disuplementasi tepung daun mengkudu (*Morinda citrifolia*) dan disimpan selama 6 minggu. Buletin Makanan Ternak. 104(2): 31-48.
- Allameh, A., R. Niayesh-Mehr., A. Aliarab., G. Sebastiani., dan K. Pantopoulos. 2023. Oxidative stress in liver pathophysiology and disease. Antioxidants (Basel). 12(9): 1653.
- Alvarenga, R, R., M. G. Zangeronimo., L. J. Pereira., P. B. Rodrigues., dan E. M. Gomide. 2011. Lipoprotein metabolism in poultry. World's Poultry Science Journal. 67(3): 431-440.
- Alves-Bezerra, M dan D. E. Cohen. 2017. Triglyceride metabolism in the liver. Comprehensive Physiology. 8(1): 1-8.
- Andani, K.R dan Ernawaty. 2022. Literature review: Cost calculation of blood services in some countries (based on HDL level). Unnes Journal Public Health. Vol. 11 (1): 33-45.
- As, N. A. dan N. J. Mubarakati. 2021. Bioprospeksi benalu teh-benalu mangga sekarang dan yang akan datang (terapi adjuvan terhadap hipertensi). Inara Publisher.
- Aslam, F., S. Iqbal., M. Nasir., dan A. A. Anjum. 2018. White sesame seed oil mitigates blood glucose level, reduces oxidative stress and improves biomarkers of hepatic and renal function in participants with type 2 diabetes mellitus. Journal of the American College Nutrition. Hal 1-12.
- Atta, E.M., N.H. Mohamed., dan A.A.M. Abdelgawad. 2017. Antioxidants: an overview on the natural and synthetic types. European Chemical Buletin. Vol. 6. Hal 367-375.
- Awad, A, L dan H. A. El-Halim. 2023. Comparative study among natural and synthetic antioxidants addition to broiler chicks diet on their productive and physiological performance and antioxidants status. Egypt Poultry Science. 43(1): 53-69.



- Ayala, A., M. F. Munoz., dan S. Arguelles. 2014. Lipid peroxidation: production, metabolism, and signaling mechanism of malondialdehyde and 4-hydroxy-2-nonenal. National Library of Medicine.
- Ayucitra, A., N. Indraswati., V. Mulyandasari., Y.K. Dengi., G. Fransisco., dan A. Yudha. 2011. Potensi senyawa fenolik bahan alam sebagai antioksidan alami minyak goreng nabati. Widya Teknik. Vol. 10: 1-10.
- Badan Standarisasi Nasional. 2014. Peraturan Menteri Pertanian Nomor 31 /Permentan /Ot.140/2 /2014 tentang Pedoman Budi Daya Ayam Pedaging Dan Ayam Petelur Yang Baik.
- Baez, L. S. S. dan H. N. Ginsberg. 2020. Hypertriglyceridemia-causes, significance, and approaches to therapy. Frontiers in Endocrinology. Vol. 11. Hal 1-7.
- Bajzelj, B., F. Laguzzi., E. Roos. 2021. The role of fats in the transition to sustainable diets. The Lancet Planetay Health. Vol. 5: 644-653.
- Basmacioglu, H and M. E. Ergul. 2005. Research on the factor affecting cholesterol content and some other characteristics of eggs in laying hens. Turkish Journal of Veterinary and Animal Sciences. 29(1): 157-164.
- Basu, D dan R. Kulkarni. Overview of blood components and their preparation. Indian Journal of Anaesthesia. Vol. 58 (5): 529-537.
- Basyir, V. 2023. Likopen Obat Masa Depan Penurun Risiko Preeklamsia. Widina. Bandung.
- Batara, V., A. M. Tasse., dan A. Napirah. Efek pemberian minyak kelapa sawit terproteksi dalam ransum terhadap kadar glukosa dalam darah ayam kampung super. Jurnal Ilmu dan Teknologi Peternakan Tropis. Vol. 4 (1): 44-48.
- Bealish, A. M. A., A. S. A. Bahakaim., S. A. Hamed., I. M. Assaf., dan M. M. Soliman. 2018. Effect of adding some antioxidants to diet containing fatty acids on productive and physiological parameters of silver montazah chickens strain 1 during growth period. Egyptian Journal of Nutrition and Feeds. Vol 21 (2): 481-494.
- Belinskaia, D. A., P. A. Voronina., A. A. Batalova., dan N. V. Goncharov. 2021. Serum albumin. Encyclopedia. Vol. 1 (1): 65-75.
- Berdahl, D, R., R.I. Nahas., dan J.P. Barren. 2010. Oxidation in Foods and Beverages and Antioxidant Application. Chapter 12. Woodhead Publishing. Sawston, United Kingdom.
- Bezerra, M, A dan D. E. Cohen. 2017. Triglycerides metabolism in the liver. Comprehensive Physiology. 8(1): 1-8.



- Blaszczyk, A., A. Augustyniak., dan J. Skolimowski. 2013. Ethoxyquin: an antioxidant used in animal feed. International Journal of Food Science. Hal 1-12
- Blundell, R., M. A. Shah., J. I. Azzopardi., A. Y. Benmelouka., A. Rasul., dan N. A. Althobaiti. 2022. Antioxidants Effect In Health The Bright and The Dark Side. Elsevier.
- Brelaz, K, C, B, T, R., F. G. G. Cruz., J. P. F. Rufino., R. J. M. Brasil., A. F. Silva., dan A. N. A. Santos. 2021. Serum biochemistry profile of laying hens fed diets with fish waste oil. Arquivo Brasileiro de Medicina Veterinaria e Zootecnia. 73(1):223-230.
- Brown. 2003. The Hyperlipoprotein and Orther Disorders of Lipid Metabolism. In : Harrison's Principle of Internal Medicine. 13th ed New York.
- Budilarto, E. S. dan A. K. Eldin. 2015. The supramolecular chemistry of lipid oxidation and antioxidation in bulk oils. European Journal Lipid Science Technology. Vol. 117 (8): 1095-1137.
- Butnariu, M dan I. Samfira. 2012. Free radicals and oxidative stress. Journal of Bioequivalent and Bioavailability. Vol. 4 (3): 1-6.
- Chen, N., M. Zhao., dan W. Sun. 2013. Effect of protein oxidation on the in vitro digestibility of soy protein isolate. Food Chemistry. 141(3): 3224-3229.
- Chien, S, C., C. Y. Chen., C. F. Lin., dan H. Yeh. 2017. Critical appraisal of the role of serum albumin in cardiovascular disease. Biomarker Research. 5(31): 1-9.
- Clinical Diagnostic Division. 1990. Veterinary Reference Guide. New York. Eastman Kodak Company.
- Codex Alimentarius. 2013. Codex standard for named vegetable oils: Codex-Stan 210. Rome: FAO/WHO.
- Datta, F, U. 2023. Dasar Ilmu Nutrisi dan Pakan Hewan. Deepublish. Yogyakarta.
- Delanghe, T., J. Huyghe., S. Lee., D. Priem., S. V. Coillie., B. Gilbert., S. M. Choi., P. Vandenameele., A. Degterev., G. D. Cuny., Y. Dondelinger., dan M. J. M. Bertrand. 2021. Antioxidant and food additive BHA prevents TNF cytotoxicity by acting as a direct RIPK1 inhibitor. Cell Death and Disease. Vol. 2021 (12): 699.
- Desbruslais, A dan A. L. Wealleans. 2022. Oxidation in poultry feed: impact on the bird and the efficacy of dietary antioxidant mitigation strategies. Poultry. Vol. 1 (4): 246-277.



- Din, U. A. A. S. E., M. M. Salem., D. O. Abdulazim. 2017. Uric acid in the pathogenesis of metabolic, renal, and cardiovascular disease: a review. *Journal Advance Science*. Vol. 8 (5): 537-548.
- Doaa, M., M. Yassein., E. A. Abdallah., I. I. Ismail., dan A. A. Faddle. 2015. Effect of dietary supplementation of pomegranate peel powder and butylated hydroxytoluene on some productive, physiological and immunological parameters of japanese quail. *Egyptian Journal of Animal Production*. 52: 105-113.
- Duan, Y., K. Gong., S. Xu., F. Zhang., X. Meng., dan J. Han. 2022. Regulation of cholesterol homeostasis in health and disease: from mechanisms to targeted therapeutics. *Signal Transduction and Targetted Therapy*. 2022(7): 265.
- Effendi Z. 2003. Peranan Leukosit Sebagai Anti Inflamasi Alergik dalam Tubuh. Bagian Histologi. Fakultas Kedokteran. Universitas Sumatera Utara. Digital Library.
- Everds, N, E. 2015. Evaluation of clinical pathology data: correlating changes with other study data. *Sage Open Medicine*. 43 (1): 90-97.
- EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP). 2018. Safety and efficacy of a feed additive consisting of butylated hydroxyanisole (BHA) as a feed additives for all animal species. *EFSA Journal*. 16(3): 1-18.
- EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP). 2022. Safety and efficacy of a feed additive consisting of ethoxyquin (6-ethoxy-1,2-dihydro-2,2,4-trimethylquinoline) for all animal species (FEFANA asbl). *EFSA Journal*. 20(3): 1-20.
- EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP). 2022. Safety and efficacy of a feed additive consisting of butylated hydroxytoluene (BHT) for all animal species (Katyon Technologies Limited). *EFSA Journal*. 20(5): 1-44
- Elshinety, R, M., S. M. Zahran., dan N. M. Zahran. 2021. Possible disrupting effect of different doses of butylated hydroxyanisole (BHA) on thyroid follicular cells of adult male albino rats: anatomical, histological, and biochemical study. *Egyptian Journal of Histology*. 46(1): 65-77.
- Firani, N.K. 2018. Mengenali Sel-Sel Darah dan Kelainan Darah. UB Press. Malang.
- Gao, Z., J. Zhang., F. Li., J. Zheng., dan G. Xu. 2021. Effect of oils in feed on the production performance and egg quality of laying hens. *Animals (Basel)*. 11(12): 3482.



- Geng, L., K. Liu., dan H. Zhang. 2023. Lipid oxidation in foods and its implications on proteins. *Frontiers Nutrition*. Vol 10. Hal 1-12.
- Ghosh, A dan N. Shcherbik. 2020. Effects of oxidative stress on protein translation: implications for cardiovascular diseases. *International Journal of Molecule Sciences*. 21(8): 2661.
- Guo, X., H. Li., G. Xu., S. Woo., H. Dong., F. Lu., A. J. Lange., dan C. Wu. 2012. Glycolysis in the control of blood glucose homeostasis. *Acta Pharmaceutica Sinica B*. 2(4): 358-367.
- Gyenis, J., Z. Suto., R. Romvari., dan P. Horn. 2006. Tracking the development of serum biochemical parameters in two laying hen strains a comparative study. *Archives Tierzucht*, 49(1): 593–606.
- Gyuraszova, M., R. Gurecka., J. Babickova., dan L. Tothova. 2020. Oxidative stress in the pathophysiology of kidney disease: implications for noninvasive monitoring and identification of biomarkers. *Oxidative Medicine and Cellular Longevity*. Vol 2020. Hal 1-11.
- Hafsa., S. Sarjuni., S. Mozin., Fatmawati., A. Malewa., I. N. Sucipto., dan S. Saifuddin. 2021. Blood profile and nutrients digestibility of native chickens fed functional diets with different energy and protein level. *The 3rd International Conference of Animal Science and Technology. IOP Conference Series: Earth and Environmental Science*. Vol 788. Hal 1-7.
- Han, H. S., G. Kang., J. S. Kim., B. H. Choi., dan S. H. Koo. 2016. Regulation of glucose metabolism from a liver-centric perspective. *Experimental & Molecular Medicine*. 48(3): e218.
- Hasibuan, R. M., E. Erwan., Elviradi., M. Rodiallah., dan S. Maya. 2021. Total kolesterol HDL, LDL, dan trigliserida darah ayam broiler yang diberi tepung daun apu-apu (*Pistia stratiotes*) dalam ransum basal. *Jurnal Ilmu dan Industri Peternakan*. 7(2): 92-103.
- Herlina, B., R. Novita., dan T. Karyono. 2015. Pengaruh jenis dan waktu pemberian ransum terhadap performansi pertumbuhan dan produksi ayam broiler. *Jurnal Sain Peternakan Indonesia*. 10(2): 107-113.
- Hochleithner, M. B.W Ritchie., G.J. Harrison., L.R. Harrison. 2013 *Chapter 11: Biochemistries. In: Avian Medicine, Principles and Application*. Winger Publishing. Florida: 223-245.
- Hosseini, S.N., S. Pirsa., J. Farzi. 2021. Biodegradable nano composite film based on modified starch-albumin/MgO antibacterial, antioxidant, and structural properties. *Polymer Testing*. Vol. 97 (2021): 1-12.
- Huo, W., M. Li., J. Wang., Z. Wang., Y. Huang., dan W. Chen. 2019. Effects of dietary lipid sources on growth performance, nutrient



digestibility, blood T lymphocyte, and cardiac antioxidant status od boriler. Animal Nutrition. Vol 5. Hal 68-73.

- Ibrahim, D., R. El-Sayed., S. I. Khater., E. N. Said., dan S. A. M. El-Mandrawy. 2018. Changing dietary n-6:n-3 ratio using different oil sources affects performance, behavior, cytokine mRNA expression and meat fatty acid profile of broiler chickens. Animal Nutrition. 4(1): 44-51.
- Ito, F., Y. Sono., T. Ito. 2019. Measurement and clinical significance of lipid peroxidation as a biomarker of oxidative stress: oxidative stress in diabetes, atherosclerosis, and chronic inflammation. Antioxidants (Basel). Vol. 8 (3): 72.
- Jawi, I.M dan K. Budiasa. 2011. Ekstrak air umbi jalar ungu menurunkan total kolesterol serta meningkatkan total antioksidan darah kelinci. Jurnal Veteriner. Vol. 12 (2): 120-125.
- Jiang, S., Y. Xie., M. Li., Y. Guo., Y. Cheng., H. Qian., W. Yao. 2020. Evaluation on the oxidative stability of edible oil by electron spin resonance spectroscopy. Food Chemistry. 309 (2020): 125714.
- Kaysen, G. A. 2009. Biochemistry and biomarkers of inflamed patients: why look, what to assess. Clinical Journal of the American Society Nephrology. 4(1): 56-63.
- Khan, M. T., A. S. Niazi., M. Arslan., M. Azhar., T. Asad., F. Raziq., M. A. Gondal., M. Rauf., S. Liaqat., S. Naz., H. A. Bachaya., Z. M. Iqbal., M. Qumar., G. Faran., F. Wadood., dan H. U. Khan. 2023. Effects of selenium supplementation on the growth performance, slaughter characteristics, and blood biochemistry of naked neck chicken. Poultry Science. Vol. 102 (3): 1-6.
- Khatun, J., T. C. Loh., H. Akit., H. L. Foo., dan R. Mohamad. 2017. Fatty acid composition, fat deposition, lipogenesis gene expression and performance of broiler fed diet supplemented with different sources of oil. Animal Science Journal. 88(14): 6-13.
- Kim, C dan H. Kang. 2022. Effects of energy and protein levels on laying performance, egg quality, blood parameters, blood biochemistry, and apparent total tract digestibility on laying hens in an aviary system. Animals (Basel). 12(24): 3513.
- Kim, J. 2014. Energy metabolism and protein utilization in chicken - A review. Korean Journal Poultry Science. 41(4): 313-322.
- Koronowicz, A.A., P. Banks., B. Szymczyk., T. Leszczyńska., A. Master., E. Piasna., W. Szczepański., D. Domagała., A. Kopeć., E. Piątkowska., P. Laidler. Dietary conjugated linoleic acid affects blood



- parameters, liver morphology and expression of selected hepatic genes in laying hens. *British Poultry Science*. Vol. 2016 (57):663–673.
- Kowalczyk, A., M. E. D. G. Ferris., dan G. Filler. 2022. Still trouble with serum creatinine measurement. *Journal of Pediatric Nephrology*. Vol. 2022 (37): 469-471.
- Kraus, A., L. Zita., O. Krunt., H. Hartlova., dan E. Chmelikova. 2021. Determination of selected biochemical parameters in blood serum and egg quality of Czech and Slovak native hens depending on the housing system and hen age. *Poultry Science*. 100(2): 1142-1153.
- Le, N, A. 2020. Postprandial triglycerides, oxidative stress, and inflammation. *Apolipoprotein, Triglycerides and Cholesterol*. Hal 1-12.
- Lee, S., M. G. Kim., S. W. Hur., K. Katya., K. W. Kim., dan B. J. Lee. 2023. Assesment of safety, effects, and muscle-specific accumulation of dietary butylated hydroxytoluene (BHT) in paralichthys olivaceus. *Aquaculture Nutrition*. Vol 2023. Hal 1-8.
- Leke, J, R., E. Wantasen., J. Laihad., E. Pudjihastuti., A. Podung., dan R. Siahaan. 2021. Egg production and blood cholesterol of layers fed after adding fragrant pandan leaf flour (*Pandanus amarylifous Roxb.*). *Jurnal Ilmu-Ilmu Peternakan*. 32(2): 167-173.
- Lestari, C, R., Y. Sulistyowati., dan I. Setiyobroto. 2022. Pengaruh pemberian jus buan naga merah (*Hylocereus polyrhizus*) terhadap kadar asam urat tikus Jantan galur wistar (*Rattus norvegicus*) hiperurisemia. *Indonesian Journal of Biomedical Science and Health*. 2(1): 1-15.
- Leveille, M dan J. L. Estall. 2019. Mitochondrial dysfunction in the transition from NASH to HCC. *Metabolites*. 9(10): 233.
- Levitt, D, G dan M. D. Levitt. 2016. Human serum albumin homeostasis: a new look at the roles of synthesis, catabolism, renal and gastrointestinal excretion, and the clinical value of serum albumin measurement. *International Journal of General Medicine*. 15(9):229-255.
- Li, C., J. Gao., S. Guo., B. He., dan W. Ma. 2024. Effects of curcumin on the egg quality and hepatic lipid metabolism of laying hens. *Animals*. 14(1): 138.
- Li, S., H. Y. Tan., N. Wang., Z. J. Zhang., L. Lao., C. W. Wong., dan Y. Feng. 2015. The role of oxidative stress and antioxidants in liver disease. *International Journal of Molecular Science*. 16(11): 26087-26124.
- Lingzhou., X. Ding., J. P. Wang., S. Bai., Q. Zeng., Z. Su., Y. Xuan., A. Wu., dan K. Zhang. 2020. Oxidized oils and oxidized proteins induce



apoptosis in granulosa cells by increasing oxidative stress in ovaries of laying hens. *Oxidative Medicine Cellular Longevity*. Vol 2020. Hal 1-11.

Liu, Z dan J. Pan. 2017. A practical method for extending the biuret assay to protein determination of corn-based products. *Food Chemistry Journal*. Vol. 224. Hal 289-293.

Liu, W.C dan I.H. Kim. 2018. Effects of different dietary n-6 and n-3 PUFA ratios on growth performance, blood lipid profiles, fatty acid composition of porkm carcass traits and meat quality in finishing pigs. *Nephron Clinical Practice*. 18: 143-154.

Liu, M., X. Song., J. Zhang., C. Zhang., Z. Gao., S. Li., H. Jing., Z. Ren., S. Wang., dan L. Jia. 2017. Protective effects on liver, kidney and pancreas of enzymatic and acidic hydrolysis of polysaccharides by spent mushroom compost (*Hypsizigius marmoreus*). *Scientific Reports*. 7:43212.

Luo, J., J. K. Wang., dan B. L. Song. 2022. Lowering low-density lipoprotein cholesterol: from mechanisms to therapies. *Life Metabolism*. 1(1): 25-38.

Lourenco, S, C. M. M. Martins., dan V. D. Alves. 2019. Antioxidants of natural plant origins: from sources to food industry applications. *Molecules*. Vol. 24 (22): 4132.

Lyu, M., H. Liu., dan Z. Yin. 2020. Inhibition effect of thiol-type antioxidants on protein oxidative aggregation caused by free radicals. *Biophysical Chemistry*. Vol 260. Hal 1-12.

Ma, H dan K. J. Shieh. 2006. Cholesterol and Human Health. *American Journal of Science*. Vol. 2 (1): 46-50.

Ma, Y., Y. Shi., Q. Wu., dan W. Ma. 2021. Dietary arsenic supplementation induces oxidative stress by supressing nuclear factor erythroid 2-related factor 2 in the livers and kidneys of laying hens. *Poultry Science*. 100(2): 982-992.

Maiuolo, J., F. Oppedisano., S. Gratteri., C. Muscoli., dan V. Mollace. 2016. Regulation of uric acid metabolism and excretion. *International Journal of Cardiology*. Vol. 213. Hal 8-14.

Maharani, A. I., F. Riskiendi., I. Febriani., K. A. Kurnia., N. A. Rahman., N. F. Ilahi., dan S. A. Farma. 2021. Peran antioksidan alami berbahan dasar pangan lokal dalam mencegah efek radikal bebas. Prosiding SEMNAS Bio 2021. Inovasi Riset Biologi dalam Pendidikan dan Pengembangan Sumber Daya Lokal. Hal 390-399.

Mallo, P. Y., Sompie, S. R. U. A., Narasiang, B. S., & Bahrun. (2012). Rancang Bangun Alat Ukur Kadar Hemoglobin dan Oksigen Dalam



Darah dengan Sensor Oximeter Secara Non-Invasive. Jurnal Teknik Elektro Dan Komputer, Vol. 1 (1), 1–6.

Mappa, F. 2011. Pengaruh antioksidan dan lama penyimpanan terhadap ketengikan pakan broiler. Skripsi. Fakultas Peternakan Universitas Hasanuddin. Makassar.

Martinez, Y., M. Valdivie., M. Estarron., G. Solano., dan J. Cordova. 2010. Serum lipid profile of laying hens fed pumpkin (*Cucurbita maxima*) seed levels. Cuban Journal of Agricultural Science. 44(4): 393-399.

Mishra, B dan R. Jha. 2019. Oxidative stress in the poultry gut: potential challenges and interventions. Animal Nutrition and Metabolism. Vol 6. Hal 1-5.

Mozuraityte, R., V. Kristinova., dan T. Rustad. 2016. Oxidation of Food Components. In Encyclopedia of Food and Health. Academic Press: Oxford. United Kingdom. Hal 186-192.

Muneer, M., M. Bilal., dan A. Ditta. 2021. A comparative study of some haematological parameters of broiler and indigenous breeds of poultry. SVU-International Journal of Agricultural Sciences. Vol. 3 (4): 189-199.

Murray, R. K., Granner., and Rodwel. 2003. Biokimia Harper. Buku Kedokteran EGC. Jakarta.

Mutia, S., F. Fauziah, & Z. Thomy. 2018. Pengaruh pemberian ekstrak etanol daun andong (*Cordyline fruticosa* (L.) A. Chev) terhadap kadar kolesterol total dan trigliserida darah tikus putih (*Rattus norvegicus*) hiperkolesterolemia. Jurnal Bioleuser. 2:29-35

Naheed, N., S. Maher., F. Saleem., A. Khan., A. Wadood., S. Rasheed., M. I. Choudhary., M. Freeyen., I. Abdullah., M. U. Mirza. 2021. New Isolate from *Salvinia molesta* with antioxidant and urease inhibitory activity. Drug Development Research. 82. 1169-1181.

Nam, T. 2011. Lipid peroxidation and its toxicological implications. Toxicology Research. Vol. 27 (1): 1-6.

Ndrepepa, G. 2021. High density lipoprotein: a double-edged sword in cardiovascular physiology and pathophysiology. Journal of Laboratory and Precision Medicine. Vol 6. Hal 21-32.

Newman, R. E., W. L. Bryden., E. Fleck., J. R. Ashes., W. A. Buttermer., L. H. Storlien. J. A. Downing. 2002. Dietary n-3 and n-6 fatty acids alter avian metabolism: metabolism and abdominal fat deposition. British Journal of Nutrition. 88(1): 11-18.



- Niki, E. 2011. Do free radicals play causal role in atherosclerosis? Low density lipoprotein oxidation and vitamin E revisited. *Journal Clinical of Biochemical Nutrition*. 48(1):3-7.
- Njobeh, P, B., P. A. Iji., dan I. V. Nsahlai. 2006. Influence of composition and storage conditions on the concentrations of free fatty acids and peroxides in broiler diets. *International Journal of Poultry Science*. 5(3): 279-283.
- Novak, C., H, M. Yakout., dan S. E. Scheideler. 2006. The effect of dietary protein level and total sulfur amino acid: lysine ratio on egg production parameters and egg yield in hy-line W-98 Hens. *Poultry Science*. 85(12): 2195-2206.
- Nwogueze, B, C., I. M. Ofili., T. N. Nnama., dan C. P. Aloamaka. 2023. Oxidative stress-induced by different stressor alters kidney tissue antioxidant markers and levels of creatinine and urea: the rate of renal membrane integrity. *Scientific Reports*. Vol 13. 13309.
- Oketch, E, O., S. S. Wickramasuriya., S. Oh., J. S. Choi., dan J. M. Heo. 2022. Physiology of lipid digestion and absorption in poultry: an updated review on the supplementation of exogenous emulsifier in broiler diets. *Journal of Animal Physiology and Animal Nutrition*. 2023(107): 1429-1443.
- Omidi, S., A. Mohit., dan N. G. H. Zadeh. 2019. Effect of dietary fat level and source on performance and immune system response of turkeys. *Acta Scientiarum Animal Science*. Vol. 42: 1-8.
- Ozbek, E. 2012. Induction of oxidative stress in kidney. *International Journal of Nephrology*. Vol 12. Hal 1-9.
- Pandey, K, B., M. M. Mehdi., P. K. Maurya., dan S. I. Rizvi. 2010. Plasma protein oxidation and its correlation with antioxidant potential during human aging. *Disease Markers*. Vol 29. Hal 31-36.
- Panova, I, G dan A. S. Tatikolov. 2023. Endogenous and exogenous antioxidants as agents preventing the negative effects of contrast media (contrast-induced nephropathy). *Pharmaceuticals*. 16(8): 1077.
- Pasini, E., G. Corsetti., R. Aquilaini., C. Romario., A. Picca., R. Calvani., dan F. S. Dioguardi. 2018. Protein-amino acid metabolism disarrangements: the hidden enemy of chronic age-related conditions. *Nutrients*. 10(4): 391
- Peng, K., X. Li., Z. Whang., M. Li., dan Y. Yang. 2022. Association of low-density lipoprotein cholesterol levels with the risk of mortality and cardiovascular events: A meta-analysis of cohort studies with 1,232,694 participants. *Medicine*. 101(48). 32003.



- Phaniendra, A., D. B. Jestadi., dan L. Periyasamy. 2015. Free radicals: properties, sources, targets, and their implication in various diseases. Indian Journal of Clinical Biochemical. Vol. 30 (1): 11-26.
- Piko, N., S. Bevc., R. Hojs., dan R. Ekart. 2023. The role of oxidative stress in kidney injury. Antioxidants. 12(9): 1772.
- Pizzini, A., L. Lunger., E. Demetz., R. Hilbe., G. Weiss., C. Ebenbichler., dan I. Tancevski. The role of omega-3 fatty acids in reverse cholesterol transport: A Review. Nutrients. 9(10): 1099.
- Pizzino, G., N. Irrera., M. Cucinotta., G. Pallio., F. Mannino., V. Arcoraci., F. Squadrito., D. Altavilla., dan A. Bitto. 2017. Oxidative Stress: Harms and benefits for human health. Oxidative Medicine and Cellular Longevity. Volume 2017. Hal 1-13.
- Polisak, B., V. Kovac., dan I. Milisav. 2021. Antioxidants, food processing and health. Antioxidants (Basel). Vol. 10 (3): 433.
- Pop A, Drugan T, Gutleb AC, Lupu D, Cherfan J, Loghin F and Kiss B, 2018. Estrogenic and anti-estrogenic activity of butylparaben, butylated hydroxyanisole, butylated hydroxytoluene and propyl gallate and their binary mixtures on two estrogen responsive cell lines (T47D-Kbluc, MCF-7). Journal of Applied Toxicology. Vol. 38. Hal 944–957.
- Qaid, M, M dan M. A. Al-Garadi. 2021. Protein and amino acid metabolism in poultry during and after heat stress: a review. Animals (Basel). 11(4): 1167.
- Rahman, K. 2007. Studies on free radicals, antioxidants, and co-factors. Clinical Interventions in Aging Journal. Vol. 2 (2): 219-236.
- Rakhmawati, R dan M. Sulistyoningsih. 2020. Kandungan kolesterol darah pada berbagai jenis ayam konsumsi. Jurnal Ilmiah Multi Science. Vol. 12 (1): 31-34.
- Ravindran, V., P. Tancharoenrat., F. Zaefarian., dan G. Ravindran. 2016. Fats in poultry nutrition: digestive physiology and factors influencing their utilisation. Animal Feed Science and Technology. Vol. 213 (2016): 1-21.
- Retnani, Y., D. Kurniawan., S. Yusawisana., dan L. Herawati. 2010. Kerusakan lemak ransum ayam broiler yang menggunakan *crude palm oil* (CPO) dengan penambahan antioksidan alami bawang putih (*Alium sativum*) dan jintan (*Cuminum cyminum Linn.*) selama penyimpanan. Jurnal Inovasi Teknologi Peternakan. Vol. 1 (1): 1-11.
- Riswanto. (2009). Pemeriksaan Laboratorium Hematologi. Yogyakarta; Kanal Medika



- Rodil, R., J. B. Quintana., G. Basaglia., M. C. Pietrogrande., dan R. Cela. Determination of synthetic phenolic antioxidants and their metabolites in water sample by downscaled solid-phase extraction, silylation and gas chromatography-mass spectrometry. *Journal of Chromatography A*. Vol. 1217 (2010): 6428-6435.
- Sadeq, M, A dan M. I. A. Al-Neemi. 2023. The effect of adding local myrtle leaves powder and industrial antioxidant butylated hydroxy toluene to laying hens feeding on some biochemical characteristics and special enzymes against oxidative stress in laying hen blood. *Kirkuk University Journal for Agricultural Sciences*. 14(2): 91-98.
- Sahib, R, M dan N. A. L. Ali. 2022. Comparison of the effect of adding bromelain enzyme and butylated hydroxy toluene (BHT) to the diet on the biochemical blood traits for laying hens lohmann brown. *Neuroquantology*. 20(11): 2906-2911.
- Saito, Y., A. Tanaka., K. Node., dan Y. Kobayashi. 2021. Uric acid and cardiovascular disease: a clinical review. *Journal of Cardiology*. Vol. 78 (1): 51-57.
- Saji, N., N. Francis., L. J. Schwarz., C. L. Blanchard., dan A. B. Santhakumar. 2019. Rice bran derived bioactive compounds modulate risk factors of cardiovascular disease and type 2 diabetes mellitus. *Nutrients*. Vol 11.
- Saki, A, A., H. Aliarabi., P. Cheraghi., G. S. Mirzaie., dan A. Ahmadi. 2016. Effects of various levels of oxidized oil on performance, egg quality, and some blood metabolites in laying hens. *Poultry Science Journal*. 4(1): 13-18.
- Septiana, A., M. Thio., dan Y. Mewo. Gambaran kadar kreatinin serum pada vegetarian lacto-ovo. *Jurnal e-Biomedik*. 6(1): 65-68.
- Shabalala, S, C., R. Johnson., A. K. Basson., K. Ziqubu., N. Hlengwa., S. X. H. Mthembu., S. E. Mabhida., S. E. M. Mbeje., S. Hanser., I. Cirili., L. Tiano., dan P. V. Dlidua. 2022. Detrimental effect of lipid peroxidations in type-2 diabetes: Exploring the neutralizing influence of antioxidants. *Antioxidants (Basel)*. 11(10):2071.
- Shaw, C dan S. Lewis. 2008. Makanan Pencegah Kanker: Panduan Memilih Makanan dan Mengatur Pola Makan untuk Mengurangi Risiko Terkena Kanker. Gramedia Pustaka Utama. Jakarta.
- Shahidi, F dan A. Hossain. 2022. Role of lipids in food flavour generation. *Molecules*. Vol. 27 (15): 5014.
- Shen, M., Z. Xie., M. Jia., A. Li., H. Han., T. Wang., dan L. Zhang. 2019. Effect of bamboo leaf extract on antioxidants status and cholesterol metabolism in broiler chickens. *Animals (Basel)*. 9(9): 699.



- Silva, R. P., I. Nissim., M. E. Brosnan., dan J. T. Brosnan. 2008. Creatine synthesis: hepatic metabolism of guanidinoacetate and creatine in the rat in vitro and in vivo. *American Journal of Physiology and Endocrinology Metabolism*. 296(2): 256-261.
- Singh, R dan A.B. Mandal. 2012. Efficacy of ascorbic acid and butylated hydroxylanisole in amelioration of aflatoxicosis in broiler chickens. *Iran Journal of Applied Animal Science*. Vol 3. (3): 595-603.
- Soliman, G, A. 2018. Dietary Cholesterol and the lack of evidence in cardiovascular disease. *Nutrients Journal*. Vol. 10 (6): 780.
- Sorah, H., J. D. Schofield., P. N . Durrington. 2015. Antioxidant properties of HDL. *Frontiers Pharmacology*. Vol. 2015 (6): 222.
- Sotler, R., B. Poljsak., R. Dahmane., T. Jukic., D. P. Jukic., C. Rotim., P. Trebse., dan A. Starc. 2019. Prooxidant activities of antioxidants and their impact on health. *Acta Clinica Croatica*. 58(4): 726-736.
- Steel, R, G, D dan J. H. Torrie. 1993. Prinsip dan Prosedur Statistik. Suatu Pendekatan Biometrik. Penerjemah: Sumantri, B. Gramedia Pustaka Utama. Jakarta.
- Supartini, N., Sumarno., dan F. K. Astuti. 2023. Suplementasi tepung maggot dalam bahan pakan ayam petelur umur 18 bulan terhadap kualitas fisik telur. Prosiding Seminar Nasional Cendekia Peternakan 2. Hal 188-196.
- Stancill, J. S., K. A. Broniowska., B. J. Oleson., A. Naatz., dan J. A. Corbett. 2019. Pancreatic B-cells detoxify H₂O₂ through the peroxiredoxin/thioredoxin antioxidant system. *Journal of Biological Chemistry*. 294 (13): 4843-4853.
- Surai, P, F. 2020. Antioxidants in poultry nutrition and reproduction: an update. *Antioxidants (Basel)*. Vol. 9 (2): 105.
- Tabata, F., Y. Wada., S. Kawakami., dan K. Miyaji. 2021. Serum albumin redox states: more than oxidative stress biomarker. *Antioxidants (Basel)*. 10(4): 503.
- Tancharoenrat, P., V. Ravindran., A. L. Molan., & G. Ravindran. 2014. Influence of fat source and Xylanase supplementation on performance, utilisation of energy and fat, and caecal microbiota counts in broiler starters fed wheat-based diets. *Poultry Science*. Vol. 51 (2). 172-179.
- Tavarez, M, A., D. D. Boler., K. N. Bess., J. Zhao., F. Yan., A. C. Dilger., F.K. McKeith., J. Killefer. 2011. Effect of antioxidant inclusion and oil quality on broiler performance, meat quality, and lipid oxidation. *Poultry Science*. 90(4): 922-930.



- Thomas, D., S. Zachariah., A. E. E. E. Elamin., A. L. O. Hashim. 2017. Limitations of serum creatinine as a marker of renal function. *Journal of Pharmaceutical Science*. Vol. 6 (5): 168-170.
- Tothova, C., E. Sesztakova., B. Bielik., dan O. Nagy. 2019. Changes of total protein and protein fractions in broiler chickens during the fattening period. *Veterinary World*. Vol. 12 (4): 598-604.
- Tugiyanti, E dan N. Iriyanti. 2012. Kualitas eksternal telur ayam petelur yang mendapat ransum dengan penambahan tepung ikan fermentasi menggunakan isolate produser antihistamin. *Jurnal Aplikasi Teknologi Pangan*. Vol. 1(12): 44-46.
- Varona, E., A. Tres., M. Rafecas., S. Vichi., R. Sala., dan F. Guardiola. 2021. Oxidative quality of acid oils and fatty acid distillates used in animal feeding. *Animals*. 11(9): 2559.
- Viktorova, E. P., R. V. Kazaryan., M. V. Lukyanenko., M. P. Semenenko., A.S. Borodikhin., E.V. Kuzminova., dan E.V. Rogaleva. 2020. Changes in the biochemical parameters of blood serum of laying hens by varying the feeding diet. *IOP Conference Series: Earth and Environmental Science*. 548 (2020): 1-10.
- Wahyuningati, M., R. Murwani., dan Isroli. 2020. Pengaruh penambahan serbuk biji jambe (*Areca catechu L.*) dan daun binahong (*Anredera cordifolia*) dalam ransum terhadap profil lemak darah ayam petelur fase layer. *Agromedia: Berkala Ilmiah Ilmu-Ilmu Pertanian*. 38(1): 22-26.
- Wang, D., H. Xiao., X. Lyu., H. Chen., dan F. Wei. 2023. Lipid oxidation in food science and nutritional health: a comprehensive review. *Oil Crop Science*. Hal 35-44.
- Wang, J dan Wang H. 2017. Oxidative stress in pancreatic beta cell regeneration. *Oxidative Medicine and Cellular Longevity*. Vol 2017. Hal 1-10.
- Wang, L., R. Gill., T. Pedersen., L. Higgins., J. Newman., dan J. Rutledge. 2009. Tg-rich lipoprotein lipolysis releases neutral and oxidized FFAs that induce endothelial cell inflammation. *Journal of Lipid Research*. Vol 50. Hal 204-213.
- Wealleans, A. L., K. Bierinckx., dan M. Benedetto. 2021. Fats and oils in pig nutrition: factor affecting digestion and utilization. *Animal Feed Scence & Technology*. Vol. 277 (2021): 114950.
- Wilson, D, A. 2011. *Clinical Veterinary Advisor The Horse*. Elsevier.
- Wouw, J dan J. A. Joles. 2022. Albumin is an interface between blood plasma and cell membrane and not just a sponge. *Clinical Kidney*. 15(4): 624-634



- Wu, X., F. Li., dan W. Wu. 2020. Effects of rice bran rancidity on the oxidation and structural characteristics of rice bran protein. LWT. Vol 120. Hal 1-23.
- Xu, Q., M. M. M. Azzam., X. Zou., dan X. Dong. 2020. Effects of chitooligosaccharide supplementation on laying performance, egg quality, blood biochemistry, antioxidant capacity and immunity of laying hens during the late laying period. Italia Journal of Animal Science. 19(1): 1181-1188.
- Xu, X., A. Liu., S. Hu., I. Ares., M. R. M. Larranaga., X. Wang., M. Martinez., A. Anadon., dan M. A. Martinez. 2021. Synthetic phenolic antioxidants: metabolism, hazards, and mechanisms of action. Food Chemistry. Vol. 353. Hal 1-15.
- Yoon, H., J. L. Shaw., M. C. Haigis., dan A. Greka. 2021. Lipid metabolism in sickness and in health: emerging regulators of lipotoxicity. Molecular Cell. 81(18): 3708-3730.
- Yuslanti, E, R. 2018. Pengantar Radikal Bebas dan Antioksidan. Deepublish.
- Zhang, C., X. Gai., Y. Tian., J. Wang., D. He., W. Yang., L. Zhang., dan Y. Chen. 2021. Analysis of ethoxyquin and its oxidation products in swine tissues by gas chromatography-tandem mass spectrometry for evaluating the feed to animal tissue transfer of ethoxyquin and its metabolites. Journal of Animal Science and Biotechnology. Vol. 2021 (12): 1-9.
- Zhang, J., J. Chen., J. Yang., S. Gong., J. Zheng., dan G. Xu. 2021. Effects of lard and vegetable oils supplementation quality and concentration on laying performance, egg quality, and liver antioxidant genes expression in Hy-Line Brown. Animals (Basel). 11(3). 769.
- Zhao, H., Y. Chen., S. Wang., C. Wen., dan Y. Zhou. 2021. Effects of dietary natural vitamin E supplementation on laying performance, egg quality, serum biochemical indices, tocopherol deposition, and antioxidant capacity of laying hens. Journal of Animal Science. 20(1): 2254-2262.
- Zhe, L., U. Krogh., C. Lauridsen., M.O. Nielsen., Z. Fang., P.K. Theil. 2023. Impact of dietary fat levels and fatty acid composition on milk fat synthesis in sows at peak lactation. Journal Animal Science and Biotechnology. Vol. 14 (42): 1-16.
- Zou, P., X. Yang., J. Wang., Y. Li., H. Yu., Y. Zhang., G. Liu. 2016. Advances in characterisation and biological activities ochitosan and chitosan oligosaccharides. Food Chemistry. 190:1174–1181.