

DAFTAR PUSTAKA

- Abd El-Hack, M.E., M.E. Shafi, W.Y. Alghamdi, S.A. Abdelnour, A.M. Shehata, A.E. Noreldin, E.A. Ashour, A.A. Swelum, A.A. Al-sagan, M. Alkhateeb, A.E. Taha, A.M.E. Abdel-moneim, V. Tufarelli, and M. Ragni. 2020. Black soldier fly (*Hermetia illucens*) meal as a promising feed ingredient for poultry: A comprehensive review. *Agriculture (Switzerland)*.10:1–31.
- Abdulla, N., T. Loh, H. Akit, A. Sazili, and H. Foo. 2016. Effects of dietary oil sources and calcium: phosphorus levels on growth performance, gut morphology and apparent digestibility of broiler chickens. *S Afr J Anim Sci*. 46:42.
- Abdulla, N.R., T.C. Loh, H.L. Foo, M.I. Alshelmani, and H. Akit. 2019. Influence of Dietary Ratios of n-6: n-3 Fatty Acid on Gene Expression, Fatty Acid Profile in Liver and Breast Muscle Tissues, Serum Lipid Profile, and Immunoglobulin in Broiler Chickens. *J Applied Poultry Res*. 28:454–469.
- Adewole, F.A., L.T. Egbeyale, D.A. Ekunseitan, K.O. Bello, O.A. Lala, and S.A. Famakinde. 2021. Effect of strain and sex on haematological and serum biochemical indices of tropical indigenous chickens. *Niger. J. Anim Prod*. 48:18–26.
- Adhiputra, M.F., B. Hartoyo, and N. Iriyanti. 2022. Blood Fat Profile of Sentul Chicken with Lactic Acid as an Acidifier in Rations Containing Probiotics. *KnE Life Sciences*. 2022: 376-382.
- Al-Sabaei, A.M., A. Al-Fakih, S. Noura, E. Yaghoubi, W. Alaloul, R.A. Al-Mansob, M. Imran Khan, and N.S. Aliyu Yaro. 2022. Utilization of palm oil and its by-products in bio-asphalt and bio-concrete mixtures: A review. *Constr Build Mater*. 337: 1-23.
- Angoua, K.B., N. Mathieu BLEYERE, S. Kamagate, and P. Angoué YAPO. 2021. Blood Biochemical Parameters Exploration in Broilers and Local Chickens in Korhogo, Côte d'Ivoire. *Am. J. Food Nutr*. 9:82–86.
- AOAC. 2005. Official Methods of Analysis. Association of official analytical chemist. 12th Ed. AOAC, Washington DC.
- Appleby, M.C., J.A. Mench, and B.O. Hughes. 2004. Poultry Behaviour and Welfare. CABI Publishing, Cambridge, MA.
- Arunima, S., and T. Rajamohan. 2014. Influence of virgin coconut oil-enriched diet on the transcriptional regulation of fatty acid synthesis and oxidation in rats-a comparative study. *Br. J. Nutr*. 111:1782–1790.
- Aulia, O.A., B. Dwiloka, and M. Arifin. 2005. Perbaikan manajemen pemotongan ternak untuk menghasilkan daging sapi local berkualitas impor. Seminar Nasional Teknologi Peternakan dan Veteriner Universitas Diponegoro, Semarang.

- Aviagen. 2018. Indian River Broiler Management Handbook. *Aviagen Asia Pacific Ltd.*, Bangkok.
- Aviagen. 2019. Ross Boiler: Nutrition Specifications. *Aviagen Asia Pacific Ltd.*, Bangkok.
- Badan Pusat Statistik. 2022. Statistik Peternakan dan Kesehatan Hewan. Direktorat Jenderal Peternakan dan Kesehatan Hewan, Kementerian Pertanian RI.
- Bach, A., and V. Babayan. 1982. Medium-chain triglycerides: an Update. *Am. J. Clin. Nutr.* 36: 950-962.
- Bai, H., Q. Guo, B. Yang, Z. Dong, X. Li, Q. Song, Y. Jiang, Z. Wang, G. Chang, and G. Chen. 2022. Effects of residual feed intake divergence on growth performance, carcass traits, meat quality, and blood biochemical parameters in small-sized meat ducks. *Poult Sci.* 101: 1-9.
- Baldizán, G., M. Oviedo, C. Michelangeli, and R.E. Vargas. 2010. Effects of peach palm oil on performance, serum lipoproteins and haemostasis in broilers. *Br Poult Sci.* 51:784–790.
- Banaszak, M., J. Biesek, J. Kuźniacka, M. Grabowicz, and M. Adamski. 2021. Slaughter yield, quality of meat from broiler chickens of different origin and age on diet with extruded or meal soybean. *J Appl Anim Res.* 49:357–365.
- Bartlett, K., and S. Eaton. 2004. Mitochondrial β -oxidation. *Eur J Biochem.* 271:462–469.
- Bedford, M.R. and H.L. Classen. 1983. An in vitro assay for prediction of broiler intestinal viscosity and growth when fed based diets in the presence of exogenous enzyme. *Poult Sci.* 72: 137-143.
- Bell, D.D. and W.D. Weaver. 2022. Commercial Chicken Meat and Egg Production. 5th Ed. Springer Science + Business Media, Inc, New York.
- Bellezza Oddon, S., I. Biasato, A. Imarisio, M. Pipan, D. Dekleva, E. Colombino, M.T. Capucchio, M. Meneguz, S. Bergagna, R. Barbero, M. Gariglio, S. Dabbou, E. Fiorilla, L. Gasco, and A. Schiavone. 2021. Black soldier fly and yellow mealworm live larvae for broiler chickens: Effects on bird performance and health status. *J Anim Physiol Anim Nutr (Berl).* 105:10–18.
- Bergsson, G., J. Jo´, J. Arnfinnsson, O.´ Lafur, S.S. Steingri´msson, and H. Thormar. 2001. Killing of Gram-positive cocci by fatty acids and monoglycerides. *APMIS.* 109:670–678.
- Bitanah, S., H.S. Kusuma, F. Moels, A.P. Purwanto, and F.S. Nadia. 2017. Total Cholesterol Blood Level Based on Isoflavone and Vitamin E Intake in Hypercholesterolemia. *J Nutr Food Sci.* 7(6):1-3.

- Boateng, L., R. Ansong, W.B. Owusu, and M. Steiner-Asiedu. 2016. Coconut oil and palm oil's role in nutrition, health and national development: A review. *Ghana Med J.* 50:189–196.
- Bull, E., dan J. Morell. 2005. Simple Guide Kolesterol. Terj. dari Simple Guide Cholesterol, oleh Elizabeth Yasmine. Erlangga. Jakarta.
- Cahya Irawan, A., N. Rahmawati, D.A. Astuti, and W. Hermana. 2021. Efek Suplementasi Black Soldier Fly (*Hermetia illucens*) terhadap Produksi Telur dan Metabolit Darah Ayam Petelur The Effect of Black Soldier Fly (*Hermetia illucens*) Supplementation on Laying Hens's Egg Production and Blood Metabolites. *JITRO.* 8:19–25.
- Caimi, C., I. Biasato, G. Chemello, S.B. Oddon, C. Lussiana, V.M. Malfatto, M.T. Capucchio, E. Colombino, A. Schiavone, F. Gai, A. Trocino, A. Brugiapaglia, M. Renna, and L. Gasco. 2021. Dietary inclusion of a partially defatted black soldier fly (*Hermetia illucens*) larva meal in low fishmeal-based diets for rainbow trout (*Oncorhynchus mykiss*). *J Anim Sci Biotechnol.* 12: 1-15.
- Çalik, A., S. Yalçın, S. Küçükersan, P. Saçaklı, G. Yıldız, M.S. Ramay, O. Ahlat, F.K. Erbay Elibol, and S. Taban. 2019. Effects of calcium soaps of animal fats on performance, abdominal fat fatty acid composition, bone biomechanical properties, and tibia mineral concentration of broilers. *Kafkas Univ Vet Fak Derg.* 25:61–70.
- Carneiro Baião, N. Brazilian Journal of Poultry Science Revista Brasileira de Ciência Avícola Oil and Fat in Broiler Nutrition. *Braz. J. Poult. Sci.* 7(3): 129-141.
- Chen, L., H. ying Zhong, J. fei Kuang, J. guo Li, W. jin Lu, and J. ye Chen. 2011. Validation of reference genes for RT-qPCR studies of gene expression in banana fruit under different experimental conditions. *Planta.* 234:377–390.
- Chen, X., J. Jin, F. Hou, B. Song, Z. Li, and Y. Zhao. 2022. Effects of black soldier fly larvae oil on growth performance, immunity and antioxidant capacity, and intestinal function and microbiota of broilers. *J Appl Poult Res.* 31: 1-16.
- Cheng, Q., and D.W. Sun. 2008. Factors affecting the water holding capacity of red meat products: A review of recent research advances. *Crit Rev Food Sci Nutr.* 48:137–159.
- Chu, H.C., and S.H. Chiang. 2017. Deposition of dietary bioactive fatty acids in tissues of broiler chickens. *Poult Sci.* 54:173–178.
- Cláudia Figueiredo-Silva, A., S. Kaushik, F. Terrier, J.W. Schrama, F. Médale, and I. Geurden. 2012. Link between lipid metabolism and voluntary food intake in rainbow trout fed coconut oil rich in medium-chain TAG. *Br. J. Nutr.* 107:1714–1725.
- Cullere, M., A. Schiavone, S. Dabbou, L. Gasco, and A.D. Zotte. 2019. Meat quality and sensory traits of finisher broiler chickens fed with black soldier fly

(*Hermetia illucens* L.) larvae fat as alternative fat source. *Animals* 9(140):1-15.

Cullere, M., G. Tasoniero, V. Giaccone, R. Miotti-Scapin, E. Claeys, S. De Smet, and A. Dalle Zotte. 2016. Black soldier fly as dietary protein source for broiler quails: Apparent digestibility, excreta microbial load, feed choice, performance, carcass and meat traits. *Animal* 10:1923–1930.

Dabbou, S., F. Gai, I. Biasato, M.T. Capucchio, E. Biasibetti, D. Dezzutto, M. Meneguz, I. Plachà, L. Gasco, and A. Schiavone. 2018. Black soldier fly defatted meal as a dietary protein source for broiler chickens: Effects on growth performance, blood traits, gut morphology and histological features. *J Anim Sci Biotechnol* 9 (49): 1-10.

Dabbou, S., A. Lauwaerts, I. Ferrocino, I. Biasato, F. Sirri, M. Zampiga, S. Bergagna, G. Pagliasso, M. Gariglio, E. Colombino, C.G. Narro, F. Gai, M.T. Capucchio, L. Gasco, L. Cocolin, and A. Schiavone. 2021. Modified black soldier fly larva fat in broiler diet: Effects on performance, carcass traits, blood parameters, histomorphological features and gut microbiota. *Animals* 11(1837): 1-20.

Dumas, A., T. Raggi, J. Barkhouse, E. Lewis and E. Weltzien. 2018. The oil fraction and partially defatted meal of black soldier fly larvae (*Hermetia illucens*) affect differently growth performance, feed efficiency, nutrient deposition, blood glucose and lipid digestibility of rainbow trout (*Oncorhynchus mykiss*). *Aquaculture*. 492: 24-34.

Choi, J., J. Song, Y. Choi, D. Jang, E. Kim, I. Kim, and K. Chee. 2016. Daidzein modulations of apolipoprotein b and fatty acid synthase mRNA expression in chick liver vary depending on dietary protein levels. *Anim Biosci*. 236-244.

DeBose-Boyd, R.A. 2008. Feedback regulation of cholesterol synthesis: Sterol-accelerated ubiquitination and degradation of HMG CoA reductase. *Cell Res*. 18:609–621.

Dev, K., J. Begum, A. Biswas, N.A. Mir, J. Singh, R. Prakash, J. Sonowal, K. Bharali, S. Tomar, R. Kant, and N. Ahlawat. 2021. Hepatic transcriptome analysis reveals altered lipid metabolism and consequent health indices in chicken supplemented with dietary *Bifidobacterium bifidum* and mannan-oligosaccharides. *Sci Rep*. 11: 17895.

Dinh, T.T.N., L.D. Thompson, M.L. Galyean, J.C. Brooks, K.Y. Patterson, and L.M. Boylan. 2011. Cholesterol content and methods for cholesterol determination in meat and poultry. *Compr Rev Food Sci Food Saf*. 10:269–289.

Eberlé, D., B. Hegarty, P. Bossard, P. Ferré, and F. Foufelle. 2004. SREBP transcription factors: Master regulators of lipid homeostasis. *Biochimie*. 86:839–848.

El-Kaiaty, A.M., A.E.R.M. Atta, D.T. Dawa, and T.R. El-sayed. 2022. The Impact of Black Soldier Fly (*Hermetia illucens*) as Feed Supplementation on

Productive and Physiological Performance of Broiler Chickens. *World's Vet J.* 12:133–140.

English, G., G. Wanger, and S.M. Colombo. 2021. A review of advancements in black soldier fly (*Hermetia illucens*) production for dietary inclusion in salmonid feeds. *J Agric Food Res.* 5:1-9.

Esperón-Rojas, A.A., R. Baeza-Jiménez, C. Cano-Sarmiento, and H.S. García. 2017. Structured mono- and diacylglycerols with a high content of medium chain fatty acids. *J Oleo Sci.* 66:991–996.

Ewald, N., A. Vidakovic, M. Langeland, A. Kiessling, S. Sampels, and C. Lalander. 2020. Fatty acid composition of black soldier fly larvae (*Hermetia illucens*) – Possibilities and limitations for modification through diet. *J. Waste Manag.* 102:40–47.

Facey, H., M. Kithama, M. Mohammadigheisar, L.A. Huber, A.K. Shoveller, and E.G. Kiarie. 2023. Complete replacement of soybean meal with black soldier fly larvae meal in feeding program for broiler chickens from placement through to 49 days of age reduced growth performance and altered organs morphology. *Poult Sci.* 102:1-12.

Fatehi-Hassanabad, Z., and C.B. Chan. 2005. Transcriptional regulation of lipid metabolism by fatty acids: A key determinant of pancreatic β -cell function. *Nutr Metab (Lond).* 2(1):1-12.

Fouad, A.M., and H.K. El-Senousey. 2014. Nutritional factors affecting abdominal fat deposition in poultry: A review. *Asian-Australas J Anim Sci.* 27:1057–1068.

Fouad, A.M., H.K. El-Senousey, X.J. Yang, and J.H. Yao. 2013. Dietary L-arginine supplementation reduces abdominal fat content by modulating lipid metabolism in broiler chickens. *Animal.* 7:1239–1245.

Fujita, S., B.B. Rasmussen, J.G. Cadenas, J.J. Grady, and E. Volpi. 2006. Effect of insulin on human skeletal muscle protein synthesis is modulated by insulin-induced changes in muscle blood flow and amino acid availability. *Am J Physiol Endocrinol Metab* 291(4):1-22.

Gao, Z., W. Wang, X. Lu, F. Zhu, W. Liu, X. Wang, and C. Lei. 2019. Bioconversion performance and life table of black soldier fly (*Hermetia illucens*) on fermented maize straw. *J Clean Prod.* 230:974–980.

Gasco, L., S. Dabbou, F. Gai, A. Brugiapaglia, A. Schiavone, M. Birolo, G. Xiccato, and A. Trocino. 2019. Quality and consumer acceptance of meat from rabbits fed diets in which soybean oil is replaced with black soldier fly and yellow mealworm fats. *Animals* 9(629):1-14.

Geletu, U.S., M.A. Usmael, Y.Y. Mummed, and A.M. Ibrahim. 2021. Quality of Cattle Meat and Its Compositional Constituents. *Vet Med Int.* 1-9.

- Gheisari, A., S.S.A.S. Fosoul, S. Pourali, E.N. Esfahani, and M. Mohammadrezaei. 2017. Blood lipid metabolites and meat lipid peroxidation responses of broiler chickens to dietary lecithinized palm oil. *S Afr J Anim Sci.* 47:526–534.
- Hamilton, R.L., M.C. Williams, and C.J.R.J. Fielding and Havel. 1976. Discoidal bilayer structure of nascent high density lipoproteins from perfused rat liver. *J Clin Investig.* 58:667–680.
- Harini, M., and P. Astirin². 2009. Blood cholesterol levels of hypercholesterolemic rat (*Rattus norvegicus*) after VCO treatment. 1:53–58.
- Hartinger, K., J. Greinix, N. Thaler, M.A. Ebbing, N. Yacoubi, K. Schedle, and M. Gierus. 2021. Effect of graded substitution of soybean meal by hermetia illucens larvae meal on animal performance, apparent ileal digestibility, gut histology and microbial metabolites of broilers. *Animals* 11(1628):1-16.
- Hasibuan, R.M., E. Erwan, M. Rodiallah, and S. Maya. 2021. *Jurnal Ilmu dan Industri Peternakan* pISSN 2355-0732. 7:92–103.
- Hassan, H.E., A.A. Abd El-Rahman, and F.M. Shehata. 2011. Machine vision method for quality evaluation of cow meat. *Misr J. Ag. Eng.* 28(2): 416-439.
- Hejdysz, M., S. Kaczmarek, D. Józefiak, D. Jamroz, and A. Rutkowski. Effect of different medium chain fatty acids, calcium butyrate, and salinomycin on performance, nutrient utilization, and fermentation products in gastrointestinal tracts of broiler chickens. *J Anim Plant Sci.* 28(2):377-387.
- Heuel, M., C. Sandrock, F. Leiber, A. Mathys, M. Gold, C. Zurbrüegg, I.D.M. Gangnat, M. Kreuzer, and M. Terranova. 2022. Black soldier fly larvae meal and fat as a replacement for soybeans in organic broiler diets: effects on performance, body N retention, carcass and meat quality. *Br Poult Sci.* 63:650–661.
- Heuel, M., C. Sandrock, F. Leiber, A. Mathys, M. Gold, C. Zurbrügg, I.D.M. Gangnat, M. Kreuzer, and M. Terranova. 2021. Black soldier fly larvae meal and fat can completely replace soybean cake and oil in diets for laying hens. *Poult Sci* 100:1-11.
- Hong, S.M., J.H. Hwang, and I.H. Kim. 2012. Effect of medium-chain triglyceride (MCT) on growth performance, nutrient digestibility, blood characteristics in weanling pigs. *Asian-Australas J Anim Sci.* 25:1003–1008.
- Ipema, A.F., W.J.J. Gerrits, E.A.M. Bokkers, B. Kemp, and J.E. Bolhuis. 2020. Provisioning of live black soldier fly larvae (*Hermetia illucens*) benefits broiler activity and leg health in a frequency- and dose-dependent manner. *Appl Anim Behav Sci* 230:1-10.
- Ismail, S.R., S.K. Maarof, S.S. Ali, and A. Ali. 2018. Systematic review of palm oil consumption and the risk of cardiovascular disease. *PLoS One.* 13:1-16.

- Jadhav, H.B., and U.S. Annapure. 2022. Triglycerides of medium-chain fatty acids: a concise review. *J Food Sci Technol.* 1-10.
- Jadhav, P., S. Manwar, K. Khose, M. Wade, M. Gole, and G. Langote. 2021. Effect of medium chain fatty acids as replacement to antibiotics in diets on growth performance and gut health in broiler chicken. *Indian J Anim Res.* 55:894–899.
- Jackman, J.A., R.D. Boyd, and C.C. Elrod. 2020. Medium-chain fatty acids and monoglycerides as feed additives for pig production: Towards gut health improvement and feed pathogen mitigation. *J Anim Sci Biotechnol* 11.
- Jlali, M., V. Gigaud, S. Métayer-Coustard, N. Sellier, S. Tesseraud, E. le Bihan-Duval, and C. Berri. 2012. Modulation of glycogen and breast meat processing ability by nutrition in chickens: Effect of crude protein level in 2 chicken genotypes. *J Anim Sci.* 90:447–455.
- Jones, A.L., G.T. Hradek, C. Hornick, G. Renaud, E.E. Windler, and R.J. Havel. 1984. Uptake and processing of remnants of chylomicrons and very low density lipoproteins by rat liver. *J Lipid Res.* 25:1151–1158.
- Joseph, S.J., S.L. Pratt, E. Pavan, R. Rekaya, and S.K. Duckett. 2010. Omega-6 fat supplementation alters lipogenic gene expression in bovine subcutaneous adipose tissue. *Gene Regul Syst Bio.* 2010:91–101.
- Jump, D.B. 2004. Fatty Acid Regulation of Gene Transcription. *Crit Rev Clin Lab Sci.* 41:41–78.
- Kamruzzaman, M., Y. Makino, and S. Oshita. 2016. Parsimonious model development for real-time monitoring of moisture in red meat using hyperspectral imaging. *Food Chem.* 196:1084–1091.
- Karaoglu, M. and H. Durdag. 2005. The influence of dietary probiotic (*Saccharomyces cerevisiae*) supplementation and different slaughter age on the performance, slaughter, and carcass properties of broilers. *Int. J. Poult. Sci.* 4(5): 309-316.
- Khan, I.A., N.B. Parker, C. V. Löhr, and G. Cherian. 2021. Docosaheptaenoic acid (22:6 n-3)-rich microalgae along with methionine supplementation in broiler chickens: effects on production performance, breast muscle quality attributes, lipid profile, and incidence of white striping and myopathy. *Poult Sci.* 100:865–874.
- Khaskheli, A.A., and L. Chou. 2020. Evaluation of fatty acids composition, metabolizable energy, nutrients digestibility of crude palm oil fat crystals in turkeys. *Anim Feed Sci Technol* 270:1-5.
- Khatibjoo, A., M. Mahmoodi, F. Fattahnia, M. Akbari-Gharaei, A.N. Shokri, and S. Soltani. 2018. Effects of dietary short- and medium-chain fatty acids on performance, carcass traits, jejunum morphology, and serum parameters of broiler chickens. *J Appl Anim Res.* 46:492–498.

- Khatun, J., T.C. Loh, H. Akit, H.L. Foo, and R. Mohamad. 2017. Fatty acid composition, fat deposition, lipogenic gene expression and performance of broiler fed diet supplemented with different sources of oil. *J. Anim. Sci.* 88:1406–1413.
- Kierończyk, B., M. Rawski, Z. Mikołajczak, P. Szymkowiak, K. Stuper-Szablewska, and D. Józefiak. 2023. Black Soldier Fly Larva Fat in Broiler Chicken Diets Affects Breast Meat Quality. *Animals.* 13:1137.
- Kierończyk, B., J. Sypniewski, M. Rawski, W. Czekala, S. Swiatkiewicz, and D. Józefiak. 2020. From Waste to Sustainable Feed Material: The Effect of *Hermetia Illucens* Oil on the Growth Performance, Nutrient Digestibility, and Gastrointestinal Tract Morphometry of Broiler Chickens. *Ann. Anim. Sci.* 20:157–177.
- Kim, B., H.T. Bang, K.H. Kim, M.J. Kim, J.Y. Jeong, J.L. Chun, and S.Y. Ji. 2020. Evaluation of black soldier fly larvae oil as a dietary fat source in broiler chicken diets. *J Anim Sci Technol.* 62:187–197.
- Kim, Y.B., D.H. Kim, S.B. Jeong, J.W. Lee, T.H. Kim, H.G. Lee, and K.W. Lee. 2020. Black soldier fly larvae oil as an alternative fat source in broiler nutrition. *Poult Sci.* 99:3133–3143.
- Kim, B., H.T. Bang, J.Y. Jeong, M. Kim, K.H. Kim, J.L. Chun, and S.Y. Ji. 2021. Effects of dietary supplementation of black soldier fly (*Hermetia illucens*) larvae oil on broiler health. *Poult Sci.* 58:222–229.
- Kim, B., M. Kim, J.Y. Jeong, H.R. Kim, S.Y. Ji, H. Jung, and S.H. Park. 2022. Black soldier fly (*Hermetia illucens*) larvae oil as an alternative fat ingredient to soybean oil in laying hen diets. *Anim Biosci.* 35:1408–1417.
- Kim, Y. Bin, S.R. Nawarathne, H.M. Cho, J.S. Hong, J.M. Heo, and J. Son. 2022. Feeding a calcium-enriched fatty acid could ameliorate the growth performance of broilers under the chronic heat stress. *J Anim Sci Technol.* 64:84–96.
- Kleiner, I.S. and B. Dotti. 1962. Laboratory Instruction in Biochemistry. 6th Ed. The C.V Mosby Co, New York.
- König, B., H. Kluge, K. Haase, C. Brandsch, G.I. Stangl, and K. Eder. Effects of Clofibrate Treatment in Laying Hens. *Poult Sci.* 86:1187-1195.
- Kolani, A., Y. Adjrah, M. Eklou-Laws, A. Teteh, and K. Tona. 2018. Effects of Dietary Palm Oil on Production Performance and Serum Parameters of Laying Hens. *Int J Poult Sci.* 18:1–6.
- Konjufca, V.H., G.M. Pesti, and R.I. Bakalli. 1997. Modulation of Cholesterol Levels in Broiler Meat by Dietary Garlic and Copper 1. *Poult Sci.* 76:1264-1271.

- Kryeziu, A.J., M. Kamberi, S. Muji, N. Mestani, and S. Berisha. 2018. Carcass traits of broilers as affected by different stocking density and sex. *Bulg. J. Agric. Sci.* 24(6):1097-1103.
- Lacy, M. & L. R. Vest. 2000. *Improving Feed Conversion in Broiler : A Guide for Growers*. Springer Science and Business Media Inc, New York.
- Lekshmi Sheela, D., P.A. Nazeem, A. Narayanankutty, J.J. Manalil, and A.C. Raghavamenon. 2016. In Silico and Wet Lab Studies Reveal the Cholesterol Lowering Efficacy of Lauric Acid, a Medium Chain Fat of Coconut Oil. *Plant Foods Hum Nutr.* 71:410–415.
- Lesson, S., and J.D. Summer. 1991. *Commercial poultry nutrition*. University Books, Montreal.
- Li, S., H. Ji, B. Zhang, J. Tian, J. Zhou, and H. Yu. 2016. Influence of black soldier fly (*Hermetia illucens*) larvae oil on growth performance, body composition, tissue fatty acid composition and lipid deposition in juvenile Jian carp (*Cyprinus carpio* var. Jian). *Aquaculture*. 465:43–52.
- Li, Y., H. Zhang, L. Yang, L. Zhang, and T. Wang. 2015. Effect of medium-chain triglycerides on growth performance, nutrient digestibility, plasma metabolites and antioxidant capacity in weanling pigs. *J. Anim. Nutr.* 1:12–18.
- Liscum, L. 2008. *Biochemistry of Lipids, Lipoproteins and Membranes*. 5th Ed. Elsevier Science, Amsterdam.
- Liu, Y.S., Y.Y. Zhang, T. Xing, J.L. Li, X.F. Wang, X.D. Zhu, L. Zhang, and F. Gao. 2020. Glucose and lipid metabolism of broiler chickens fed diets with graded levels of corn resistant starch. *Br Poult Sci.* 599–607.
- Livak, K.J. and T.D. Schmittgen. 2001. Analysis of relative gene expression data using real time quantitative PCR and the $2^{-\Delta\Delta CT}$ method. *Methods*. 25: 402-408.
- Long, S., Y. Xu, C. Wang, C. Li, D. Liu, and X. Piao. 2018. Effects of dietary supplementation with a combination of plant oils on performance, meat quality and fatty acid deposition of broilers. *Asian-Australas J Anim Sci.* 31:1773–1780.
- Lu, K. Le, W.N. Xu, L.N. Wang, D.D. Zhang, C.N. Zhang, and W. Bin Liu. 2014. Hepatic β -oxidation and regulation of carnitine palmitoyltransferase (CPT) I in blunt snout bream *Megalobrama amblycephala* fed a high fat diet. *PLoS One*. 9(3):1-12.
- Lu, L., X.G. Luo, C. Ji, B. Liu, and S.X. Yu. 2007. Effect of manganese supplementation and source on carcass traits, meat quality, and lipid oxidation in broilers. *J Anim Sci.* 85:812–822.

- Mandey, J.S., Y.H.S. Kowel, M.N. Regar, and J.R. Leke. 2017. Effect of different level of energy and crude fiber from sawdust in diets on carcass quality of broiler. *J Indones Trop Anim Agric.* 42:240–246.
- Marangoni, F., G. Corsello, C. Cricelli, N. Ferrara, A. Ghiselli, L. Lucchin, and A. Poli. 2015. Role of poultry meat in a balanced diet aimed at maintaining health and wellbeing: An Italian consensus document. *Food Nutr Res.* 59:1–11.
- Marono, S., R. Loponte, P. Lombardi, G. Vassalotti, M.E. Pero, F. Russo, L. Gasco, G. Parisi, G. Piccolo, S. Nizza, C. Di Meo, Y.A. Attia, and F. Bovera. 2017. Productive performance and blood profiles of laying hens fed *Hermetia illucens* larvae meal as total replacement of soybean meal from 24 to 45 weeks of age. *Poult Sci.* 96:1783–1790.
- Marten, B., M. Pfeuffer, and J. Schrezenmeir. 2006. Medium-chain triglycerides. *Int Dairy J.* 16:1374–1382.
- Martins, C., M. Cullere, A.D. Zotte, C. Cardoso, S.P. Alves, R.J.B. De Bessa, J.P.B. Freire, and L. Falcaõ-E-Cunha. 2018. Incorporation of two levels of black soldier fly (*Hermetia illucens* L.) larvae fat or extruded linseed in diets of growing rabbits: Effects on growth performance and diet digestibility. *Czech J Anim Sci.* 63:356–362.
- Mashima, T., H. Seimiya, and T. Tsuruo. 2009. De novo fatty-acid synthesis and related pathways as molecular targets for cancer therapy. *Br J Cancer.* 100:1369–1372.
- Mbhele, F.G.T., C.M. Mnisi, and V. Mlambo. 2019. A nutritional evaluation of insect meal as a sustainable protein source for jumbo quails: Physiological and meat quality responses. *Sustainability (Switzerland).* 11(6592):1-10.
- Mhlongo, G., and C.M. Mnisi. 2023. Effect of seaweed (*Ecklonia maxima*) on apparent nutrient digestibility, growth performance, and physiological and meat quality parameters in Boschveld cockerels. *Poult Sci.* 102:1-9.
- Milićević, D., D. Vranić, Z. Mašić, N. Parunović, D. Trbović, J. Nedeljković-Trailović, and Z. Petrović. 2014. The role of total fats, saturated/unsaturated fatty acids and cholesterol content in chicken meat as cardiovascular risk factors. *Lipids Health Dis.* 13:42.
- Mir, N.A., A. Rafiq, F. Kumar, V. Singh, and V. Shukla. 2017. Determinants of broiler chicken meat quality and factors affecting them: a review. *J Food Sci Technol.* 54:2997–3009.
- Miranda, C.D., J.A. Cammack, and J.K. Tomberlin. 2019. Life-history traits of the black soldier fly, *hermetia illucens* (L.) (diptera: Stratiomyidae), reared on three manure types. *Animals.* 9(281):1-15.
- Mirghelenj, S.A., A. Golian, M.A. Behroozlak, and S. Moradi. 2016. Effects of Different Fat Sources in Finisher Diet of Broiler Chickens on Performance, Fat Deposition and Blood Metabolites. *Iran. J. Appl. Anim. Sci.* 6(1): 143-148

- Mjøs, S.A. 2003. Identification of fatty acids in gas chromatography by application of different temperature and pressure programs on a single capillary column. *J Chromatogr A*. 1015:151–161.
- Mosavat, N. 2011. Use of Soybean Fatty Acids and Soybean Calcium Salt Fatty Acids in Broiler Chickens Diets Nima Mosavat: Use of Soybean Fatty Acids and Soybean Calcium Salt Fatty Acids in Broiler Chickens Diets. *Adv Environ Biol*. 5:3068–3071.
- Montgomery, R., R.L. Dryer, T.W. Conway dan A.A. Spector. 1983. Biokimia-Suatu Pendekatan Berorientasi Kasus. Terj. dari *Biochemistry: A Case-Oriented Approach*, oleh N.Ismadi. Gadjah Mada University Press, Yogyakarta.
- Nahashon, S. N., N. Adefope, A. Amenyenu and D. Wright. 2005. Effects of dietary metabolizable energy and crude protein concentration on growth performance and carcass characteristics Of French Guinea Broiler. *Poult. Sci*. 84: 337-344.
- Nasrul Haq, A., D. Septinova, and dan Purnama Edy Santosa. 2015. The Physical of Beef from Traditional Market in Bandar Lampung. *Jurnal Ilmiah Peternakan Terpadu*. 3(3):98-103.
- Nelson, D. L. & Cox, M. M. 2011. *Lehninger Principles of Biochemistry*. Worth Publishers, New York.
- Nilugonda, A., S. Sankaralingam, P. Anitha, D.K.D. Mathew, and P.B. Aswathi. 2022. Influence of Black Soldier Fly (*Hermetia illucens*) larvae feeding on carcass characteristics of Gramasree hens. *Vet. Anim. Sci*. 53(3):429-434.
- North, M.O and D.D. Bell. 1992. *Commercial Chicken Production Manual*. 2nd Ed. The Avi Publishing Co. Inc. Wesport, Conecticut, New York.
- Odia, O.J. 2015. Palm oil and the heart: A review. *World J Cardiol* 7:144.
- Ou, J., H. Tu, B. Shan, A. Luk, R.A. Debose-Boyd, Y. Bashmakov, J.L. Goldstein, and M.S. Brown. Unsaturated fatty acids inhibit transcription of the sterol regulatory element-binding protein-1c (SREBP-1c) gene by antagonizing ligand-dependent activation of the LXR. *PNAS*. 98(11):6027-6032.
- Papamandjaris, A.A., D.E. Macdougall, and P.J.H. Jones. 1998. Minireview medium chain fatty acid metabolism and energy expenditure: obesity treatment implications. *Life Sciences*. 62(14):1203-1215.
- Park, B.S., K.H. Um, W.K. Choi, and S.O. Park. 2017. Einfluss des Einsatzes des Mehls von Larven der Schwarzen Soldatenfliege im Futter auf Legeleistung, Eiqualität, Blutparameter und Bakterienflora im Kot von Legehennen. *Eur. Poult. Sci*. 81:1-12.
- Park, S.H., H.R. Kim, Y.C. Baek, C.H. Ryu, S.Y. Ji, J.Y. Jeong, M. Kim, H. Jung, and B. Kim. 2021. Effects of dietary inclusion level of microwave-dried and press-defatted black soldier fly (*Hermetia illucens*) larvae meal on productive

performance, cecal volatile fatty acid profile, and egg quality in laying hens. *Animals*. 11(1486):1-15.

Patel, N., M. Bergamaschi, L. Magro, A. Petrini, and G. Bittante. 2019. Relationships of a detailed mineral profile of meat with animal performance and beef quality. *Animals*.9(1073):1-18.

Patterson, P.H., N. Acar, A.D. Ferguson, L.D. Trimble, H.B. Sciubba, and E.A. Koutsos. 2021. The impact of dietary Black Soldier Fly larvae oil and meal on laying hen performance and egg quality. *Poult Sci*. 100:1-8.

Popeijus, H.E., W. Zwaan, J.Z. Tayyeb, and J. Plat. 2021. Potential contribution of short chain fatty acids to hepatic apolipoprotein a-i production. *Int J Mol Sci* 22(5986):1-12.

Popova, T., E. Petkov, and M. Ignatova. 2020. Effect of black soldier fly (*Hermetia illucens*) meals on the meat quality in broilers. *Agric. Food. Sci*. 29:177–188.

Prayitno, A.H., E. Suryanto, and D. Zuprizal. 2010. Kualitas fisik dan sensoris daging ayam broiler yang diberi pakan dengan penambahan ampas virgin coconut oil (vco) physical and sensory quality of meat of broiler chicken fed with the addition of virgin coconut oil waste. *Buletin Peternakan*. 34:55–63.

Qiao, M., D.L. Fletcher, D.P. Smith, and J.K. Northcutt. The Effect of Broiler Breast Meat Color on pH, Moisture, Water-Holding Capacity, and Emulsification Capacity. *Poult Sci*. 80:676-680.

Regar, M.N., B. Tulung, J.J.M.R. Londok, S.A.E. Moningkey, and Y.R.L. Tulung. 2019. Blood lipid profile of broiler chicken as affected by a combination of Feed restriction and different crude fiber sources. Page in IOP Conference Series: Earth and Environmental Science. Institute of Physics Publishing. 387:1-4.

Reyer, H., R. Hawken, E. Murani, S. Ponsuksili, and K. Wimmers. 2015. The genetics of feed conversion efficiency traits in a commercial broiler line. *Sci Rep* 5. 16387.

Roopashree, P.G., S.S. Shetty, and N. Suchetha Kumari. 2021. Effect of medium chain fatty acid in human health and disease. *J Funct Foods* 87.

Salinas, J., R.G. Ramírez, M.M. Domínguez, N. Reyes-Bernal, N. Trinidad-Lárraga, and M.F. Montaña. 2006. Effect of calcium soaps of tallow on growth performance and carcass characteristics of Pelibuey lambs. *Small Rumin. Res*. 66:135–139.

Saminathan, M., W.N.W. Mohamed, 'Abidah Md Noh, N.A. Ibrahim, M.A. Fuat, and S.K. Ramiah. 2022. Effects of dietary palm oil on broiler chicken productive performance and carcass characteristics: a comprehensive review. *Trop Anim Health Prod*. 54-64.

Sams, A.R. 2001. *Poultry Meat Processing*. CRC Press, Boca Raton, FL.

- Saponaro, C., M. Gaggini, F. Carli, and A. Gastaldelli. 2015. The subtle balance between lipolysis and lipogenesis: A critical point in metabolic homeostasis. *Nutrients*. 7:9453–9474.
- Sasaki, Y., R. Uemura, S. Sekiguchi, T. Takahashi, Y. Fujii, and M. Sueyoshi. 2014. An analysis of factors affecting production performance in broiler flocks on Japanese commercial farms. *Br Poult Sci*. 55:737–744.
- Schiavone, A., M. Cullere, M. De Marco, M. Meneguz, I. Biasato, S. Bergagna, D. Dezzutto, F. Gai, S. Dabbou, L. Gasco, and A.D. Zotte. 2017. Partial or total replacement of soybean oil by black soldier fly larvae (*Hermetia illucens* L.) fat in broiler diets: Effect on growth performances, feed-choice, blood traits, carcass characteristics and meat quality. *Ital J Anim Sci*. 16:93–100.
- Schiavone, A., S. Dabbou, M. De Marco, M. Cullere, I. Biasato, E. Biasibetti, M.T. Capucchio, S. Bergagna, D. Dezzutto, M. Meneguz, F. Gai, A. Dalle Zotte, and L. Gasco. 2018. Black soldier fly larva fat inclusion in finisher broiler chicken diet as an alternative fat source. *Animal*. 12:2032–2039.
- Schiavone, A., S. Dabbou, M. Petracci, M. Zampiga, F. Sirri, I. Biasato, F. Gai, and L. Gasco. 2019. Black soldier fly defatted meal as a dietary protein source for broiler chickens: Effects on carcass traits, breast meat quality and safety. *Animal*. 13:2397–2405.
- Schoeneck, M., and D. Iggman. 2021. The effects of foods on LDL cholesterol levels: A systematic review of the accumulated evidence from systematic reviews and meta-analyses of randomized controlled trials. *Nutr Metab Cardiovasc Dis*. 31:1325–1338.
- Schumacher, M., H. Delcurto-Wyffels, J. Thomson, and J. Boles. 2022. Fat Deposition and Fat Effects on Meat Quality—A Review. *Animals* 12(1550):1-12.
- Şen, U., E. Şirin, A.G. Filik, H. Önder, D. Piwczyński, and M. Kolenda. 2021. Growth and slaughter characteristics of weaning male kids of turkish native goat breeds. *Animals*. 11(2788):1-11.
- Shahryari, M., S.A. Tabeidian, A.D. Foroozandeh Shahraki, S.N. Tabatabaei, M. Toghyani, M. Forouzmand, and M. Habibian. 2021. Using soybean acid oil or its calcium salt as the energy source for broiler chickens: Effects on growth performance, carcass traits, intestinal morphology, nutrient digestibility, and immune responses. *Anim Feed Sci Technol*. 276:1-15.
- Shokrollahi, B., Z. Yavari, and A.H. Kordestani. 2014. Effects of dietary medium-chain fatty acids on performance, carcass characteristics, and some serum parameters of broiler chickens. *Br Poult Sci*. 55:662–667.
- Soeparno. 2009. Ilmu Nutrisi dan Teknologi Daging. 5th Ed. Gadjah Mada University Press, Yogyakarta.

- Soeparno. 2011. Ilmu Nutrisi dan Gizi Daging. Gadjah Mada University Press, Yogyakarta.
- Soetan, K.O., C.O. Olaiya, and O.E. Oyewole. 2010. The importance of mineral elements for humans, domestic animals and plants: A review. *Afr. J. Food. Sci.* 4:200–222.
- Softic, S., D.E. Cohen, and C.R. Kahn. 2016. Role of Dietary Fructose and Hepatic De Novo Lipogenesis in Fatty Liver Disease. *Dig Dis Sci.* 61:1282–1293.
- Souza Vilela, J., N.M. Andronicos, M. Kolakshyapati, M. Hilliar, T.Z. Sibanda, N.R. Andrew, R.A. Swick, S. Wilkinson, and I. Ruhnke. 2021. Black soldier fly larvae in broiler diets improve broiler performance and modulate the immune system. *J. Anim. Nutr.* 7:695–706.
- Suparman, S. Purwanti, and N. Nahariah. 2021. The effect of fish meal protein substitution with Black Soldier Fly (BSF) larva meal protein in quail feed on the chemical quality of eggs. Page in *IOP Conference Series: Earth and Environmental Science*. IOP Publishing Ltd. 788:1-6.
- Surendra, K.C., R. Olivier, J.K. Tomberlin, R. Jha, and S.K. Khanal. 2016. Bioconversion of organic wastes into biodiesel and animal feed via insect farming. *Renew Energy.* 98:197–202.
- Sypniewski, J., B. Kierończyk, A. Benzertiha, Z. Mikołajczak, E. Pruszyńska-Oszmałek, P. Kołodziejki, M. Sassek, M. Rawski, W. Czekala, and D. Józefiak. 2020. Replacement of soybean oil by *Hermetia illucens* fat in turkey nutrition: effect on performance, digestibility, microbial community, immune and physiological status and final product quality. *Br Poult Sci.* 61:294–302.
- Tachibana, S., K. Sato, T. Takahashi, and Y. Akiba. 2002. Octanoate inhibits very low-density lipoprotein secretion in primary cultures of chicken hepatocytes. *Comparative Biochemistry and Physiology Part A.* 132:621-627.
- Tada, H., A. Nohara, and M.A. Kawashiri. 2018. Serum triglycerides and atherosclerotic cardiovascular disease: Insights from clinical and genetic studies. *Nutrients.* 10(1789):1-8.
- Tan, C.H., C.J. Lee, S.N. Tan, D.T.S. Poon, C.Y.E. Chong, and L.P. Pui. 2021. Red palm oil: A review on processing, health benefits and its application in food. *J Oleo Sci.* 70:1201–1210.
- Tancharoenrat, P., V. Ravindran, F. Zaefarian, and G. Ravindran. 2014. Digestion of fat and fatty acids along the gastrointestinal tract of broiler chickens. *Poult Sci* 93:371–379.
- Tandra, H., A.I. Suroso, Y. Syaikat, and M. Najib. 2021. Indonesian Oil Palm Export Market Share and Competitiveness to European Union Countries: Is The Roundtable on Sustainable Palm Oil (RSPO) Influential?. *Jurnal Manajemen dan Agribisnis.* 18(3):342-350.

- Tóthová, C., E. Sesztáková, B. Bielik, and O. Nagy. 2019. Changes of total protein and protein fractions in broiler chickens during the fattening period. *Vet World*. 12:598–604.
- Tsado, D.N., A.H. Dikko, O.J. Kperun, B.K. Jiya, M.O. Ojapah, A. Ibrahim and B.D. Olatunji. Performance and nutrient digestibility of broiler chickens fed graded levels of fermented and toasted *Albizia lebbbeck* seed meal. *Nig. J. Anim. Prod.* 45(2): 150-156.
- Velasco, S., L.T. Ortiz, C. Alzueta, A. Rebolé, J. Treviño, and M.L. Rodríguez. 2010. Effect of inulin supplementation and dietary fat source on performance, blood serum metabolites, liver lipids, abdominal fat deposition, and tissue fatty acid composition in broiler chickens. *Poult Sci.* 89:1651–1662.
- Villanueva-Lopez, D.A., F. Infante-Rodríguez, O.G. Nájera-Pedraza, H.B. Barrios-García, and J. Salinas-Chavira. 2020. Effect of dietary frying fat, vegetable oil and calcium soaps of palm oil on the productive behavior and carcass yield of broiler chickens. *Rev Bras Cienc Avic.* 22:1–8.
- Wan Nooraida, W.M., and M.N. Abidah. 2020. Effects of pellet supplemented with different percentages of oil palm lipid sources on broiler performance, carcass trait and feed quality. *J Oil Palm Res.* 32:313–325.
- Wang, B., J. Fu, L. Li, D. Gong, X. Wen, P. Yu, and Z. Zeng. 2016. Medium-chain fatty acid reduces lipid accumulation by regulating expression of lipid-sensing genes in human liver cells with steatosis. *Int J Food Sci Nutr.* 67:288–297.
- Wang, B., M. Jia, L. Fang, L. Jiang, and Y. Li. 2018. Effects of eucalyptus oil and anise oil supplementation on rumen fermentation characteristics, methane emission, and digestibility in sheep. *J Anim Sci.* 96:3460–3470.
- Wang, H.H., G. Garruti, M. Liu, P. Portincasa, and D.Q.H. Wang. 2017. Cholesterol and lipoprotein metabolism and atherosclerosis: Recent advances in reverse cholesterol transport. *Ann Hepatol.* 16:s27–s42.
- Wang, J., X. Wang, J. Li, Y. Chen, W. Yang, and L. Zhang. 2015. Effects of dietary coconut oil as a medium-chain fatty acid source on performance, carcass composition and serum lipids in male broilers. *Asian-Australas J Anim Sci.* 28:223–230.
- Wang, Y.S., and M. Shelomi. 2017. Review of black soldier fly (*Hermetia illucens*) as animal feed and human food. *Foods* 6(91):1-23.
- Warner, C.M., S.-W. Hahm, S.L. Archibeque, J.J. Wagner, T.E. Engle, I.N. Roman-Muniz, D. Woerner, M. Sponsler, and H. Han. 2015. A comparison of supplemental calcium soap of palm fatty acids versus tallow in a corn-based finishing diet for feedlot steers. *J Anim Sci Technol.* 57(25):1-7.
- Weidemüller, P., M. Kholmatov, E. Petsalaki, and J.B. Zaugg. 2021. Transcription factors: Bridge between cell signaling and gene regulation. *Proteomics.* 21:1-14.

- Williams, P. 2007. Key nutrients delivered by red meat in the diet. *J. Am. Diet. Assoc. Aus.* 64(4): 113-119.
- William, O.R., H.E. Howard, P.G. Jesse, and E.U. Etsuro. 2015. *Duke's Physiology of Domestic Animals*. 13nded. Wiley-Blackwell. New Jersey (US).
- Wirahadikusumah, M. 1985. *Biokimia Metabolisme Energi, Karbohidrat, dan Lipid*. ITB, Bandung.
- Wu, N., L.K. Sarna, S.Y. Hwang, Q. Zhu, P. Wang, Y.L. Siow, and O. Karmin. 2013. Activation of 3-hydroxy-3-methylglutaryl coenzyme A (HMG-CoA) reductase during high fat diet feeding. *Biochim Biophys Acta Mol Basis Dis.* 1832:1560–1568.
- Xiao, L., S.A. Mjøs, and B.O. Haugsgjerd. 2012. Efficiencies of three common lipid extraction methods evaluated by calculating mass balances of the fatty acids. *J Food Compost Anal.* 25:198–207.
- Xie, M., J.N. Zhao, S.S. Hou, and W. Huang. 2010. The apparent metabolizable energy requirement of White Pekin ducklings from hatch to 3 weeks of age. *Anim Feed Sci Technol.* 157:95–98.
- Xie, Q., K. Xie, J. Yi, Z. Song, H. Zhang, and X. He. 2022. The effects of magnolol supplementation on growth performance, meat quality, oxidative capacity, and intestinal microbiota in broilers. *Poult Sci* 101:1-9.
- Xie, Z., G. Shen, Y. Wang, and C. Wu. 2019. Curcumin supplementation regulates lipid metabolism in broiler chickens. *Poult Sci.* 98:422–429.
- Xu, E., C. Chen, J. Fu, L. Zhu, J. Shu, M. Jin, Y. Wang, and X. Zong. 2021. Dietary fatty acids in gut health: Absorption, metabolism and function. *J. Anim Nutr.* 7:1337–1344.
- Xu, Q., C. Xue, Y. Zhang, Y. Liu, J. Wang, X. Yu, X. Zhang, R. Zhang, X. Yang, and C. Guo. 2013. Medium-chain fatty acids enhanced the excretion of fecal cholesterol and cholic acid in C57BL/6J mice fed a cholesterol-rich diet. *Biosci Biotechnol Biochem.* 77:1390–1396.
- Yao, Y., Y. Liu, C. Li, X. Huang, X. Zhang, P. Deng, G. Jiang, and Q. Dai. 2023. Effects of rosemary extract supplementation in feed on growth performance, meat quality, serum biochemistry, antioxidant capacity, and immune function of meat ducks. *Poult Sci.* 102:1-8.
- Yerpes, M., P. Llonch, and X. Manteca. 2020. Factors associated with cumulative first-week mortality in broiler chicks. *Animals.* 10(310):1-13.
- Yusup, F.H., N. Frasiska, and N. Rahayu. 2021. Addition of bidara leaves (*Ziziphus spina - Christi* L.) in drinking water on production and mortality of broiler chickens. Page in *IOP Conference Series: Earth and Environmental Science*. IOP Publishing Ltd. 902:1-4.

- Zantek, Z., S. Buchheit-Renko, F. Ferrara, W. Vahjien, A.G. Van Kessel, and R. Pieper. 2011. Nutritional and physiological role of medium-chain triglycerides and medium-chain fatty acids in piglets. *Anim. Heal Res. Rev.* 12: 83-93.
- Zeitz, J.O., J. Fennhoff, H. Kluge, G.I. Stangl, and K. Eder. 2015. Effects of dietary fats rich in lauric and myristic acid on performance, intestinal morphology, gut microbes, and meat quality in broilers. *Poult Sci.* 94:2404–2413.
- Zhang, Y., X. Yang, X. Zhang, Q. Xu, X. Yu, C. Xue, and Y. Liu. 2018. Effects of medium-chain fatty acids on high-density-lipoprotein in rats fed with high fat diet. *Wei Sheng Yan Jiu.* 47(1): 123-127.
- Zijlstra, R.T. 2021. Binding Fatty Acids into Indigestible Calcium Soap: Removing a Piece of Pie. *J. Nutr.* 151:1053–1054.