

DAFTAR PUSTAKA

- Abubakar, A.R., and M. Haque. 2020. Preparation of medicinal plants: basic extraction and fractionation procedures for experimental purposes. *J. Pharm. Bio. Sci.* 12(1):1-10.
- Adibmoradi, M., B. Navidshad, J. Seifdavati, and M. Royan. 2006. Effect of dietary garlic meal on histological structure of small intestine in broiler chicken. *J. Poult. Sci.* 43: 378-383.
- Agati, G., E. Azzarello, S. Pollastri, and M. Tattini. 2012. Flavonoids as antioxidants in plants: Location and functional significance. *Plant Sci.* 196: 67-76.
- Amat, C., J.M. Planas, and M. Moreto. 1996. Kinetics of hexose uptake by the small and large intestine of the chicken. *Am. J. Physiol.* 271: 1085-1089.
- Ansari, M.J. and S.M. Alshahrani. 2019. Nano-encapsulation and characterization of baricitinib using poly-lactic-glycolic acid co-polymer. *Saudi Pharm. J.* 27(4): 491-501.
- Aranaz, I., M. Mengibar, R. Harris, I. Panos, B. Miralles, dan N. Acosta. 2009. Functional characterization of chitin and chitosan functional characterization of chitin and chitosan. *Curr. Chem. Biol.* 3: 203-230.
- Augustia, V.A.S., M. Musdzalifah, D.A. Lestari, and A. Chafidz. 2018. Effect of sodium tripolyphosphate on the characteristics of anthocyanin microcapsules extracted from purple sweet potato (*Ipomoea batatas L.*). Pages 020056-1 – 020056-6 in AIP Conference Proceedings 2049. Universitas Islam Indonesia (UII), Indonesia.
- Awad, W. A., J. R. Aschenbach, B. Khayal, C. Hess, and M. Hess. 2012. Intestinal epithelial responses to *Salmonella enterica serovar enteritidis*: Effects on intestinal permeability and ion transport. *Poult. Sci.* 91 :2949–2957.
- Awad, W., K. Ghareeb, and J. Bohn. 2008. Intestinal structure and function of broiler chickens on diets supplemented with a synbiotic containing *Enterococcus faecium* and oligosaccharides. *Int. J. Mol. Sci.* 9(11): 2205-2216.
- Ayyaril, S.S., A. Shanableh, S. Bhattacharjee, M. Rawas-Qalaji, R. Cagliani, A.G. Shabib, and M.I. Khan. 2023. Recent progress in micro and nano-encapsulation techniques for environmental applications: a review. *Results Eng.* 18(101094): 1-21.
- Azwanida, N.N. 2015. A review on the extraction method use in medicinal plants, principle, strenght, and limitation. *Medicinal and Aromatic Plants* 4(3): 1-6.
- Badan Pusat Statistik. 2020. Produksi daging ayam ras. Lembaga Statistik Indonesia. Diakses tanggal 02 Desember 2020. <https://www.bps.go.id/linkTableDinamis/view/id/1064/>

- Badan Pusat Statistik. 2020. Produksi Daging Sapi. Lembaga Statistik Indonesia. Diakses tanggal 02 Desember 2020. <https://www.bps.go.id/linkTableDinamis/view/id/1038>.
- Balouiri, M., M. Sadiki and S.K. Ibensouda. 2016. Methods for *in vitro* evaluating antimicrobial activity: a review. J. Pharm. Anal. 6(2): 71–79.
- Bazana, M.T., C.F. Codevilla, and C.Raganin de Mendez. 2019. Nanoencapsulation of bioactive compounds: challenges and perspectives. Curr. Opin. Food Sci. 26: 47-56.
- Bell, D. dan W. D. Weaver, Jr. 2002. Commercial chicken meat and egg production. 5 th edition. Springer Science and Busines Media Inc. New York.
- Bruno, L.D.G., A. Maiorka, M. Macari, R.L. Furlan, and P.E.N. Givisiez. 2011. Water intake behavior of broiler chickens exposed to heat stress and drinking from bell or and nipple drinkers. Braz. J. Poult. Sci. 13(2): 147-152.
- Budi, S., B.A. Suliasih, I. Rahmawati, and Erdawati. 2020. Size-controlled chitosan nanoparticles prepared using ionotropic gelation. ScienceAsia 46 : 457-461.
- Cesur, S., and A.P. Demiroz. 2013. Antibiotics and the mechanisms of resistance to antibiotics. J. Pharm. 21(4): 138-142.
- Clayton, K.N., J.W. Salameh, S.T. Wereley, and T.L. Kinzer-Ursem. 2016. Physical characterization of nanoparticle size and surface modification using particle scattering diffusometry. Biomicrofluidics 10(5): 1-14.
- Collado-gonzalez, M., M.G. Montalban, J. Pena-Garcia, and H. Perez-Sanchez. 2017. Chitosan as stabilizing agent for negatively charged nanoparticles. Carbohydr. Polym. 161(2): 63-70.
- Cook, N.C., and S. Sammon. 1996. Flavanoids chemistry, metabolism, cardioprotective effects, and dietary sources. Nutr. Biochem. 7: 66– 76.
- Corrêa, T.A.F., M.M. Rogero, N.M.A. Hassimotto, and F.M. Lajolo, F.M. 2019. The two-way polyphenols-microbiota interactions and their effects on obesity and related metabolic diseases. Front. Nutr. 6(188): 1-15.
- Cowan, M.M. 1999. Plant products as antimicrobial agents. Clin. Microbiol. Rev. 12 : 564–582.
- Danaei, M., M. M. Dehghankhold, S. Ataei, F. Hasanzadeh Davarani, R. Javanmard, A. Dokhani, S. Khorasani, and M. R. Mozafari. 2018. Impact of particle size and polydispersity index on the clinical applications of lipidic nanocarrier systems. Pharmaceutics 10(2): 57.
- Davis, W.W., and T.R. Stout. 1971. Disc plate methods of microbiological antibiotic assay. J. Microbiol. 22: 659-665.
- Delaquis, P.J., K. Stanich, B. Girard, and G. Mazza. 2002. Antimicrobial activity of individual and mixed fractions of dill, cilantro, coriander and eucalyptus essential oils. Int. J. Food Microbiol. 74: 101–109.

- Denbow. 2012. Denbow DM. Gastrointestinal anatomy and physiology. In: Scanes CG, editor. *Sturkie's Avian Physiology*. Springer Science and Business Media Inc. New York.
- Desai, K.G., and H. Jin Park. 2005. Recent Development in Microencapsulation of Food Ingredients. *Dry. Technol.* 23(7): 1361-1394.
- Di Santo, M. C., C.L. D' Antoni, A.P. Domínguez Rubio, A. Alaimo, and O.E. Pérez. 2021. Chitosan-tripolyphosphate nanoparticles designed to encapsulate polyphenolic compounds for biomedical and pharmaceutical applications - A review. *Biomed. Pharmacother.* 142(111970): 1-24
- Dongre, P., C. Doifode, S. Choudhary, and N. Sharma. 2023. Botanical description, chemical composition, traditional uses and pharmacology of *Citrus sinensis*: An updated review. *Pharmacol. Res. - Mod. Chin. Med.* 8: 100272.
- Dono, N.D. 2012. Nutritional strategies to improve enteric health and growth performance of poultry in the post antibiotic era. Ph.D. Thesis, The College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow.
- Ebrahimi, A., A.A.A. Qotbi, A. Seidavi, and B. Bahar. 2014. The effects of dietary supplementation of *Citrus sinensis* peel extract on production and quality parameters of broiler chicken. *J. App. Anim. Res.* 42(4): 445-450.
- Edogbanya, P.R.O., M.O. Suleiman, J.B. Orunmola, and I.J. Oijagbe. 2019. Comparative study on the antimicrobial effects of essential oil from peels of three citrus fruit's. *MOJ Biol. Med.* 4(2): 49-54.
- Erhan, M.K., and S.C. Bolukbas. 2017. Citrus peel oils supplementation in broiler diet: effects on performance, jejunum microflora and jejunum morphology. *Braz. J. Poult. Sci. Special Issue Nutrition* : 015-022
- Fathi, M., and Julian, D. 2014. Nanoencapsulation of food ingredients using carbohydrate based delivery systems. *Trends Food Sci. Technol.* 39: 18-39.
- Ferket, P.R., and A.G. Gernat. 2006. Factors that affect feed intake of meat birds: a review. *Int. J. Poult. Sci.* 5(10): 905-911.
- Gao, J., H.J. Zhang, S.H. Yu, S.G. Wu, I. Yoon, J. Quigley, Y.P. Gao, and G.H. Qi. 2008. Effects of yeast culture in broiler diets on performance and immunomodulatory functions. *J. Poult. Sci.* 87(7): 1377-1384.
- Garcia, R., A. Mendes, J. Sartori, I.C.D.L.A. Paz, S. Takahashi, K. Pelícia, C. Komiya, and R. Quinteiro. 2004. Digestibility of feeds containing sorghum, with and without tannin, for broiler chickens submitted to three room temperatures. *Braz. J. Poult. Sci.* 6: 55-60.
- Ghasemi, K., Y. Ghasemi, and M.A. Ebrahimzadeh. 2018. Antioxidant activity, phenol and flavonoid contents of 13 citrus species peels and tissues. *Pak. J. Pharm. Sci.* 22(3): 277-281
- Gokmen, S., R. Palamutoglu, and C. Saricoban. 2012. application of encapsulation in food industry. *Elec. J. Food Technol.* 7(1): 36-50.

- Gorniak, I., R. Bartoszewski, and J. Kroliczewski. 2019. Comprehensive review of antimicrobial activities of plant flavonoids. *Phytochem. Rev.* 18: 241-272.
- Goliomytis, M., D. Tsourekis, P. E Simitzis, M. A. Charismiadou, A. L. Hager Theodorides, and S. G. Deligeorgis. 2014. The effects of quercetin dietary supplementation on broiler growth performance, meat quality, and oxidative stability. *J. Poult. Sci.* 93(8):1957-1962
- Grasshorn, M.A. 2010. Use of Phytobiotics in broiler nutrition- an alternative to infeed antibiotics. *J. Anim. Feed Sci.* 19: 338-347.
- Halimatunnisroh, R., T. Yudiarti and Sugiharto. 2017. Total coliform, acid bacteria and total bacteria in intestine of broiler chicken given turmeric. *Jurnal Peternakan Indonesia* 19: 79-84.
- Hassani, S., A. Laouini, H. Fessi, and C. Charcosset. 2015. Reparation of chitosan-TPP nanoparticles using microengineered membranes – effect of parameters and encapsulation of tacrine. *Colloids Surf. A: Physicochem. Eng.* 482:34-43.
- Honary, S., and F. Zahir. 2013. Effect of zeta potential on the properties of nano-drug delivery systems - A Review (Part 1). *Trop. J. Pharm. Res.* 12(2): 255-264.
- Hosseini, S.M., M. Manafi, and H. Nazarizadeh. 2017. Effects of xylanase supplementation and citric acid on performance, ileal nutrients digestibility, and gene expression of intestinal nutrient transporters in broilers challenged with *Clostridium perfringens*. *J. Poult. Sci.* 54(2): 149-156.
- Huang, D., B. Ou, and R.L. Prior. 2005. The chemistry behind antioxidant capacity assays. *J. Agric. Food Chem.* 53 (6):1841-1856.
- Iqbal, Y., J.J. Cotrell, H.A.R. Suleria, and F.R. Dunshea. 2020. Gut microbiota-polyphenol interactions in chicken: a review. *Animals* 10(1391): 1-18.
- Iswanti, F.C., I. Nurulita, S. Djauzi, M. Sadikin, A.B. Wlarto, and T. Yamazaki. 2018. Preparation, characterization, and evaluation of chitosan-based nanoparticles as CpG ODN carriers. *Biotechnol. Equip.* 33(1): 390-396.
- Kavoi, B.M., D.W. Gakuya, P.N. Mbugua, and S.G. Kiama. 2016. Effects of dietary *Moringa oleifera* leaf meal supplementation on chicken intestinal structure and growth performance. *J. Morphol.* 33(4): 186-192.
- Khalid, M., Saeed-Ur-Rahman, M. Bilal, and H. Dan-feng. 2019. Role of flavonoids in plant interactions with the environment and against human pathogens-A review. *J. Int. Agri.* 18(1): 211-230.
- Kim, J., M.R. Marshall, and C.-i. Wei. 1995. Antibacterial activity of some essential oil components against five foodborne pathogens. *J. Agric. Food Chem.* 43: 2839–2845.

- Klangpetch, K. Phromsurin, K. Hannarong, J. Wichapon, and S. Rungchang. 2016. Antibacterial and antioxidant effects of tropical citrus peel extracts to improve the shelf life of raw chicken drumettes. *Int. Food Res. J.* 23(2): 700-707.
- Laudadio V., Passantino L., Perillo A., Lopresti G., Passantino A., Khan R.U., Tufarelli V. 2012. Productive performance and histological features of intestinal mucosa of broiler chickens fed different dietary protein levels. *J. Poult. Sci.* 91(1):265–270.
- Liang, J., H. Yan, X. Wang, Y. Zhou, X. Gao, P. Puligundla, and X. Wan. 2017. Encapsulation Of Epigallocatechin Gallate In Zein/Chitosan Nanoparticles For Controlled Applications In Food Systems. *Food Chem.* 231: 19–24.
- Madene, A., M. Jacquot, J. Scher, and S. Desorby. 2006. Flavour Encapsulation and Controlled Release-a Review. *Int. J. Food Sci.Technol.* 41(1): 1-21.
- Maesaruh, U., N.D. Dono. and Zuprizal. 2022. Performance, microbial populations, and jejunal morphology of broilers supplemented with nano-encapsulated graviola leaf extract. *Trop. Anim. Sci. J.* 45(1): 64-72.
- Majekodunmi, B.C., M.O. Lugunleko, E.O. Adekunle, M.O. Abioja, O.F. Akinjunte, T.O. Owolabi, and J.O. Daramola. 2021. Evaluation of sweet citrus peel supplement in water on performance and ileal microbial count of broiler chickens. *Trop. Health Anim. Prod.* 53(3): 405.
- Magaldi, S., S. Mata-Essayag, C. Hartung de Capriles, C. Perez, M.T. Collela, C. Olaizola, and Y. Ontiveros. 2004. Well diffusion for antifungal susceptibility testing. *Int. J. Infect. Disease* 8(1): 39-45.
- Marin, L., E.M. Miguelez, C.J. Villar, and F. Lombo. 2015. Bioavailability of dietary polyphenols and gut microbiota metabolism: antimicrobial properties. *BioMed Res. Int.* 2015 (905215): 1-18
- Martati, E., and P.P. Ciptadi. 2020. Extraction of baby java citrus (*Citrus sinensis* (L) Osbeck) peel by microwave-assisted extraction. *IOP Conf. Ser.: Earth Environ. Sci.* 443 (012020): 1-8.
- Martien, R., A. Adhyatmika, V. Farid dan D.P. Sari. 2012. Technology developments nanoparticles as drug delivery systems. *Majalah Farmaseutik.* 8: 133-144.
- Masih, N., and B.S. Singh. 2012. Phytochemical screening of some plants used in herbal based cosmetic preparations. In: Khemani L., Srivastava M., Srivastava S. (eds) *Chemistry of phytopotentials: health, energy and environmental perspectives*. Springer, Berlin, Heidelberg.
- Masjid, N.A.S., Zuprizal, and N.D. Dono. 2020. In vitro antibacterial activity of mindi (*Melia azedarach linn.*) leaf extract with nanoencapsulation technology. *IOP Conf. Ser.: Earth Environ. Sci.* 387: 012069.
- Masjid, N.A.S., Zuprizal, and N.D. Dono. 2020. Effect of dietary nano-encapsulated mindi (*Melia Azedrach Linn.*) leaf extract on growth performance and intestinal ph of broiler chicken. *IOP Conf. Ser.: Earth Environ. Sci.* 478: 012025.

- Mathe, A. 2009. Essential oils : Biochemistry, production, and utilization. page 1-18 in phytogenics in animal nutrition: natural concepts to optimize gut health and performance. Nottingham University Press, Nottingham.
- Maurer, A.J. 2003. Poultry. Page 4680 in encyclopedia of food sciences and nutrition (2nd Ed). Academic Press, Cambridge, US.
- Mehmood, B., K.K. Dar, S. Ali, U.A. Awan, A.Q. Nayyer, T. Ghous, and S. Andleeb. 2015. In vitro assessment of antioxidant, antibacterial, and phytochemical analysis of peel of *Citrus sinensis*. Pak. J. Pharm. Sci. 28(1): 231-239.
- Mella, R.M. and O.H. Mendo. 2010. Review nanotechnology on animal production. Tropical and Subtropical Agroecosystems. 12: 423-429.
- Motesano, D., and M. Gallo. 2023. *moringa oleifera, lycium barbarum*: a perspective on new sources of phytochemicals, lipids and proteins. Pages 107-122 in Sustainable food science - a comprehensive approach. P. Ferranti Elsevier, Naples, Italy.
- Mora-huertas, C. E., H. Fessi, dan A. Elaissari. 2010. Polymer-based nanocapsules for drug delivery. Int. J. Pharm.. 385: 113-142.
- Nagavarma, B. V. N., Yadav, H. K. S., Ayaz, A., Vasudha, L. S., dan Shivakumar, H. G. 2012. Different techniques for preparation of polymeric nanoparticles- a review. Asian J. Pharm. Clin. Res. 3: 16-23.
- Nagy, A., Harrison, A., Sabbani, S., Munson, R. S., Jr, Dutta, P. K., and Waldman, W. J. 2011. Silver nanoparticles embedded in zeolite membranes: release of silver ions and mechanism of antibacterial action. Int. J. Nanomedicine 6: 1833–1852.
- Nguyen, F., A.L. Starosta, S. Arenz, D. Sohmen, Alexandra, D., and Daniel, N. W. 2014. Tetracycline antibiotics and resistance mechanism. Biol. Chem. 395(5): 559- 575.
- Ningsih, N., B. Ariyadi, N.D. Dono, Supadmo, and Zuprizal. The effect of nanoencapsulated *Phaleria macrocarpa* fruit's extract in drinking water on jejunal histomorphology of broiler chicken. Trop. Anim. Sci. Journal 42(2): 106-112.
- Nirwana, A. Mujnisa, and J. Jamilah. 2021. Length and weight of small intestine and digestion rate of quail, with the addition of beluntas leaf flour (*Pluchea indica* L.) to the ration. IOP Conf. Series: Earth and Environmental Science. 788(012073): 1-7
- Otang, W.M., and A.J. Afolayan. 2016. Antimicrobial and antioxidant efficacy of *Citrus limon* L. peel extracts used for skin diseases by Xhosa tribe of Amathole District, Eastern Cape, South Africa. S. Afr. J. Bot. 102: 46–49.
- Papadimitrou, S.A., D.N. Bikiaris, K. Avgoustakis, E. Karavas, and M. Georgarakis. 2008. Chitosan nanoparticles loaded with dorzolamide and pramipexole. Carbohydr. Polym. 73(1):44-54.

- Patra, J. K. and K.-H. Baek. 2014. Green nanobiotechnology: factors affecting synthesis and characterization techniques. *Journal of Nanomaterials*. 2014: 219. Pourhossein, Z., A.A.A. Qotbi, and A. Seidavi. 2012. Investigation on the effects of different levels of *Citrus sinensis* peel extract on gastrointestinal microbial population in commercial broilers. *Afri. J. Microbiol. Res.* 6: 6370-6378.
- Pieta, P.G. 2000. Flavonoids as antioxidants. *J. Nat. Products* 63: 1035–1042.
- Poshadari, A., and K. Aparna. 2010. Microencapsulation technology. *J. Res. ANGRAU* 38: 86-102.
- Pourhossein, Z., A.A.A. Qotbi, and A.R. Seidavi. 2012. Investigation on effects of dried *Citrus sinensis* peel on broilers intestinal pathogens. *Ann. Biol. Res.* 3 (9): 4480-4484
- Priambodo, T. R., Sholikin, M. M., Qomariyah, N., Jayanegara, A., Batubara, I., Utomo, D. B., dan Nahrowi, N. 2021. Effects of dietary flavonoids on performance, blood constituents, carcass composition and small intestinal morphology of broilers: a meta-analysis. *Anim. Biosci.* 34(3): 434–442.
- Rafiq, S., R. Kaul, S.A. Sofi, N. Bashir, F. Nazir, and G.A. Nayik. 2018. Citrus peel as a source of functional ingredient : a review. *J. Saudi Soc. Agric. Sci.* 17: 351-358
- Rajmohan, D., and D. Bellmer. 2019. Characterization of spirulina-alginate beads formed using ionic gelation. *Int. J. Food Sci.* Article ID 7101279 : 1-7
- Ramanery, F.P., A.A.P. Mansur, and H.S. Mansur. 2013. One-step colloidal synthesis of biocompatible water-soluble ZnS quantum dot/chitosan nanoconjugates. *Nanoscale Res. Lett.* 8(512): 1-13.
- Rashidinejad, A., and S.M. Jafari. 2020. Nanoencapsulation of bioactive food ingredients. Pages 279-344 in *Handbook of food nanotechnology: application and approaches*. S.M. Jafari, ed. Academic Press, Cambridge, United States.
- Reyes, F.C.C., A.T.A. Aguirre, E. M. Agbisit Jr, F.E. Merca, G.L. Manulat, and A.A. Angeles. 2018. Growth performances and carcass characteristics of broiler chickens fed akasya [*Samanea saman* (Jacq.) Merr.] pod meal. *Trop. Anim. Sci. J.* 41(1): 46-52.
- Ross, K.A., T.Beta, and S.D. Arntfield. 2009. A comparative study on the phenolic acids identified and quantified in dry beans using hplc as affected by different extraction and hydrolysis method. *Food Chem.* 113(1): 336-344.
- Saha, M., S.D. Chowdury, M.E. Hossain, M.K. Islam, and B. Roy. 2011. Organic water additive on growth performance, hematological parameters, and cost effectiveness in broiler production. *J. Anim. Sci. and Tech.* 53(6): 517-523.
- Samanya, M., and K. Yamauchi. 2002. Histological alterations of intestinal villi in chickens fed dried *Bacillus subtilis* var. *Natto*. *Comp. Biochem. Physiol.* 133:95–104.

- Samli, H.E., N. Senkoylu, F. Koc, M. Kanter, and A. Agma. 2007. Effects of *Enterococcus faecium* and dried whey on broiler performance, gut histomorphology and microbiota. Arch. Anim. Nutr. 61:42–49.
- Shah, B. R., L. Yan, W.J. Weiping, A. Yaping, H. Lei, L. Zhenshun, X. wei, and L. Bin. 2016. Preparation and optimization of pickering emulsion stabilized by chitosantripolyphosphate nanoparticles for curcumin encapsulation. Food Hydrocol. 52: 369-377.
- Simon, Á., G. Gulyás, Z. Mészár, M. Bhide, J. Oláh, P. Bai, É. Csősz, A. Jávör, I. Komlósi, J. Remenyik, and L.Czeplédi. 2019. Proteomics alterations in chicken jejunum caused by 24 h fasting. Peer J. 7(e6588): 1-19.
- Smith, David J. 2015. Characterisation of Nanomaterials Using Transmission Electron Microscopy in Nanoscience & Nanotechnology Series Nanocharacterisation. Pages 1-29 in Hierarchical Nanostructures for Energy Devices I. Kirkland, and S. J. Haigh, Royal Society of Chemistry, Great Britain
- Sohail, M.U., and M.E. Hume. 2019. Evaluation of antimicrobial action of chitosan and acetic acid on broiler cecal bacterial profiles in anaerobic cultures inoculated with *Salmonella typhimurium*. J. Appl. Poult. Res. 28(1): 176-183.
- Steiner, T., and B. Syet. 2015. Phytogetic feed additives in animal nutrition. Pages 403-423 in Medicinal and aromatic plants of the world. A. Mathe. Springer : Austria.
- Studies, R. A. 2010. Nanotechnology and Food Safety. Safety food and environmental hygiene. Department The Government of the Hong Kong Special Administrative Region. Hongkong.
- Sudarman, A., Sumiati, dan R. Kaniadewi. 2011. Performance of broiler chickens offered drinking water contained water extracted beluntas (*Pluchea indica* L.) leaf and sugar cage. Jurnal Media Peternakan 35(2) : 117-122.
- Suhaila, M.A., K. Krishnakumar, K. Smitha, and Nair. 2018. Nanoencapsulation techniques in pharmaceuticals: review. J.Bio. Innov. 7(4): 573–584.
- Sundari, Zuprizal, T. Yuwanta, and R. Martien. 2014. the effect nanocapsule of turmeric extracts in rations on nutrient digestibility of broiler chickens. Anim. Prod.16: 107-113.
- Tan, B.L., M.E. Norhaizan, W-P-P. Liew, and H.S. Rahman. 2018. Antioxidant and oxidative stress: a mutual interplay in age-related diseases. Front Pharm. 9 (1162): 1-28.
- Temiz, O., and E. Ozturk. 2018. Encapsulation method and use in animal nutrition. Selcuk. J. Agr. Food Sci. 32(3): 624-631.
- Torre I de, V. Martin-Dominguez, M.G. Acedos, J. Esteban, V.E. Santos, M. Lader. 2019. Utilisation/upgrading of orange peel waste from a biological biorefinery perspective. Appl. Microbiol. Biotechnol. 103: 5975–599.

- Toutenburg, H., and Shalabh. 2012. Statistical analysis of designed experiments : 3rd edition. Springer Science and Business Media Inc. New York.
- Turk, C.T.S., Z. Bayindir, and U. Badilli. 2009. Preparation of polymeric nanoparticles using different stabilizing agents. *J. Fac. Pharm. Ankara* 38(4): 257-268.
- Trevino, J, L. Ortiz, and C. Centeno. 1992. Effect of tannins from faba beans (*Vicia faba*) on the digestion of starch by growing chicks. *Anim. Feed. Sci. Technol.* 137: 345–349.
- Valgas, C., S. Machado de Souza, E.F.A. Smania, and A. Smania Jr. 2007. Screening methods to determine antibacterial activity of natural products. *Braz. J. Microbiol.* 38(2): 369-380.
- Wang, X., Y.Z. Farnell, E.D. Peebles, .S. Kiess, K.G.S. Wamsley, and W. Zhai. 2016. Affects of prebiotics, probiotics, and their combination on growth performance, small intestine morphology, and resident *Lactobacillus* of male broilers. *J. Poult. Sci.* 95: 1332-1340.
- Wang, M., C. Yang, Q. Wang, J. Li, P. Huang, Y. Li, X. Ding, H. Yang, and Y. Yin. 2020. The relationship between villous height and growth performance, small intestinal mucosal enzymes activities and nutrient transporters expression in weaned piglets. *J. Anim. Physiol. Anim. Nut.* 104(2): 606-615.
- Widodo, N., and H. Khasanah. 2021. The effect of binahong leaf meal (*Anredera cordifolia* (ten.) Steenis) as feed additive on digestive organs profile of broiler chickens. *IOP Conf. Series: Earth and Environmental Science* 759:012024.
- Yamauchi, K. 2002. Review on chicken intestinal villus histological alterations related with intestinal functions. *Poult. Sci.* 39: 229-242.
- Yan, W., C. Sun, J. Zheng, C. Wen, C. Ji, D. Zhang, Y. Chen, Z. Hou, N. Yang. 2019. Efficacy of fecal sampling as a gut proxy in the study of chicken gut microbiota. *Front. Microbiol.* 10 (2126): 1-11.
- Yoshida, Y., F. Kawabata, S. Tabata, Samuel E. A., Romdhane R., and H. Liu. 2021. Evolvement of taste sensitivity and taste buds in chickens during selective breeding. *J. Poult. Sci.* 100(6): 101-113.
- Zhang, Q.W., L.G. Lin, and W.C. Ye. 2018. Techniques for extraction and isolation of natural products: a comprehension review. *Chin. Med.* 13: 1-26.