



## DAFTAR PUSTAKA

- Abbas, H. K., W. T. Shier, J. Plasencia, M. A. Weaver, N. Bellaloui, J. K. Kotowicz, A. M. Butler, C. Accinelli, M. E. de la Torre-Hernandez, dan R. M. Zablotowicz. 2017. Mycotoxin contamination in corn smut (*Ustilago maydis*) galls in the field and in the commercial food products. *J. Food Cont.* 71: 57–63.
- Adegbeye, M. J., P. R. K. Reddy, C. A. Chilaka, O. B. Balogun, M. M. M. Y. Elghandour, R. R. Rivas-Caceres, dan A. Z. M. Salem. 2020. Mycotoxin toxicity and residue in animal products: prevalence, consumer exposure and reduction strategies – a review. *Toxicon*. 177: 96–108.
- Ali, A. M. A., M. F. Fahmy, M. M. Metwally, O. Hassanin, H. A. Azazy, dan R. E. Mowafy. 2021. Ameliorative effects of cholestyramine and oxihumate on aflatoxicosis in broiler chickens. *Pak. Vet. J.* 41(1): 51–56.
- Anas, M. A, L. M. Yusiat, C. T. Noviandi, dan A. Agus. 2022. Crude aflatoxin B<sub>1</sub> production using maize and rice substrates for animal research. *Adv. Biol. Sci. Res.* 21: 17-21.
- Ansari, F. dan Rezaei, K. 2022. Biological detoxification of mycotoxins by binding them with certain microorganisms: A review. *J. Microbiol.* 5: 56–71.
- Anukul, N., K. Vangnai, dan W. Mahakarnchankul. 2013. Significance of regulation limits in mycotoxin contamination in Asia and risk management programs at the national level. *J. Food Drug Anal.* 21 (3): 227–241.
- Aristyawati, P.D., N. N. Puspawati, N. M. I. Hapsari, dan S. A. Duniaji. 2017. Cemaran *Aspergillus flavus* penghasil aflatoksin B<sub>1</sub> pada jagung manis (*Zea mays saccharata*) selama penyimpanan. *J. I. Teknol. Pangan.* 6(2): 51-60.
- Arunachalam, C. dan F. M. Doohan. 2013. Trichothecene toxicity in eukaryotes: cellular and molecular mechanisms in plants and animals. *J. Toxicol.* 217 (2): 149–158.
- Azizpour, A. dan N. Moghadam. 2015. Effects of yeast glucomannan and sodium bentonite on the toxicity of aflatoxin in broilers. *Braz. J. Poult. Sci.* 7–14.
- Bahri, S., R. Maryam, dan D. R. Widiastuti. 2005. Cemaran aflatoksin pada bahan pakan dan pakan di beberapa daerah Propinsi Lampung dan Jawa Timur. *J. Anim. Vet. Sci.* 10(3): 236-241.



- Bakeer, A. M., A. S. Farid, dan M. F. Gadelkarim. 2013. The hepatotoxic and nephrotoxic effects of mycotoxin in broiler chickens. *Benha Vet. Med. J.* 25(1): 29-45.
- Biesek, J., M. Banaszak, K. Kądziołka, S. Właźlak, dan M. Adamski. 2022. Growth of broiler chickens, and physical features of the digestive system, and leg bones after aluminosilicates used. *Sci. Rep.* 12(1): 1-10.
- Broto, W. 2018. Status cemaran dan upaya pengendalian aflatoksin pada komoditas serealia dan aneka kacang. *J. Litbang Pert.* 37(2): 81-90.
- Caceres, I., A. Al Khoury, R. El Khoury, S. Lorber, I. P. Oswald, A. El Khoury, A. Atoui, O. Puel, dan J. D. Bailly. 2020. Aflatoxin biosynthesis and genetic regulation: a review. *Toxins.* 12 (3): 1-28.
- Dai, C., X. Xiao, F. Sun, Y. Zhang, D. Hoyer, J. Shen, S. Tang, dan T. Velkov. 2019. T-2 toxin neurotoxicity: role of oxidative stress and mitochondrial dysfunction. *Arch. Toxicol.* 93(11): 3041–3056.
- Ejiofor, T., A. C. Mgbeahuruike, C. Ojiako, A. M. Ushie, E. I. Nwoko, I. R. Onoja, T. Dada, M. Mwanza dan M. Karlsson. 2021. Saccharomyces cerevisiae, bentonite, and kaolin as adsorbents for reducing the adverse impacts of mycotoxin contaminated feed on broiler histopathology and hemato-biochemical changes. *Vet. World.* 14(1): 23–32.
- Ekhlas K. H. 2012. Histopathological changes of some internal organs in broilers fed aflatoxin. *J. Vet. Med. Sci.* 11(2): 70-79.
- Elaroussi, M. A., F. R. Mohamed, E. M. El Barkouky, A. M. Atta, A. M. Abdou, dan M. H. Hatab. 2006. Experimental ochratoxicosis in broiler chickens. *Avian Pathol.* 35(4): 263–269.
- Farooqui, M. Y., A. Khalique, M. A. Rashid, S. Mehmood, dan M. I. Malik. 2019. Aluminosilicates and yeast-based mycotoxin binders: Their ameliorated effects on growth, immunity and serum chemistry in broilers fed aflatoxin and ochratoxin. *S. Afr. J. Anim. Sc.* 49(4): 619–627.
- Fati, N., D. Syukriani, dan N. Nilawati. 2023. Effects of additional mint leaf (*Mentha piperita*, L) fermentation on the percentage of broiler carcass, liver and heart. *Anim. Sci. J.* 14(1): 1-9.
- Feshanghchi, M., P. Baghban-Kanani, B. Kashefi-Motlagh, F. Adib, Azimi-S. Youvalari, B. Hosseintabar-Ghasemabad, M. Slozhenkina, I. Gorlov, M. G. Zangeronimo, A. A. Swelum, A. Seidavi, R. U. Khan, M. Ragni, V. Laudadio, dan V. Tufarelli. 2022. Milk thistle (*Silybum marianum*), marine algae (*Spirulina platensis*) and toxin binder powders in the diets of broiler chickens exposed to aflatoxin-b<sub>1</sub>: growth performance, humoral immune response and cecal microbiota. *Agriculture.* 12(6): 1-11.



- Fitriana, R., F. X. A. Soesetijo, dan E. Sulistyaningsih. 2019. Identifikasi kontaminasi aflatoksin pada rempah-rempah yang dijual di sentra pasar di Kabupaten Jember. Multijournal. 2(1): 24–29.
- Fouad, A. M., D. Ruan, H. A. K. El Senousey, W. Chen, S. Jiang, dan C. Zheng. 2019. Harmful effects and control strategies of aflatoxin B<sub>1</sub> produced by *Aspergillus flavus* and *Aspergillus parasiticus* strains on poultry: review. Toxins. 11(3): 1-21.
- Fowler, J., W. Li, dan C. Bailey. 2015. Effects of a calcium bentonite clay in diets containing aflatoxin when measuring liver residues of aflatoxin B<sub>1</sub> in starter broiler chicks. Toxins. 7(9): 3455–3464.
- Fruhauf, S., H. Schwartz, F. Ottner, R. Krska, dan E. Vekiru. 2012. Yeast cell based feed additives: studies on aflatoxin B<sub>1</sub> and zearalenone. Food Addit. Contam. Part A. 29(2): 217–231.
- Gao, Y., L. Meng, H. Liu, J. Wang, dan N. Zheng. 2020. The compromised intestinal barrier induced by mycotoxins. Toxins. 12 (10): 1-42.
- Gholami-Ahangaran, M., N. Rangsaz, dan S. Azizi. 2016. Evaluation of turmeric (*Curcuma longa*) effect on biochemical and pathological parameters of liver and kidney in chicken aflatoxicosis. Pharm. Biol. 54(5): 780–787.
- Girgis, G. N., J. R. Barta, M. Brash, dan T. K. Smith. 2010. Morphologic changes in the intestine of broiler breeder pullets fed diets naturally contaminated with *Fusarium* mycotoxins with or without coccidial challenge. Avian Dis. 54(1): 67-73.
- Gomori, C., E. Nasca-Farkas, E. B. Kerekes, S. Kocsube, C. Vagvolgyi, dan J. Krisch. 2013. Evaluation of five essential oils for the control of foodspoilage and mycotoxin producing fungi. Acta Biol. Szeged. 57(2): 113-116.
- Guo, H., P. Wang, C. Liu, T. Zhou, J. Chang, Q. Yin, L. Wang, S. Jin, Q. Zhu, dan F. Lu. 2022. Effects of compound mycotoxin detoxifier on alleviating aflatoxin B<sub>1</sub>-induced inflammatory responses in intestine, liver and kidney of broilers. Toxins. 14(10): 1-17.
- Guo, Y., B. Balasubramanian, Z. H. Zhao, dan W. C. Liu. 2021. Marine algal polysaccharides alleviate aflatoxin B<sub>1</sub>-induced bursa of fabricius injury by regulating redox and apoptotic signaling pathway in broilers. Poult. Sci. 100(2): 844–857.
- Hedayati, M. T., A. C. Pasqualotto, P. A. Warn, P. Bowyer, dan D. W. Denning. 2007. *Aspergillus flavus*: human pathogen, allergen and mycotoxin producer. J. Microbiol. 153(6): 1677–1692.
- Ibitoye, E. B. dan A. A. Jimoh. 2012. Comparative performance and organ relative weight of broiler chickens fed three sources of energy diet. J Anim. Prod. Adv. 2(5): 233-238.



- Indresh, H. C. dan B. Umakantha. 2013. Effects of ochratoxin and T-2 toxin combination on performance, biochemical and immune status of commercial broilers. *Vet. World.* 6(11): 945–949.
- Janik, E., M. Niemcewicz, M. Podogrocki, M. Ceremuga, M. Stela, M. Bijak. 2021. T-2 toxin—the most toxic trichothecene mycotoxin: Metabolism, toxicity, and decontamination strategies. *Molecules.* 26(22): 1-15.
- Kim, S. W., D. M. Holanda, X. Gao, I. Park, dan A. Yiannikouris. 2019. Efficacy of a yeast cellwall extract to mitigate the effect of naturally co-occurring mycotoxins contaminating feed ingredients fed to young pigs: Impact on gut health, microbiome, and growth. *Toxins.* 11(11): 1-30.
- Kolawole, O., A. Graham, C. Donaldson, B. Owens, W. A. Abia, J. Meneely, M. J. Alcorn, L. Connolly, dan C. T. Elliott. 2020. Low doses of mycotoxin mixtures below EU regulatory limits can negatively affect the performance of broiler chickens: A longitudinal study. *Toxins.* 12(7): 1-16.
- Kong, C., S. Y. Shin, dan B. G. Kim. 2014. Evaluation of mycotoxin sequestering agents for aflatoxin and deoxynivalenol: an in vitro approach. *SpringerPlus.* 3(1): 1–4.
- Lai, Y., M. Sun, Y. He, J. Lei, Y. Han, Y. Wu, D. Bai, Y. Guo, dan B. Zhang. 2022. Mycotoxins binder supplementation alleviates aflatoxin B<sub>1</sub> toxic effects on the immune response and intestinal barrier function in broilers. *Poult. Sci.* 101(3): 1-11.
- Lawson, B., R. A. Robinson, M. Parmar, R. Killick, A. A. Cunningham dan S. J. MacDonald. 2020. Aflatoxin and ochratoxin A residues in supplementary foods used for wild birds. *Sci. Total Environ.* 73(1): 1-7.
- Liu, J. H., W. K. Cai, N. Khatoon, W. H. Yu, dan C. H. Zhou. 2021. On how montmorillonite as an ingredient in animal feed functions. *Appl. Clay Sci.* 202: 1-16.
- Luo, Y., X. Liu, L. Yuan, dan J. Li. 2020. Complicated interactions between bio-adsorbents and mycotoxins during mycotoxin adsorption: current research and future prospects. *Trends Food Sci. Technol.* 96: 127–134.
- Mavrommatis, A., E. Giamouri, S. Tavrizelou, M. Zacharioudaki, G. Danezis, P. E. Simitzis, E. Zoidis, E. Tsiplakou, A. C. Pappas, C. A. Georgiou, dan K. Feggeros. 2021. Impact of mycotoxins on animals' oxidative status. *Antioxidants.* 10(2):1–24.
- Magnoli, A. P., V. L. Poloni, dan L. Cavaglieri. 2019. Impact of mycotoxin contamination in the animal feed industry. *Food Sci.* 29: (99–108).
- Magnoli, A. P., M. C. Rodriguez, M. L. G. Pereyra, V. L. Poloni, M. F. Peralta, A. J. Nilson, R. D. Mazzio, G. Bagnis, S. M. Chiacchiera, dan L. R. Cavaglieri. 2017. Use of yeast (*Pichia kudriavzevii*) as a novel



- feed additive to ameliorate the effects of aflatoxin B<sub>1</sub> on broiler chicken performance. *Mycotoxin Res.* 33(4): 273–283.
- Malir, F., V. Ostry, A. Pfohl-Leszkowicz, J. Malir, dan J. Toman. 2016. Ochratoxin A: 50 years of research. *Toxins.* 8(7): 1-49.
- Manafi, M., H. D. Narayanaswamy, dan N. Pirany. 2009. In vitro binding ability of mycotoxin binder in commercial broiler feed. *Afr. J. Agric. Res.* 4(2):141–143.
- Manafi, M., N. Pirany, M. N. Ali, M. Hedayati, S. Khalaji, dan M. Yari. 2015. Experimental pathology of T-2 toxicosis and mycoplasma infection on performance and hepatic functions of broiler chickens. *Poult. Sci.* 94(7): 1483–1492.
- Martindah, E. dan S. Bahri. 2016. Mycotoxin contamination in the food chain. *Wartazoa.* 26(3): 115-124.
- Maryam, R., P. M. Widiyanti, F. Ramadhani, dan H. Munawar. 2020. Homogenitas dan stabilitas kit elisa ota, serta aplikasinya untuk mendekripsi okratoksin a pada pakan unggas (homogeneity and stability of ota elisa kit and its application for ochratoxin a detection in poultry feed). *Pros. Semnas. TPV.* pp 664–676.
- Mendieta, C. R., G. G. Verduzco, J. C. G. del Río, A. C. Cuevas, J. M. Arce, dan E. G. Ávila. 2018. Effect of the addition of *Saccharomyces Cerevisiae* yeast cell walls to diets with mycotoxins on the performance and immune responses of broilers. *J. Poult. Sci.* 55(1): 38–46.
- Mil, T. D., M. Devreese, S. de Baere, E. van Ranst, M. Eeckhout, P. de Backer, dan S. Croubels. 2015. Characterization of 27 mycotoxin binders and the relation with in vitro zearalenone adsorption at a single concentration. *Toxins.* 7(1): 21–33.
- Moretti, A., M. Pascale, dan A. F. Logrieco. 2019. Mycotoxin risks under a climate change scenario in Europe. *Trends Food Sci. Technol.* 84: 38–40.
- Munkvold, G. P., S. Arias, I. Taschl, dan C. Gruber-Dorninger. 2018. Mycotoxins in Corn: Occurrence, Impacts, and Management. In *Corn: Chemistry and Technology.* 3rd Edition. pp 235–287.
- Nakavuma, J. L., A. Kirabo, P. Bogere, M. Nabulime, A. N. Kaaya, dan B. Gnonlonfin. 2020. Awareness of mycotoxins and occurrence of aflatoxins in poultry feeds and feed ingredients in selected regions of Uganda. In *International J. Food Cont.* 7(1): 1-10.
- Nalle, C. L., M. A. J. Supit, A. H. Angi, dan N. S. Yuliani. 2021. The performance, nutrient digestibility, aflatoxin B<sub>1</sub> residue, and histopathological changes of broilers exposed to dietary mycosorb. *Trop. Anim. Sci. J..* 44(2): 160–172.



- Nones, J., J. Nones, H. G. Riella, N. C. Kuhnen, dan A. Trentin. 2015. Bentonite protects neural crest stem cells from death caused by aflatoxin B<sub>1</sub>. *Appl. Clay Sci.* 104: 119–127.
- Pál, L., K. Dublecz, M. Kovács-Weber, K. Balogh, M. Erdélyi, G. Szigeti, dan M. Mézes. 2009. Effect of combined treatment with aflatoxin B<sub>1</sub> and T-2 toxin and metabolites on some production traits and lipid peroxide status parameters of broiler chickens. *Acta Vet. Hung.* 57(1): 75–84.
- Pantaya, D., K. G. Wiryawan, D. E. Amirroenas, dan S. Suryahadi. 2016. Detoksifikasi mikotoksin melalui optimalisasi fungsi rumen dengan pemberian ragi. *J. Vet.* 17(1): 143–154.
- Patil, R. D., N. M. Degloorkar, dan S. K. Himachal. 2018. ameliorative efficacy of commercial mycotoxin binder (Bantox®) against ochratoxin a-induced microscopic pathology in broiler birds. *J. Poult. Sci. Tech.* 6(2): 26-30.
- Poroj, S. N., M. R. Fazeli, M. Larypoor, dan F. Shariatmadari. 2023. Developing a new biologic *toxin binder* for reducing AFB<sub>1</sub> toxicity in laying hens. *Lett. Appl. Microbiol.* 76(2): 1-8.
- Pugazhendhi, A., A. Margaret, M. Rathinam, dan J. M. Sheela. 2015. Antifungal activity of cell extract of *spirulina platensis* against aflatoxin producing *Aspergillus* species. *Int. J. Curr. Microbiol. App. Sci.* 4(8): 1025-1029.
- Qing, H., S. Huang, K. Zhan, L. Zhao, J. Zhang, C. Ji, dan Q. Ma. 2022. Combined toxicity evaluation of ochratoxin a and aflatoxin B<sub>1</sub> on kidney and liver injury, immune inflammation, and gut microbiota alteration through pair-feeding pullet model. *Front. Immunol.* 13: 1-16.
- Raj, J., H. Farkaš, Z. Jakovčević, M. Vasiljević, R. Kumar, dan R. K. Asrani. 2023. Effects of supplemented multicomponent mycotoxin detoxifying agent in laying hens fed aflatoxin B<sub>1</sub> and T-2 toxin contaminated feeds. *Poult. Sci.* 102(8): 1-15.
- Ramandani, D., R. Ummami, N. Hidayah, N. W. Y. Dalimunthe, S. Indarjulianto, Y. Yanuartono, dan A. Nururrozi. 2020. Potensi bentonite clay dan karbon aktif sebagai aflatoksin binders berdasarkan gambaran imunologis dan histopatologis pada ayam buras. *J. Trop. Anim. Vet. Sci.* 10(1): 63-69.
- Rawal, S., J. E. Kim, dan R. Coulombe. 2010. Aflatoxin B<sub>1</sub> in poultry: toxicology, metabolism and prevention. *Res. Vet. Sci.* 89:325–331.
- Ren, Z., C. Guo, S. Yu, L. Zhu, Y. Wang, H. Hu, dan J. Deng. 2019. Progress in mycotoxins affecting intestinal mucosal barrier function. *Int. J. Mol. Sci.* 20(11): 1-14.



- Rezar, V., T. Frankič, M. Narat, A. Levart, dan J. Salobir. 2007. Dose-dependent effects of T-2 toxin on performance, lipid peroxidation, and genotoxicity in broiler chickens. *Poult. Sci.* 85: 1155-1160.
- Riahi, I., A. J. Ramos, J. Raj, Z. Jakovčević, H. Farkaš, M. Vasiljević, dan , A. M. Pérez-Vendrell. 2021. Effect of a mycotoxin binder (MMDA) on the growth performance, blood and carcass characteristics of broilers fed ochratoxin a and T-2 mycotoxin contaminated diets. *Animals.* 11(11): 1-11.
- Roze, L. V., S. Y. Hong, dan J. E. Linz. 2013. Aflatoxin biosynthesis: current frontiers. *Annu. Rev. Food Sci. Technol.* 4(1): 293–311.
- Saleemi, M. K., K. Ashraf, S. T. Gul, M. N. Naseem, M. S. Sajid, M. Mohsin, C. He, M. Zubair, dan A. Khan. 2020. Toxicopathological effects of feeding aflatoxins B<sub>1</sub> in broilers and its amelioration with indigenous mycotoxin binder. *Ecotoxicol. Environ. Saf.* 187: 1-7.
- Santin, E., A. C. Paulillo, P. C. Maiorka, A. C Alessi, E. L. Krabbe, dan A. Maiorka. 2002. The effects of ochratoxin/aluminosilicate interaction on the tissues and humoral immune response of broilers. *Avian Pathol.* 31(1): 73–79.
- Sharma, M., A. B. Mandal, dan R. Singh. 2016. Effect of aflatoxin, ochratoxin and their interaction on growth performance, immunity and jejunal morphometry of broiler chickens. *Ind. J. Poult. Sci.* 51(3): 253-258.
- Siloto, E. V., E. F. A. Oliveira, J. R. Sartori, V. B. Fascina, B. A. B. Martins, D. R. Ledoux, G. E. Rottinghaus, dan D. R. S. Sartori. 2013. Lipid metabolism of commercial layers fed diets containing aflatoxin, fumonisin, and a binder. *Poult. Sci.* 92(8): 2077–2083.
- Sobolewska, A., J. Bogucka, A. Dankowiakowska, G. Elminowska-Wenda, K. Stadnicka, dan M. Bednarczyk. 2017. The impact of synbiotic administration through in ovo technology on the microstructure of a broiler chicken small intestine tissue on the 1st and 42nd day of rearing. *Anim. Sci. Biotechnol.* 8(1): 1-8.
- Soenartiningsih, M., D. N. N. Aqil, dan B. Andayani. 2016. Strategi Pengendalian Cendawan *Fusarium sp.* dan Kontaminasi Mikotoksin pada Jagung. *Bul. Iptek Tanaman Pangan.* 11(1): 85-98.
- Srinual, O., T. Moonmanee, C. Lumsangkul, H. van Doan, M. Punyatong, M. Yachai, T. Chaiyaso, K. Kongtong dan W. Tapingkae. 2022. Can red yeast (*Sporidiobolus pararoseus*) be used as a novel feed additive for mycotoxin binders in broiler chickens. *Toxins.* 14(10): 1-23.
- Stefanović, D., D. Marinković, S. Trailović, M. Vasiljević, H. Farkaš, J. Raj, N. Tolimir, S. Radulović, V. Nešić, J. N. Trailović dan B. Petrujić. 2023. Evaluation of effectiveness of a novel multicomponent mycotoxins



detoxification agent in the presence of AFB<sub>1</sub> and T-2 toxin on broiler chicks. *Microorganisms*. 11(3): 1-16.

Sumantri, I., A. Agus, B. Irawan, H. Habibah, N. Faizah, dan K. J. Wulandari. 2017. Aflatoxins contamination in feed and products of alabio duck (*Anas platyrinchos borneo*) collected from South Kalimantan, Indonesia. *Bul. Peternak*. 41(2): 163-168.

Tangendjaja B., S. Rachmawati, dan E. Wina. 2016. Mycotoxins contamination in corn used by feed mills for animal feed in Indonesia. *Indo. J. Agric. Sci.* 9(2): 68-76.

Tavangar, P., S. Gharahveysi, V. Rezaeipour, dan M. Irani. 2021. Efficacy of phytobiotic and toxin binder feed additives individually or in combination on the growth performance, blood biochemical parameters, intestinal morphology, and microbial population in broiler chickens exposed to aflatoxin B<sub>1</sub>. *Trop. Anim. Health Prod.* 53(335): 1–10.

Thohawi, M., E. Purnama, R. A. Prastiya, dan A. L. Saputro. 2018. Potensi toksin binders untuk mengurangi efek mikotoksin zearalenon terhadap panjang, bobot, dan jumlah fetus mencit. *J. Vet.* 19(3): 357–362.

Tsiouris, V., P. Tassis, J. Raj, T. Mantzios, K. Kiskinis, M. Vasiljevic, N. D. Delic, E. Petridou, G. D. Brelou, Z. Polizopoulou, N. Mittas, dan I. Georgopoulou. 2021. Toxins investigation of a novel multicomponent mycotoxin detoxifying agent in amelioration of mycotoxicosis induced by aflatoxin-B<sub>1</sub> and ochratoxin a in broiler chicks. *Toxins*. 13: 367-375.

Umaya, S. R., Y. C. Vijayalakshmi, dan V. Sejian. 2021. Exploration of plant products and phytochemicals against aflatoxin toxicity in broiler chicken production: Present status. *Toxicon*. 200: 55-68.

Wang, F., Z. Zuo, K. Chen, C. Gao, Z. Yang, S. Zhao, J. Li, H. Song, X. Peng, J. Fang, H. Cui, P. Ouyang, Y. Zhou, G. Shu, dan B. Jing. 2018. Histopathological injuries, ultrastructural changes, and depressed TLR expression in the small intestine of broiler chickens with aflatoxin B<sub>1</sub>. *Toxins*. 10(4): 1-14.

Wang, G. H., C. Y. Xue, F. Chen, Y. L. Ma, X. B. Zhang, Y. Z. Bi, dan Y. C. Cao. 2009. Effects of combinations of ochratoxin A and T-2 toxin on immune function of yellow-feathered broiler chickens. *Poult. Sci.* 88(3): 504–510.

Wang, W., S. Zhai, Y. Xia, H. Wang, D. Ruan, T. Zhou, Y. Zhu, H. Zhang, M. Zhang, H. Ye, W. Ren, dan L. Yang. 2019. Ochratoxin A induces liver inflammation: Involvement of intestinal microbiota. *Microbiome*. 7(151): 1-14.

Widiastuti, R. dan Indraningsih. 2009. Deteksi deoksinivalenol dan toksin t-2 dalam pakan menggunakan kromatografi gas dengan electron captured detector. *J. Ilmu Ternak Vet.* 14(3): 230-236.



- Widiyanti, P. M. 2020. Deteksi aflatoxin B<sub>1</sub> dalam bahan pakan dan pakan secara enzyme linked immunosorbent assay immunosorbent assay. Pros. PPIS. pp 225-230.
- Wu, Q. H., X. Wang, W. Yang, A. K. Nüssler, L. Y. Xiong, K. Kuča, V. Dohnal, X. J. Zhang, dan Z. H. Yuan. 2014. Oxidative stress-mediated cytotoxicity and metabolism of T-2 toxin and deoxynivalenol in animals and humans: An update. Arch. Toxicol. 88(7): 1309–1326.
- Xi, Y., J. Chen, S. Guo, S. Wang, Z. Liu, L. Zheng, Y. Qi, P. Xu, L. Li, dan B. Ding. 2022. Effects of tannic acid on growth performance, relative organ weight, antioxidative status, and intestinal histomorphology in broilers exposed to aflatoxin B<sub>1</sub>. Front. Vet. Sci. 9: 1-10.
- Xu, R., E. G. Kiarie, A. Yiannikouris, L. Sun, dan N. A. Karrow. 2022. Nutritional impact of mycotoxins in food animal production and strategies for mitigation. J. Anim. Sci. Biotechnol. 13(69). 1-19.
- Xue, C. Y., G. H. Wang, F. Chen, X. B. Zhang, Y. Z. Bi, dan Y. C. Cao. 2010. Immunopathological effects of ochratoxin A and T-2 toxin combination on broilers. Poult. Sci. 89(6): 1162–1166.
- Yadavalli, R., P. Valluru, R. Raj, C. N. Reddy, dan B. Mishra. 2023. Biological detoxification of mycotoxins: emphasizing the role of algae. Algal Res. 71: 1-12.
- Yang, J., F. Bai, K. Zhang, S. Bai, X. Peng, X. Ding, Y. Li, J. Zhang, dan L. Zhao. 2012. Effects of feeding corn naturally contaminated with aflatoxin B<sub>1</sub> and B<sub>2</sub> on hepatic functions of broilers. Poult. Sci. 91(11): 2792–2801.
- Yarru, L. P., R. S. Settivari, N. K. S. Gowda, E. Antoniou, D. R. Ledoux, dan G. E. Rottinghaus. 2009. Effects of turmeric (*curcuma longa*) on the expression of hepatic genes associated with biotransformation, antioxidant, and immune systems in broiler chicks fed aflatoxin. Poult. Sci. 88(12): 2620–2627.
- Yiannikouris, A., J. François, L. Poughon, C.-G. Dussap, G. Bertin, G. Jeminet, dan J. P. Jouany. 2004. Adsorption of zearalenone by b-d-glucans in the *saccharomyces cerevisiae* cell wall. J. Food Prot. 67(6): 1195-1200.
- Yin, H., S. Han, Y. Chen, Y. Wang, D. Li, dan Q. Zhu. 2020. T-2 toxin induces oxidative stress, apoptosis and cytoprotective autophagy in chicken hepatocytes. Toxins. 12(2): 1-13.
- Yunus, A. W., E., Razzazi-Fazeli, dan J. Bohm. 2011. Aflatoxin B<sub>1</sub> in affecting broiler's performance, immunity, and gastrointestinal tract: A review of history and contemporary issues. Toxins. 3(6): 566–590.
- Zahra, N., N. Jamil, S. R. Ahmad, M. K. Saeed, I. Kalim, dan A. Sheikh. 2019. A review of mycotoxin types, occurrence, toxicity, detection



methods and control. Pak. J. Sci. Ind. Res. Ser. B: Biol. Sci. 62(3): 206–218.

Zhai, S., Y. Zhu, P. Feng, M. Li, W. Wang, L. Yang, dan Y. Yang. 2021. Ochratoxin A: its impact on poultry gut health and microbiota, an overview. Poult. Sci. 100(5): 1-10.

Zhao, L., Y. Feng, J. T. Wei, M. X. Zhu, L. Zhang, J. C. Zhang, N. A. Karrow, Y. M. Han, Y. Y. Wu, Y. M. Guo, dan L. H. Sun. 2021. Mitigation effects of bentonite and yeast cell wall binders on AFB<sub>1</sub>, DON, and OTA induced changes in laying hen performance, egg quality, and health. Toxins. 13(2): 1-10.

Zimmermann, C. E. P., A. K. Machado, F. C. Cadoná, J. A. S. Jaques, K. B. Schlemmer, C. Lautert, I. B. M. Cruz, R. A. Zanette, D. B. R. Leal, dan J. M. Santurio. 2014. In-vitro cytotoxicity of aflatoxin B<sub>1</sub> to broiler lymphocytes of broiler chickens. Braz. J. Poult. Sci. 16(3): 307–312.