

DAFTAR PUSTAKA

- Abubakar dan M. Arpah. 2015. Pengaruh suhu produksi terhadap aktivitas ekstrak kasar bakteriosin dari berbagai galur. *Buletin Peternakan*. 39(3):189–98.
- Adawiyah, Rabiatal, S., Hafsan, Nur, F., dan M. Mustami. 2015. Prosiding seminar nasional mikrobiologi kesehatan dan lingkungan Makassar. Prosiding Seminar Nasional Mikrobiologi Kesehatan dan Lingkungan. 29:164–74.
- Ahmad, R., Yu H. Y., Felix S. H. H., Andrzej D., Ilyas A., Hui C. H., dan H. C.Yeong. 2022. Probiotics as a friendly antibiotic alternative: Assessment of their effects on the health and productive performance of poultry. *Fermentation*. 8(12). doi: 10.3390/fermentation8120672.
- Aini, M., Sri R., Vivi M., Quranayati, dan A. Nur. 2021. Bakteri *Lactobacillus Spp.* dan peranannya bagi kehidupan. *Jurnal Jeumpa*. 8(2):614–24. doi: 10.33059/jj.v8i2.3154.
- Ali, S. A., Singh, P., Tomar, S. K., Mohanty, A. K., dan P. Behare. 2020. Proteomics fingerprints of systemic mechanisms of adaptation to bile in *Lactobacillus fermentum*. *Journal of proteomics*. 213:103600.
- Astashkina, A. P., Khudyakova, L. I., dan Y. V. Kolbysheva. 2014. Microbiological Quality Control of Probiotic Products. *Procedia Chemistry*. 10:74–79. <https://doi.org/10.1016/j.proche.2014.10.014>
- Bacanlı, M., dan N. Başaran. 2019. Importance of antibiotic residues in animal food. *Food and Chemical Toxicology*. 125:462–66. doi: 10.1016/j.fct.2019.01.033.
- Balouiri, M., Moulay S., dan S. K. Ibnsouda. 2016. Methods for in vitro evaluating antimicrobial activity: A Review. *Journal of Pharmaceutical Analysis*. 6(2):71–79. doi: 10.1016/j.jpha.2015.11.005.
- Bawole, K. V., Umboh, S. D., dan T.E. Tallei. 2018. Uji ketahanan bakteri asam laktat hasil fermentasi kubis merah (*Brassica oleracea* L.) pada pH 3. *Jurnal MIPA*. 7(2), 20-23.
- Begley, Máire, Cormac G. M., Gahan, dan C. Hill. 2005. The interaction between bacteria and bile. *FEMS Microbiology Reviews*. 29(4):625–51. doi: 10.1016/j.femsre.2004.09.003.

- Beier, C. R. 2021. Interactions and inhibition of pathogenic foodborne bacteria with individual dissociated organic acid species: A Review. *Journal of Food Chemistry and Nanotechnology*. 7(1):4–17. doi: 10.17756/jfcn.2021-0106.
- Bermudez-Brito, Miriam, Julio P. D., Sergio M. Q., Carolina G. L., dan A. Gil. 2012. Probiotic mechanisms of action. *Annals of Nutrition dan Metabolism*. 61(2):160–74. doi: 10.1159/000342079.
- Borisov, Vitaliy B., Sergey A. S., Martina R. N., dan E. Forte. 2021. Ros defense systems and terminal oxidases in bacteria. *Antioxidants*. 10(6):1–17. doi: 10.3390/antiox10060839.
- Both, E., György, E., Abrahám, B., dan S. Lányi. 2011. Beneficial Effects of Probiotic Microorganisms. *Acta Univ. Sapientiae. Alimentaria*. pp. 44–58.
- Cahyono, Kinasih, Sumardi S., Bambang I., Sri W., dan E. Nurcahyani. 2021. Imobilisasi bakteri asam laktat dengan menggunakan zeolit dan natrium alginat. *Jurnal Ilmiah Farmasi Farmasyifa*. 4(1):33–40. doi: 10.29313/jiff.v4i1.6372.
- Chou, Lan S., dan B. Weimer. 1999. Isolation and characterization of acid- and bile-tolerant isolates from strains of *Lactobacillus acidophilus*. *Journal of Dairy Science*. 82(1):23–31. doi: 10.3168/jds.S0022-0302(99)75204-5.
- Corr, Sinéad C., Yin L., Christian U., Riedel, Paul W., O'Toole, Colin H., dan C. G. M. Gahan. 2007. Bacteriocin production as a mechanism for the anti-infective activity of *Lactobacillus Salivarius* UCC118. *Proceedings of the National Academy of Sciences of the United States of America*. 104(18):7617–21. doi: 10.1073/pnas.0700440104.
- Dee, Scott, Jose E. G., Dan H., Noel G., Robert M., Deborah A., dan L. G. Pantoja. 2018. A randomized controlled trial to evaluate performance of pigs raised in antibiotic-free or conventional production systems following challenge with porcine reproductive and respiratory syndrome virus. *PLoS ONE*. 13(12):1–15. doi: 10.1371/journal.pone.0208430.
- Duary, Raj K., Virender K. B., dan S. Grover. 2010. Expression of the AtpD gene in probiotic *Lactobacillus plantarum* strains under in vitro acidic conditions using RT-QPCR. *Research in Microbiology*. 161(5):399–405. doi: 10.1016/j.resmic.2010.03.012.

- Ebeid, Tarek A., Ibrahim H., Al-Homidan, dan M. M. Fathi. 2021. physiological and immunological benefits of probiotics and their impacts in poultry productivity. *World's Poultry Science Journal*. 77(4):883–99. doi: 10.1080/00439339.2021.1960239.
- Faraki, Azita, dan F. Rahmani. 2021. The antioxidant activity of lactic acid bacteria and probiotics: A Review. *Journal of Food Safety and Hygiene*. 6(4). doi: 10.18502/jfsh.v6i4.7563.
- Faridah, Rajmi, Epi T., dan I. I. Arief. 2017. Pertumbuhan dan produksi bakteriosin *Lactobacillus fermentum* asal Dangke pada media whey dangke. *Jurnal Agripet* 17(2):81–86. doi: 10.17969/agripet.v17i2.8104.
- Fatimah, Meliana P., Imam M., dan T. T. K. Anggaeni. 2020. Kajian pustaka: Pemanfaatan bakteriosin dari produk fermentasi sebagai antibakteri terhadap *Staphylococcus aureus*. *Indonesia Medicus Veterinus*. 9(5):835–48. doi: 10.19087/imv.2020.9.5.835.
- Febrianti, Andri N., Wayan S., Nyoman Su., Mahasiswa P. P., Dokter H., Laboratorium K., Masyarakat V., dan L. B. Veteriner. 2016. Ketahanan bakteri asam laktat (BAL) isolat 9A hasil isolasi dari kolon sapi Bali terhadap pH rendah dan natrium deoksikolat (NaDC) (Resistance test of lactic acid bacteria isolates 9A from Bali cattle colon againsts low pH and natrium deoksikolat)(NaDC). *Indonesia Medicus Veterinus* Oktober. 5(5):415–21.
- Fridovich, I. 1997. Superoxide anion radical ($O_2^{\cdot-}$), superoxide dismutases, and related matters. *Journal of Biological Chemistry*. 272(30):18515–17. doi: 10.1074/jbc.272.30.18515.
- Fuochi, Virginia, Giulio P. P., Edmondo L., dan P. M. Furneri. 2015. Evaluation of resistance to low pH and bile salts of human *Lactobacillus Spp.* isolates. *International Journal of Immunopathology and Pharmacology*. 28(3):426–33. doi: 10.1177/0394632015590948.
- Gänzle dan G. Michael. 2015. Lactic metabolism revisited: Metabolism of lactic acid bacteria in food fermentations and food spoilage. *Current Opinion in Food Science*. 2(2):106–17. doi: 10.1016/j.cofs.2015.03.001.
- Halder, D., Mandal, M., Chatterjee, S. S., Pal, N. K., dan S. Mandal. 2017. Indigenous probiotic *Lactobacillus* isolates presenting antibiotic like activity against human pathogenic bacteria. *Biomedicines*. 5(2):1–11. <https://doi.org/10.3390/biomedicines5020031>

- Hardiningsih, Riani, Rostiati N. R. N., dan T. YULINERY. 2006. Isolation and resistance test of several isolates of *Lactobacillus* in low pH. *Biodiversitas Journal of Biological Diversity*. 7(1):15–17. doi: 10.13057/biodiv/d070105.
- Hartini, Puji, Hendri P., Indri J., . Yuherman, dan E. Purwati. 2019. Probiotic potential of lactic acid bacteria *Lactobacillus fermentum* NbrC 15885 isolation from tempoyak in Padang Pariaman district, West Sumatera (Indonesia) to acid conditions, bile salts and antimicrobial activity. *International Research Journal Of Pharmacy*. 10(3):70–73. doi: 10.7897/2230-8407.100381.
- Heravi, R.M., H. Kermanshahi, M. Sankian, M.R. Nassiri, A.H. Moussavi, L.R. Nasiraii, and A.R. Varasteh. 2011. Screening of *Lactobacilli* bacteria isolated from gastrointestinal tract of broiler chickens for their use as probiotic. *African Journal of Microbiology Research*. 5(14): 1858-1868.
- Hood, S. K., dan E. A. Zoitola. 1988. Effect of low pH on the ability of *Lactobacillus acidophilus* to survive and adhere to human intestinal cells. *Journal of Food Science*. 53(5):1514–16. doi: 10.1111/j.1365-2621.1988.tb09312.x.
- Hurri, Saiful, dan T. R. Farasyi. 2018. Kontrol vektor penyakit pada unggas di era bebas antibiotik growth promoter (AGP), Disease vector control in poultry in the free era of antibiotic growth promoter (AGP).
- İduğ, Tuğba, dan H. H. Güldemir. 2024. Probiyotiklerin etk mekanizmaları. *İzmir Katip Çelebi Üniversitesi Sağlık Bilimleri Fakültesi Dergisi*. 9(3):457–62. doi: 10.61399/ikcusbfd.1366834.
- Jayamanne, V. S., dan M. R. Adams. 2006. Determination of survival, identity dan stress resistance of probiotic *Bifidobacteria* in bio-yoghurts. *Letters in Applied Microbiology*. 42(3):189–94. doi: 10.1111/j.1472-765X.2006.01843.x.
- Kaur, Gurjeet, Syed A. A., Sudarshan K., Ashok K. M., dan P. Behare. 2017. Label-free quantitative proteomic analysis of *Lactobacillus fermentum* NCDC 400 during bile salt exposure. *Journal of Proteomics*. 167:36–45. doi: 10.1016/j.jprot.2017.08.008.
- Klingberg, T. D., dan B. B. Budde. 2006. The survival and persistence in the human gastrointestinal tract of five potential probiotic *Lactobacilli* consumed as freeze-dried cultures or as probiotic

- sausage. International journal of food microbiology.109(1-2):157-159.
- Kurdi, Peter, Koji K., Kanako M., dan A. Yokota. 2006. Mechanism of growth inhibition by free bile acids in *Lactobacilli* and *Bifidobacteria*. Journal of Bacteriology. 188(5):1979–86. doi: 10.1128/JB.188.5.1979-1986.2006.
- Kusmiati, dan A. Malik. 2002. Aktivitas bakteriosin dari bakteri *Leuconostoc mesenteroides* Pbac1 pada berbagai media. Makara Kesehatan. 6(1):1–7.
- Laubinger, W., dan P. 1989. The sodium ion translocating adenosine triphosphatase of *Propionigenium modestum* pumps protons at low sodium ion concentrations. Biochemistry. 28(18):7194-7198.
- LeBlanc, J. G., Garro, dan G. S. D. Giori. 2004. Effect of pH on *Lactobacillus fermentum* growth, raffinose removal, α -galactosidase activity dan fermentation products. Applied Microbiology and Biotechnology. 65(1):119–23. doi: 10.1007/s00253-003-1532-z.
- Lim, Sung M., Na K. L., Kee T. K., dan H. D. Paik. 2020. Probiotic *Lactobacillus fermentum* KU200060 isolated from watery kimchi and its application in probiotic yogurt for oral health. Microbial Pathogenesis. 147(4):104430. doi: 10.1016/j.micpath.2020.104430.
- Lund, Peter, Angela T., dan D. D. Biase. 2014. Coping with low pH: Molecular strategies in neutrophilic bacteria. FEMS Microbiology Reviews. 38(6):1091–1125. doi: 10.1111/1574-6976.12076.
- Mastuti, Sri. 2022. Potensi bakteriosin pada bakteri asam laktat terhadap *Staphylococcus aureus* dan *Escherichia coli*. Jurnal Ilmiah Kesehatan Sandi Husada. 11(1):25–30. doi: 10.35816/jiskh.v11i1.650.
- Mehmood, Adnan, Muhammad N., Masood R., dan M. H. Mushtaq. 2023. In vitro characterization of probiotic potential of *Limosilactobacillus fermentum* against *Salmonella gallinarum* causing fowl typhoid. Animals. 13(8). doi: 10.3390/ani13081284.
- Mesquita, Amanda R. C., Lucas, P. M. S., Iranildo, J. C. F., Valmir, F. L., Vladimir, M. S. F., Ana, A. A., Tacilene, L. S., Klewdma, F. A., dan L. S. Macedo. 2017. Metabolism and physiology of *Lactobacilli*: A Review. Journal of Environmental Analysis and Progress. 02:125–36. doi: 10.24221/jeap.2.2.2017.1202.125-136.
- Mikelsaar, Marika, dan M. Zilmer. 2009. *Lactobacillus fermentum* ME-3 - an

antimicrobial and antioxidative probiotic. *Microbial Ecology in Health and Disease*. 21(1):1–27. doi: 10.1080/08910600902815561.

Molina, Andrea. 2019. Probiotics and their mechanism of action in animal feed. *Agronomia Mesoamericana*. 30(2):601–11. doi: 10.15517/am.v30i2.34432.

Mosilhey, S. H. 2003. Influence of different capsule material on the physiological properties of microencapsulated *Lactobacillus acidophilus*. Institute of Food Technology. Faculty of Agriculture University of Bonn, Jerman.

Naghmouchi, Karim, Yanath B., Farida B., Giuseppe S., Bruce S. S., dan D. Drider. 2020. *Lactobacillus fermentum*: A bacterial species with potential for food preservation and biomedical applications. *Critical Reviews in Food Science and Nutrition*. 60(20):3387–99. doi: 10.1080/10408398.2019.1688250.

Nakamura, Keisuke, Taro K., Takayuki M., Atsuo I., Yoshimi N., dan M. Kohno. 2012. Microbial resistance in relation to catalase activity to oxidative stress induced by photolysis of hydrogen peroxide. *Microbiology and Immunology*. 56(1):48–55. doi: 10.1111/j.1348-0421.2011.00400.x.

Neal-McKinney, Jason M., Xiaonan L., Tri D., Charles L. L., Douglas R. C., Devendra H. S., dan M. E. Konkel. 2012. Production of organic acids by probiotic *Lactobacilli* can be used to reduce pathogen load in poultry. *PLoS ONE*. 7(9). doi: 10.1371/journal.pone.0043928.

Nurliana, N., Idwan S., Mirnawati S., dan R. R. Soejoedono. 2009. Pengaruh bakteriosin produksi bakteri asam laktat isolat Indonesia terhadap jumlah bakteri dalam susu pasteurisasi. *Jurnal Agripet*. 9(1):50–56. doi: 10.17969/agripet.v9i1.622.

Nurtia, C. 2023. Pemanfaatan supernatan *Lactobacillus fermentum* FNCC 0322 sebagai senyawa biopreservatif pada tahu putih. Skripsi. Fakultas Sains Teknologi UIN Syarif Hidayatullah. Jakarta.

Pan, M., Hidalgo-Cantabrana, C., Goh, Y. J., Sanozky-Dawes, R., dan R. Barrangou. 2020. Comparative analysis of *Lactobacillus gasseri* and *Lactobacillus crispatus* isolated from human urogenital and gastrointestinal tracts. *Frontiers in microbiology*. 10:499288.

Panicker, Aiswarya S., Syed A. A., Santosh A., Narender R. P., Sudarshan

- K., Mohanty, dan P. V. Behare. 2018. Evaluation of some in vitro probiotic properties of *Lactobacillus fermentum* strains. *Journal of Food Science and Technology*. 55(7):2801–7. doi: 10.1007/s13197-018-3197-8.
- Permadi, Angga, Mubalikhoh A. I., Kukuh C., dan M. Al Kholif. 2018. Penggunaan probiotik dalam budidaya ternak. *Jurnal Abadimas Adi Buana*. 2(1):5–10. doi: 10.36456/abadimas.v2.i1.a1616.
- Plaza-Diaz, Julio, Francisco, J. R., Gil-Campos, dan A. Gil. 2019. Mechanisms of action of probiotics. *Advances in Nutrition*. 10:S49–66. doi: 10.1093/advances/nmy063.
- Porto-Figueira, Priscilla, José, S. C., Ana, M. V., dan J. A. M. Pereira. 2023. Understanding the tolerance of different strains of human pathogenic bacteria to acidic environments. *Applied Sciences (Switzerland)*. 13(1). doi: 10.3390/app13010305.
- Rahmah, Widya, Erika, N., Sylvan, S. R., dan H. Hamzah. 2021. Fermentasi tape singkong. *Jurnal Penelitian Farmasi Indonesia*. 10(1):1–5.
- Rosari, R. W., Sulistiyani, S., Yossy, S. P., dan S. Nurasih. 2006. 10 Model penelitian dan pengolahannya dengan SPSS 14. Andi Offset. Yogyakarta.
- Rousk, Johannes, Philip, C. B., dan E. Bååth. 2009. Contrasting soil pH effects on fungal and bacterial growth suggest functional redundancy in carbon mineralization. *Applied and Environmental Microbiology*. 75(6):1589–96. doi: 10.1128/AEM.02775-08.
- Ruiz, L., Abelardo, M., dan B. Sanchez. 2013. bile resistance mechanisms in *Lactobacillus* and *Bifidobacterium*. *Frontiers in Microbiology* 4(12):1–8. doi: 10.3389/fmicb.2013.00396.
- Salveti, Elisa, Marco, F., Renato, F., Sandra, T., dan G. E. Felis. 2013. Evolution of lactic acid bacteria in the order *Lactobacillales* as depicted by analysis of glycolysis and pentose phosphate pathways. *Systematic and Applied Microbiology*. 36(5):291–305. doi: 10.1016/j.syapm.2013.03.009.
- Sánchez, Borja, Marie, C. C., María, D. C. C., Patricia, A., Fabienne, B., Yolanda, S., Clara, G. D. R., Abelardo, M., dan Z. Monique. 2007. low-pH adaptation and the acid tolerance response of *Bifidobacterium longum* biotype *longum*. *Applied and Environmental Microbiology*.

73(20):6450–59. doi: 10.1128/AEM.00886-07.

- Sasaki, Y., Nogami, E., Maeda, M., Nakanishi-Matsui, M., dan A. Iwamoto-Kihara. 2014. A unique F-type H⁺-ATPase from *Streptococcus mutans*: an active H⁺ pump at acidic pH. *Biochemical and Biophysical Research Communications*. 443(2): 677-682.
- Sharma, Garima, Shweta, D., Sanjay, G., dan R. Gabrani. 2018. Antibacterial activity, cytotoxicity, and the mechanism of action of bacteriocin from *Bacillus subtilis* GAS101. *Medical Principles and Practice*. 27(2):186–92. doi: 10.1159/000487306.
- Sies, Helmut. 2020. Oxidative stress: Concept and some practical aspects. *Antioxidants*. 9(9):1–6. doi: 10.3390/antiox9090852.
- Soenarno, Mochammad, S., Irma, I. A., Cece, S., Epi, T., dan L. Nuraida. 2020. Karakterisasi plantarisin IIA-1A5 sebagai antimikroba dan evaluasi aktivitas sediaan kering beku terenkapsulasi. *Jurnal Aplikasi Teknologi Pangan*. 9(1):30. doi: 10.17728/jatp.5480.
- Songisepp. 2011. *Dissertationes medicinae. Universitatis Tartuens*. 110. University of Tartu. 219.
- Sturr, M. G., dan R. E. Marquis. 1992. Comparative acid tolerances and inhibitor sensitivities of isolated F-ATPases of oral lactic acid bacteria. *Applied and environmental microbiology*. 58(7): 2287-2291.
- Sunaryanto, Rofiq, Efrida, M., dan B. Marwoto. 2014. Uji kemampuan *Lactobacillus casei* sebagai agensia probiotik. *Jurnal Bioteknologi & Biosains Indonesia (JBBI)*. 1(1):9. doi: 10.29122/jbbi.v1i1.546.
- Tang, Jialing, Xiaochang C. W., Yisong H., Huu H. N., dan Y. Li. 2017. Dynamic membrane-assisted fermentation of food wastes for enhancing lactic acid production. *Bioresource Technology*. 234:40–47. doi: 10.1016/j.biortech.2017.03.019.
- Tewari, Souvik, John D., dan A. Gautam. 2019. A review on probiotic dairy products and digestive health. *Journal of Pharmacognosy and Phytochemistry*. 8(3):368–72. doi: 10.22271/phyto.2019.v8.i3h.8112.
- Wang, K., Mengmeng, N., Dawei, S., Xuejian, S., Jing, Z., Y. Wu., Baoxin, L., dan G. Niu. 2020. Preparation, partial characterization and biological activity of exopolysaccharides produced from *Lactobacillus fermentum* S1. *Journal of Bioscience and Bioengineering*. 129(2):206–14. doi:

10.1016/j.jbiosc.2019.07.009.

- Wang, Y., Yanping, W., Yuanyuang, W., Han, X., Xiaoqiang, M., Dongyou, Y., Yibing, W., dan W. Li. 2017. Antioxidant properties of probiotic bacteria. *Nutrients*. 9(5). doi: 10.3390/nu9050521.
- Widodo. 2003. *Bioteknologi Industri Susu*. Edisi I. Lacticia Press, Yogyakarta.
- Winterbourn, C. Christine. 2012. Biological chemistry of reactive oxygen species. *Encyclopedia of Radicals in Chemistry, Biology and Materials*. doi: 10.1002/9781119953678.rad077.
- Wu, R., Sun, J., Wu, H., Meng, dan H. Zhang. 2010. Effect of bile salts stress on protein synthesis of *Lactobacillus casei* zhang revealed by 2-dimensional gel electrophoresis. *Journal of Dairy Science*. 93(8):3858–68. doi: 10.3168/jds.2009-2967.
- Zhai, Z., Yang, Y., Hui, W., Guohong, W., Fazheng, Ren., Zaigui, L., dan Y. Hao. 2020. Global transcriptomic analysis of *Lactobacillus plantarum* CAUH2 in response to hydrogen peroxide stress. *Food Microbiology*. 87(10):103389. doi: 10.1016/j.fm.2019.103389.
- Zhang, D., Chuang, L., Ruirui, S., Fengchun, Z., dan Z. Yang. 2020. *Lactobacillus fermentum* JX306 restrain D-Galactose-induced oxidative stress of mice through its antioxidant activity. *Polish Journal of Microbiology*. 69(2):205–15. doi: 10.33073/PJM-2020-024.
- Zhang, H., Jianhang, X., Qian, C., Hui, W., dan B. Kong. 2021. Physiological, morphological and antioxidant responses of *Pediococcus pentosaceus* R1 and *Lactobacillus fermentum* R6 isolated from harbin dry sausages to oxidative stress. *Foods*. 10(6):1–13. doi: 10.3390/foods10061203.
- Zheng, J., Stijn, W., Elisa, S., Charles, M. A. P. F., Hugh, M. B. H., Paola, M, Paul, W. O., Bruno, P., Peter, V., Jens, W., Koichi, W., Sander, W., Giovanna, E. F., Michael, G. G., dan S. Lebeer. 2020. A taxonomic note on the genus *Lactobacillus*: Description of 23 novel genera, emended description of the genus *Lactobacillus* Beijerinck 1901, and union of *Lactobacillaceae* and *Leuconostocaceae*. *International Journal of Systematic and Evolutionary Microbiology*. 70(4):2782–2858. doi: 10.1099/ijsem.0.004107.