

REFERENCES

- Almohammadi, A. R., Abdel-Shafi, S., Tartour, E., & Enan, G. (2022). Inhibitory action of three lactic acid bacteria cultures on some food-borne pathogens during pickling of green olive fruits. *Helijon*, 8(11), e11693.
- Amaning Danquah, C., Minkah, P. A. B., Osei Duah Junior, I., Amankwah, K. B., & Somuah, S. O. (2022). Antimicrobial compounds from microorganisms. *Antibiotics*, 11(3), 285.
- Ben Youssef, B. (2015). A parallel cellular automata algorithm for the deterministic simulation of 3-D multicellular tissue growth. *Cluster Computing*, 18, 1561-1579.
- Bernatová, S., Samek, O., Pilát, Z., Šerý, M., Ježek, J., Jákl, P., ... & Růžička, F. (2013). Following the mechanisms of bacteriostatic versus bactericidal action using Raman spectroscopy. *Molecules*, 18(11), 13188-13199.
- Blackburn, C. D. W. (2006). Managing microbial food spoilage: an overview. *Food spoilage microorganisms*, 147-170.
- Bondi, M., Lauková, A., de Niederhausern, S., Messi, P., & Papadopoulou, C. (2017). Natural preservatives to improve food quality and safety. *Journal of Food Quality*, 2017.
- Bonnet, M., Lagier, J. C., Raoult, D., & Khelaifia, S. (2020). Bacterial culture through selective and non-selective conditions: the evolution of culture media in clinical microbiology. *New microbes and new infections*, 34, 100622.
- Bungenstock, L., Abdulmawjood, A., & Reich, F. (2020). Evaluation of antibacterial properties of lactic acid bacteria from traditionally and industrially produced fermented sausages from Germany. *PLoS One*, 15(3), e0230345.
- Bussaman, P., Sa-Uth, C., Rattanasena, P., & Chandrapatya, A. (2012). Acaricidal activities of whole cell suspension, cell-free supernatant, and crude cell extract of Xenorhabdus stokiae against mushroom mite (Luciaphorus sp.). *Journal of Zhejiang University Science B*, 13, 261-266.
- Callejon, S., Sendra, R., Ferrer, S., & Pardo, I. (2017). Recombinant laccase from *Pediococcus acidilactici* CECT 5930 with ability to degrade tyramine. *PloS one*, 12(10), e0186019.
- Castellano, P., Peña, N., Ibarreche, M. P., Carduza, F., Soteras, T., & Vignolo, G. (2018). Antilisterial efficacy of *Lactobacillus* bacteriocins and organic acids on frankfurters. Impact on sensory characteristics. *Journal of food science and technology*, 55, 689-697.
- Chen, J., Pang, H., Wang, L., Ma, C., Wu, G., Liu, Y., ... & Tan, Z. (2022). Bacteriocin-producing lactic acid bacteria strains with antimicrobial activity screened from Bamei pig feces. *Foods*, 11(5), 709.
- Cheng, C., Yang, Y., Dong, Z., Wang, X., Fang, C., Yang, M., ... & Song, H. (2015). Listeria

monocytogenes varies among strains to maintain intracellular pH homeostasis under stresses by different acids as analyzed by a high-throughput microplate-based fluorometry. *Frontiers in Microbiology*, 6, 15.

Cho, Y. H., Hong, S. M., & Kim, C. H. (2013). Isolation and characterization of lactic acid bacteria from kimchi, Korean traditional fermented food to apply into fermented dairy products. *Food Science of Animal Resources*, 33(1), 75-82.

Dabour, N., Zihler, A., Kheadr, E., Lacroix, C., & Fliss, I. (2009). In vivo study on the effectiveness of pediocin PA-1 and Pediococcus acidilactici UL5 at inhibiting Listeria monocytogenes. *International journal of food microbiology*, 133(3), 225-233.

Da Hye, S. O. N. G., Lee, J. M., Chung, K. H., & An, J. H. (2018). Penicillin Binding Protein from Pediococcus acidilactici Isolated from Nuruk for Food Biopreservative. *Iranian Journal of Public Health*, 47(11), 1653.

Danial, E. N., Al-Zahrani, S. H. M., & Al-Mahmoudi, Z. A. H. M. (2016). Enhancement of novel extracellular bacteriocin production by media optimization using LAB isolate from meat. *Journal of Applied Pharmaceutical Science*, 6(12), 020-027.

Darbandi, A., Asadi, A., Mahdizade Ari, M., Ohadi, E., Talebi, M., Halaj Zadeh, M., ... & Kakanj, M. (2022). Bacteriocins: Properties and potential use as antimicrobials. *Journal of Clinical Laboratory Analysis*, 36(1), e24093.

De Marco, S., Sichetti, M., Muradyan, D., Piccioni, M., Traina, G., Pagiotti, R., & Pietrella, D. (2018). Probiotic cell-free supernatants exhibited anti-inflammatory and antioxidant activity on human gut epithelial cells and macrophages stimulated with LPS. *Evidence-Based Complementary and Alternative Medicine*, 2018.

Dissasa, G., Lemma, B., & Mamo, H. (2022). Antimicrobial activity of lactic acid bacteria (lab) isolated from yoghurt and fish against pathogenic bacteria isolated from fish in Ethiopia. *Journal of Microbiology and Biotechnology*, 7(3), 1-10.

Dobson, A., Cotter, P. D., Ross, R. P., & Hill, C. (2012). Bacteriocin production: a probiotic trait?. *Applied and environmental microbiology*, 78(1), 1-6.

Ebbensgaard, A., Mordhorst, H., Overgaard, M. T., Nielsen, C. G., Aarestrup, F. M., & Hansen, E. B. (2015). Comparative evaluation of the antimicrobial activity of different antimicrobial peptides against a range of pathogenic bacteria. *PloS one*, 10(12), e0144611.

EFSA Panel on Additives and Products or Substances used in Animal Feed (FEEDAP), Bampidis, V., Azimonti, G., Bastos, M. D. L., Christensen, H., Dusemund, B., ... & Brozzi, R. (2022). Safety and efficacy of a feed additive consisting of Pediococcus acidilactici CNCM I-4622 for all animal species (Danstar Ferment AG). *EFSA Journal*, 20(8), e07424.

- El Far, M. S., Zakaria, A. S., Kassem, M. A., Wedn, A., Guimei, M., & Edward, E. A. (2023). Promising biotherapeutic prospects of different probiotics and their derived postbiotic metabolites: in-vitro and histopathological investigation. *BMC microbiology*, 23(1), 1-14.
- Flanagan, J. N., & Steck, T. R. (2017). The relationship between agar thickness and antimicrobial susceptibility testing. *Indian journal of microbiology*, 57, 503-506.
- Fugaban, J. I. I., Vazquez Bucheli, J. E., Park, Y. J., Suh, D. H., Jung, E. S., Franco, B. D. G. D. M., ... & Todorov, S. D. (2022). Antimicrobial properties of *Pediococcus acidilactici* and *Pediococcus pentosaceus* isolated from silage. *Journal of Applied Microbiology*, 132(1), 311-330.
- Giacometti, F., Shirzad-Aski, H., & Ferreira, S. (2021). Antimicrobials and food-related stresses as selective factors for antibiotic resistance along the farm to fork continuum. *Antibiotics*, 10(6), 671.
- Gefen, O., Fridman, O., Ronin, I., & Balaban, N. Q. (2014). Direct observation of single stationary-phase bacteria reveals a surprisingly long period of constant protein production activity. *Proceedings of the National Academy of Sciences*, 111(1), 556-561.
- Gomes, J., Barbosa, J., & Teixeira, P. (2021). The inhibitory concentration of natural food preservatives may be biased by the determination methods. *Foods*, 10(5), 1009.
- Hamill, P. G., Stevenson, A., McMullan, P. E., Williams, J. P., Lewis, A. D., Stevenson, K. E., ... & Hallsworth, J. E. (2020). Microbial lag phase can be indicative of, or independent from, cellular stress. *Scientific reports*, 10(1), 1-20.
- Hammond, S. T., Brown, J. H., Burger, J. R., Flanagan, T. P., Fristoe, T. S., Mercado-Silva, N., ... & Okie, J. G. (2015). Food spoilage, storage, and transport: Implications for a sustainable future. *BioScience*, 65(8), 758-768.
- Hayati, F., Yuliana, T., & Rialita, T. (2021, November). Antimicrobial activity of bacteriocin like inhibitory substance (BLIS) and lactic acid bacteria (LAB) isolated from traditional fermented buffalo milk from West Sumatra, Indonesia. In *IOP Conference Series: Earth and Environmental Science* (Vol. 924, No. 1, p. 012082). IOP Publishing.
- Hu, C. H., Ren, L. Q., Zhou, Y., & Ye, B. C. (2019). Characterization of antimicrobial activity of three *Lactobacillus plantarum* strains isolated from Chinese traditional dairy food. *Food science & nutrition*, 7(6), 1997-2005.
- Iyer, V., Raut, J., & Dasgupta, A. (2021). Impact of pH on growth of *Staphylococcus epidermidis* and *Staphylococcus aureus* in vitro. *Journal of Medical Microbiology*, 70(9), 001421.
- Jaishankar, J., & Srivastava, P. (2017). Molecular basis of stationary phase survival and applications. *Frontiers in microbiology*, 8, 2000.
- Juturu, V., & Wu, J. C. (2018). Microbial production of bacteriocins: Latest research development and

- applications. *Biotechnology advances*, 36(8), 2187-2200.
- Kaewchomphunuch, T., Charoenpichitnunt, T., Thongbaiyai, V., Ngamwongsatit, N., & Kaeoket, K. (2022). Cell-free culture supernatants of Lactobacillus spp. and Pediococcus spp. inhibit growth of pathogenic Escherichia coli isolated from pigs in Thailand. *BMC Veterinary Research*, 18(1), 1-13.
- Kamble, P., Appa Rao, V., Abraham, R. J., & Dhanalakshmi, B. (2017). Effect of Pediocin NCDC 252 as cell free supernatant produced from Pediococcus acidilactici NCDC 252 with EDTA on total viable count and sensory evaluation of chicken carcasses stored at refrigeration temperature. *Int J Curr Microbiol App Sci*, 6(7), 2269-2276.
- Karwowska, M., & Kononiuk, A. (2020). Nitrates/nitrites in food—Risk for nitrosative stress and benefits. *Antioxidants*, 9(3), 241.
- Kaya, H. İ., & Şimşek, Ö. (2020). Characterization of Pediococcus acidilactici PFC69 and Lactococcus lactis PFC77 bacteriocins and their antimicrobial activities in tarhana fermentation. *Microorganisms*, 8(7), 1083.
- Kim, H., & Kang, S. S. (2019). Antifungal activities against Candida albicans, of cell-free supernatants obtained from probiotic Pediococcus acidilactici HW01. *Archives of oral biology*, 99, 113-119.
- Khorshidian, N., Khanniri, E., Mohammadi, M., Mortazavian, A. M., & Yousefi, M. (2021). Antibacterial activity of pediocin and pediocin-producing bacteria against Listeria monocytogenes in meat products. *Frontiers in microbiology*, 12, 709959.
- Kovanda, L., Zhang, W., Wei, X., Luo, J., Wu, X., Atwill, E. R., ... & Liu, Y. (2019). In vitro antimicrobial activities of organic acids and their derivatives on several species of gram-negative and gram-positive bacteria. *Molecules*, 24(20), 3770.
- Kumar, R., Bansal, P., Singh, J., & Dhanda, S. (2020). Purification, partial structural characterization and health benefits of exopolysaccharides from potential probiotic Pediococcus acidilactici NCDC 252. *Process Biochemistry*, 99, 79-86.
- Kuniyoshi, T. M., O'Connor, P. M., Lawton, E., Thapa, D., Mesa-Pereira, B., Abulu, S., ... & Cotter, P. D. (2022). An oxidation resistant pediocin PA-1 derivative and penocin A display effective anti-Listeria activity in a model human gut environment. *Gut Microbes*, 14(1), 2004071.
- Lennerz, B. S., Vafai, S. B., Delaney, N. F., Clish, C. B., Deik, A. A., Pierce, K. A., ... & Mootha, V. K. (2015). Effects of sodium benzoate, a widely used food preservative, on glucose homeostasis and metabolic profiles in humans. *Molecular genetics and metabolism*, 114(1), 73-79.
- Lepe, J. A., Rodríguez-Villodres, Á., Martín-Gutiérrez, G., Luque, R., & Aznar, J. (2019). In vitro study of synergy of ampicillin with ceftriaxone against Listeria monocytogenes. *Revista Española de Quimioterapia*, 32(5), 465.

- Li, Y., Huang, T. Y., Mao, Y., Chen, Y., Shi, F., Peng, R., ... & Liu, J. (2020). Effect of environmental conditions on the formation of the viable but nonculturable state of *Pediococcus acidilactici* BM-PA17927 and its control and detection in food system. *Frontiers in Microbiology*, 11, 586777.
- Loh, J. Y., Lim, Y. Y., & Ting, A. S. Y. (2017). Bacteriocin-like substances produced by *Lactococcus lactis* subsp. *lactis* CF4MRS isolated from fish intestine: Antimicrobial activities and inhibitory properties. *International Food Research Journal*, 24(1), 394.
- Lv, P., Zhu, L., Yu, Y., Wang, W., Liu, G., & Lu, H. (2020). Effect of NaOH concentration on antibacterial activities of Cu nanoparticles and the antibacterial mechanism. *Materials Science and Engineering: C*, 110, 110669.
- Mani-López, E., Arrioja-Bretón, D., & López-Malo, A. (2022). The impacts of antimicrobial and antifungal activity of cell-free supernatants from lactic acid bacteria in vitro and foods. *Comprehensive Reviews in Food Science and Food Safety*, 21(1), 604-641.
- Martindale, W., & Schiebel, W. (2017). The impact of food preservation on food waste. *British Food Journal*.
- McBirney, S. E., Trinh, K., Wong-Beringer, A., & Armani, A. M. (2016). Wavelength-normalized spectroscopic analysis of *Staphylococcus aureus* and *Pseudomonas aeruginosa* growth rates. *Biomedical optics express*, 7(10), 4034-4042.
- Mehta, R., Arya, R., Goyal, K., Singh, M., & K Sharma, A. (2013). Bio-preserved and therapeutic potential of pediocin: recent trends and future perspectives. *Recent patents on biotechnology*, 7(3), 172-178.
- Mgombe, F. C., Yang, Y. R., Cheng, G., & Yang, Z. Q. (2023). Lactic acid bacteria biofilms and their antimicrobial potential against pathogenic microorganisms. *Biofilm*, 100118.
- Milillo, S. R., Story, R. S., Pak, D., O'Bryan, C. A., Crandall, P. G., & Ricke, S. C. (2013). Antimicrobial properties of three lactic acid bacterial cultures and their cell free supernatants against *Listeria monocytogenes*. *Journal of Environmental Science and Health, Part B*, 48(1), 63-68.
- Mótyán, J. A., Tóth, F., & Tőzsér, J. (2013). Research applications of proteolytic enzymes in molecular biology. *Biomolecules*, 3(4), 923-942.
- Myers, J. A., Curtis, B. S., & Curtis, W. R. (2013). Improving accuracy of cell and chromophore concentration measurements using optical density. *BMC biophysics*, 6(1), 1-16.
- NaKVR, M. P. (2014). Characterization and antimicrobial properties of partially purified pediocin produced by *Pediococcus acidilactici*. *International Journal of Current Microbiology and Applied Sciences*, 3, 1086-1094.
- Nasiri Moslem, M., Faezi Ghasemi, M., Amirmozafari, N., & Ranji, N. (2022). Antimicrobial Activity of

- Pediococcus Acidilactici PTCC 1954 and Leuconostoc Mesenteroides PTCC 1953 strains isolated from Organic Meat Sausages. *Biological Journal of Microorganism*, 11(44), 129-144.
- Olajugbagbe, T. E., Elugbadebo, O. E., & Omafuvbe, B. O. (2020). Probiotic potentials of Pediococcus acidilactici isolated from wara; A Nigerian unripened soft cheese. *Heliyon*, 6(9), e04889.
- Osek, J., Lachtara, B., & Wieczorek, K. (2022). Listeria monocytogenes—How This Pathogen Survives in Food-Production Environments?. *Frontiers in Microbiology*, 1441.
- Otieno, B. A., Krause, C. E., & Rusling, J. F. (2016). Bioconjugation of antibodies and enzyme labels onto magnetic beads. In *Methods in enzymology* (Vol. 571, pp. 135-150). Academic Press.
- RAMADHANTI, N., MELIA, S., HELLYWARD, J., & PURWATI, E. (2021). Characteristics of lactic acid bacteria isolated from palm sugar from West Sumatra, Indonesia and their potential as a probiotic. *Biodiversitas Journal of Biological Diversity*, 22(5).
- Papagianni, M., & Anastasiadou, S. (2009). Pediocins: The bacteriocins of Pediococci. Sources, production, properties and applications. *Microbial cell factories*, 8(1), 1-16.
- Pato, U., YUSUF, Y., FITRIANI, S., JONNADI, N. N., WAHYUNI, M. S., FERUNI, J. A., & JASWIR, I. (2020). Inhibitory activity of crude bacteriocin produced by lactic acid bacteria isolated from dadih against Listeria monocytogenes. *Biodiversitas Journal of Biological Diversity*, 21(4).
- Pato, U., Yusuf, Y., Fitriani, S., Yeni, R., Fadillah, F., & Husnaini, L. (2021, May). Optimization of the Growth of Pediococcus pentosaceus Strain 2397 in Inhibiting Pathogenic Listeria monocytogenes. In *IOP Conference Series: Earth and Environmental Science* (Vol. 757, No. 1, p. 012056). IOP Publishing.
- Pletnev, P., Osterman, I., Sergiev, P., Bogdanov, A., & Dontsova, O. (2015). Survival guide: Escherichia coli in the stationary phase. *Acta Naturae (англоязычная версия)*, 7(4 (27)), 22-33.
- Prabhurajeshwar, C., & Chandrakanth, K. (2019). Evaluation of antimicrobial properties and their substances against pathogenic bacteria in-vitro by probiotic Lactobacilli strains isolated from commercial yoghurt. *Clinical Nutrition Experimental*, 23, 97-115.
- Ramamurthy, T., Ghosh, A., Pazhani, G. P., & Shinoda, S. (2014). Current perspectives on viable but non-culturable (VBNC) pathogenic bacteria. *Frontiers in public health*, 2, 103.
- Rani, A., Saini, K. C., Bast, F., Varjani, S., Mehariya, S., Bhatia, S. K., ... & Funk, C. (2021). A review on microbial products and their perspective application as antimicrobial agents. *Biomolecules*, 11(12), 1860.
- Reda, F. M. (2019). Antibacterial and anti-adhesive efficiency of Pediococcus acidilactici against foodborne biofilm producer *Bacillus cereus* attached on different food processing surfaces. *Food science and biotechnology*, 28(3), 841-850.
- Romero, J. L., Grande Burgos, M. J., Pérez-Pulido, R., Gálvez, A., & Lucas, R. (2017). Resistance to

antibiotics, biocides, preservatives and metals in bacteria isolated from seafoods: co-selection of strains resistant or tolerant to different classes of compounds. *Frontiers in microbiology*, 8, 1650.

Sambu, S., Hemaram, U., Murugan, R., & Alsofi, A. A. (2022). Toxicological and teratogenic effect of various food additives: an updated review. *BioMed Research International*, 2022.

Sari, M., & Suryanto, D. (2018, March). Antimicrobial activity of lactic acid bacteria isolated from bekasam against staphylococcus aureus ATCC 25923, escherichia coli ATCC 25922, and salmonella sp. In *IOP Conference Series: Earth and Environmental Science* (Vol. 130, No. 1, p. 012011). IOP Publishing.

Schultz, D., & Kishony, R. (2013). Optimization and control in bacterial lag phase. *BMC biology*, 11(1), 1-3.

Shi, C., & Maktabdar, M. (2022). Lactic acid bacteria as biopreservation against spoilage molds in dairy products—A review. *Frontiers in microbiology*, 12, 4283.

Sridhar, A., Ponnuchamy, M., Kumar, P. S., & Kapoor, A. (2021). Food preservation techniques and nanotechnology for increased shelf life of fruits, vegetables, beverages and spices: a review. *Environmental Chemistry Letters*, 19, 1715-1735.

Stanbury, P. F., Whitaker, A., & Hall, S. J. (2013). *Principles of fermentation technology*. Elsevier.

Teshome, E., Forsido, S. F., Rupasinghe, H. P., & Olika Keyata, E. (2022). Potentials of Natural Preservatives to Enhance Food Safety and Shelf Life: A Review. *The Scientific World Journal*, 2022.

Tokmakov, A. A., Kurotani, A., & Sato, K. I. (2021). Protein pl and intracellular localization. *Frontiers in Molecular Biosciences*, 1179.

Trasande, L., Shaffer, R. M., Sathyaranayana, S., Lowry, J. A., Ahdoot, S., Baum, C. R., ... & Woolf, A. D. (2018). Food additives and child health. *Pediatrics*, 142(2).

Trunk, T., Khalil, H. S., & Leo, J. C. (2018). Bacterial autoaggregation. *AIMS microbiology*, 4(1), 140.

Walczak-Nowicka, Ł. J., & Herbet, M. (2022). Sodium Benzoate—Harmfulness and Potential Use in Therapies for Disorders Related to the Nervous System: A Review. *Nutrients*, 14(7), 1497.

Wang, J., Li, L., Zhao, X., & Zhou, Z. (2015). Partial characteristics and antimicrobial mode of pediocin produced by *Pediococcus acidilactici* PA003. *Annals of microbiology*, 65(3), 1753-1762.

Witkowski, M., Grajeta, H., & Gomułka, K. (2022). Hypersensitivity Reactions to Food Additives—Preservatives, Antioxidants, Flavor Enhancers. *International Journal of Environmental Research and Public Health*, 19(18), 11493.

Zhao, Y., Tu, Y., Li, J., Xu, M., Yang, Y., Nie, X., ... & Du, H. (2014). Effects of alkaline concentration, temperature, and additives on the strength of alkaline-induced egg white gel. *Poultry*

science, 93(10), 2628-2635.

Zapaśnik, A., Sokołowska, B., & Bryła, M. (2022). Role of lactic acid bacteria in food preservation and safety. *Foods*, 11(9), 1283.

Zhang, T., Zhang, Y., Li, L., Jiang, X., Chen, Z., Zhao, F., & Yi, Y. (2022). Biosynthesis and production of class II bacteriocins of food-associated lactic acid bacteria. *Fermentation*, 8(5), 217.