



**POTENSI PEPTIDA BIOAKTIF SUSU KAMBING PERANAKAN AFRICAN DWARF DAN KAMBING KACANG YANG DIFERMENTASI MENGGUNAKAN LACTOBACILLUS ACIDOPHILUS DAN BIFIDOBACTERIUM LONGUM SEBAGAI ANTIBAKTERI**

UNIVERSITAS  
GADJAH MADA

Fauzi Anwar, Prof. Dr. Ir. Tridjoko Wisnu Murti, DEA; Dr. Ir. Rio Olympias Sujarwanta, S.Pt., M.Sc., IPM., ASEAN Eng  
Universitas Gadjah Mada, 2024 | Diunduh dari <http://etd.repository.ugm.ac.id/>

## DAFTAR PUSTAKA

- Adriani, L., N. Indrayati, U H Tanuwiria, dan N. Mayasari. 2008. Aktivitas Lactobacillus Acidophilus Dan Bifidobacterium Terhadap Kualitas Yoghurt Dan Penghambatannya Pada Helicobacter Pylori. Jurnal Bionatura. 10 (2): 129–40.
- Agustina, Y., R. Kartika, dan A. S. Panggabean. 2015. Pengaruh Variasi Waktu Fermentasi Terhadap Kadar Laktosa, Lemak, PH Dan Keasaman Pada Susu Sapi Yang Difermentasi Menjadi Yogurt. Jurnal Kimia Mulawarman. 12 (2): 97–100.
- Akan, E. 2022. The Effect of Fermentation Time and Yogurt Bacteria on the Physicochemical , Microbiological and Antioxidant Properties of Probiotic Goat Yogurts. Anais Da Academia Brasileira de Ciencias. 94: 1–16. <https://doi.org/10.1590/0001-3765202220210875>.
- Alkaisy, Q. H., J. Al-Saadi, K. Jaber, A. B Altemimi, M. A. Hesarinejad, dan G. T. Abedelmaksoud. 2023. Exploring the Health Benefits and Functional Properties of Goat Milk Proteins. Food Science & Nutrition Journal. 1: 1–16. <https://doi.org/10.1002/fsn3.3531>.
- Arief, I. I., C. Budiman, R. Hanifah, dan M. S. Soenarno. 2016. Antihypertensive Potency of Goat Milk Yoghurt Supplemented by Probiotic and Roselle Extract. International Journal of Sciences: Basic and Applied Research (IJSBAR). 30 (4): 207–14. <http://gssrr.org/index.php?journal=JournalOfBasicAndApplied>.
- Badan Pusat Statistik. 2022. Populasi Kambing Menurut Provinsi (Ekor) 2020-2022. <Https://Www.Bps.Go.Id/Indicator/24/472/1/Populasi-Kambing-Menurut-Provinsi.Html>. Diakses Pada 3 Juli 2023. <https://www.bps.go.id/indicator/24/472/1/populasi-kambing-menurut-provinsi.html>.
- Begunova, A. V., I. V. Rozhkova, O. A. Glazunova, K. V. Moiseenko, O. S. Savinova, dan T. V. Fedorova. 2021. Fermentation Profile and Probiotic-Related Characteristics of Bifidobacterium Longum Mc-42. Fermentation. 7 (3): 1–13. <https://doi.org/10.3390/fermentation7030101>.
- Bioscience, Amersham. 2012. *Sephadex® G-25 Media and Pre-Packed Columns*. London: Amersham Biosciences. Diakses Pada 12 Mei 2024. [https://r.search.yahoo.com/\\_ylt=AwrKAzT.k6FmPEwCwVDLQwx.;\\_ylu=Y29sbwNzZzMEcG9zAzEEdnRpZAMEc2VjA3Ny/RV=2/RE=1721894015/RO=10/RU=https%3A%2F%2Ffr.vwr.com%2Fassetsvc%2Fasset%2Ffr\\_FR%2Fid%2F17886326%2Fcontents/RK=2/RS=zVpvPCc.mzyvBE7CK3XimxJVVe0-](https://r.search.yahoo.com/_ylt=AwrKAzT.k6FmPEwCwVDLQwx.;_ylu=Y29sbwNzZzMEcG9zAzEEdnRpZAMEc2VjA3Ny/RV=2/RE=1721894015/RO=10/RU=https%3A%2F%2Ffr.vwr.com%2Fassetsvc%2Fasset%2Ffr_FR%2Fid%2F17886326%2Fcontents/RK=2/RS=zVpvPCc.mzyvBE7CK3XimxJVVe0-).
- Bukharin, O. V., N. Perunova, Y. Nikolaev, Ivanova, A. Oleskin, dan Registan. 2023. Secondary Metabolites of Bifido- and Lactobacteria Fulfilling Signal Functions. Microbiology. 92 (6): 875–80. <https://doi.org/10.1134/S0026261723601549>.



**POTENSI PEPTIDA BIOAKTIF SUSU KAMBING PERANAKAN AFRICAN DWARF DAN KAMBING KACANG YANG DIFERMENTASI MENGGUNAKAN LACTOBACILLUS ACIDOPHILUS DAN BIFIDOBACTERIUM LONGUM SEBAGAI ANTIBAKTERI**

UNIVERSITAS  
GADJAH MADA

Fauzi Anwar, Prof. Dr. Ir. Tridjoko Wisnu Murti, DEA; Dr. Ir. Rio Olympias Sujarwanta, S.Pt., M.Sc., IPM., ASEAN Eng  
Universitas Gadjah Mada, 2024 | Diunduh dari <http://etd.repository.ugm.ac.id/>

- Chang, J. H., Y. Y. Shim, S. K. Cha, M. J. T. Reaney, dan K. M. Chee. 2012. Effect of *Lactobacillus Acidophilus* KFRI342 on the Development of Chemically Induced Precancerous Growths in the Rat Colon. *Journal of Medical Microbiology*. 61 (3): 361–68. <https://doi.org/10.1099/jmm.0.035154-0>.
- Choi, Y. J., dan H. S. Shin. 2021. Antibacterial Effect of Eight Probiotic Strains of *Bifidobacterium* against Pathogenic *Staphylococcus Aureus* and *Pseudomonas Aeruginosa*. *Journal of Bacteriology and Virology*. 51 (3): 128–37.
- Chull-An, B., Y. Ryu, O. Choi, S. Hong, J. Y. Heo, dan M. J. Chung. 2020. Genetic Engineering of a Probiotic-Based Drug Delivery System for Colorectal Cancer Therapy. *Cancer Reports and Reviews*. 4 (2): 3–6. <https://doi.org/10.15761/crr.1000208>.
- Danquah, M. K., dan D. Agyei. 2012. Pharmaceutical Applications of Bioactive Peptides. *OA Biotechnology*. 1 (2): 1–7. <https://doi.org/10.13172/2052-0069-1-2-294>.
- Dong, J., C. Miyake, T. Yasuda, H. Oyama, dan I. Morita. 2020. PM Q-Probe: A Fluorescent Binding Protein That Converts Many Antibodies to a Fluorescent Biosensor. *Biosensors and Bioelectronics*. 165. <https://doi.org/10.1016/j.bios.2020.112425>.
- Ebegulem, V., dan J. Nwanjoku. 2021. Composition and Physicochemical Characteristics of Milk of the West African Dwarf Goats in Cross River, Nigeria. *Annual Research & Review in Biology*. 36 (7): 92–96. <https://doi.org/10.9734/ARRB/2021/v36i730402>.
- Edvotek. 2011. *Principles of Gel Filtration Chromatography*. Washington: Edvotek.
- Ekanem, N. J., E. N. Mbaba, K. Igwunze, F. O. Ahamefule, dan U. Okah. 2024. Milk Yield , Composition and Growth of Kids of West African Dwarf Does Fed *Enterolobium Cyclocarpum* Leaves. *International Journal of Life Science and Agriculture Research*. 03 (04): 250–58.
- Fatmawati, U., F. I. Prasetyo, M. Supia TA, dan A. N. Utami. 2013. Karakteristik Yogurt Yang Terbuat Dari Berbagai Jenis Susu Dengan Penambahan Kultur Campuran. *Jurnal Bioedukasi*. 6 (2): 1–9.
- Food and Agricultural Organization. 2013. Dietary Protein Quality Evaluation in Human Nutrition. Report of an FAQ Expert Consultation. FAO Food and Nutrition Paper. Vol. 92. Auckland.
- Gao, H., X. Li, X. Chen, D. Hai, C. Wei, L. Zhang, dan P. Li. 2022. The Functional Roles of *Lactobacillus Acidophilus* in Different Physiological and Pathological Processes. *Journal of Microbiology and Biotechnology*. 32 (10): 1226–33.
- Gao, Z., E. B. Daliri, J. Wang, D. Liu, S. Chen, X. Ye, dan T. Ding. 2019. Inhibitory Effect of Lactic Acid Bacteria on Foodborne Pathogens : A Review. *Journal of Food Protection*. 82 (3): 441–53. <https://doi.org/10.4315/0362-028X.JFP-18>



**POTENSI PEPTIDA BIOAKTIF SUSU KAMBING PERANAKAN AFRICAN DWARF DAN KAMBING KACANG YANG DIFERMENTASI MENGGUNAKAN LACTOBACILLUS ACIDOPHILUS DAN BIFIDOBACTERIUM LONGUM SEBAGAI ANTIKAKERI**

UNIVERSITAS  
GADJAH MADA

Fauzi Anwar, Prof. Dr. Ir. Tridjoko Wisnu Murti, DEA; Dr. Ir. Rio Olympias Sujarwanta, S.Pt., M.Sc., IPM., ASEAN Eng  
Universitas Gadjah Mada, 2024 | Diunduh dari <http://etd.repository.ugm.ac.id/>

303.

- Georgieva, R., L. Yocheva, L. Tserovska, G. Zhelezova, N. Stefanova, A. Atanasova, dan A. Danguleva. 2015. Antimicrobial Activity and Antibiotic Susceptibility of Lactobacillus and Bifidobacterium Spp. Intended for Use as Starter and Probiotic Cultures. *Biotechnology & Biotechnological Equipment*. 29 (1): 84–91. <https://doi.org/10.1080/13102818.2014.987450>.
- Hadiwiyoto, S. 1982. *Teknik Uji Mutu Susu Dan Hasil Olahannya*. Yogyakarta: Liberty.
- Hammam, A. R. A., S. M. Saleh, M. S. Elfaruk, dan K. A. Alsaleem. 2021. Goat Milk: Compositional, Technological, Nutritional, and Therapeutic Aspects. *Preprints* 8 (1): 1-15. <https://doi.org/10.20944/preprints202108.0097.v1>.
- Harvard. 2015. *Guide to Gel Filtration or Size Exclusion Chromatography*. Massachusetts: Harvard Apparatus.
- Herlina, N., A. Z. Mustopa, R. S. Surachma, L. Triratna, G. Kartina, dan W. N. Alfisyahrin. 2019. Aktivitas Antibakteri Dan Antioksidan Peptida Susu Kambing Hasil Hidrolisis Dengan Protease Lactobacillus Plantarum S31. *Jurnal Biologi Indonesia*. 15 (1): 23–31.
- Javvadi, S. G., M. Kujawska, D. Papp, A. M. Gontarczyk, A. Jordan, M. A. E. Lawson, dan I. O'Neill. 2022. A Novel Bacteriocin Produced by Bifidobacterium Longum Subsp. Infantis Has Dual Antimicrobial and Immunomodulatory Activity. *Cold Spring Harbor Perspectives in Biology*.
- Kamara, D. S., S. D. Rachman, dan R. W. Pasisca. 2016. Pembuatan Dan Aktivitas Antibakteri Yogurt Hasil Fermentasi Tiga Bakteri ( Lactobacillus Bulgaricus, Streptococcus Thermophilus, Lactobacillus Acidophilus ). *Al-Kimia*. 4 (2): 22–32.
- Kusumaningtyas, E. 2013. Peran Peptida Susu Sebagai Antimikroba Untuk Meningkatkan Kesehatan. *Wartazoa*. 23 (2): 63–75.
- Lee, S., H. Jeon, J. Yoo, dan J. Kim. 2021. Some Important Metabolites Produced by Lactic Acid Bacteria Originated from Kimchi Some Important Metabolites Produced by Lactic Acid Bacteria Originated from Kimchi. *Foods*. 10 (2): 1-48.
- Lestari, D., dan G. Eddyson. 2020. Peptida Bioaktif Kasein Susu Kambing Sebagai Agen Antibakteri Terhadap *Staphylococcus Aureus*. *Jurnal Agroindustri Halal*. 6 (1): 28–38.
- Ligunas, G. D., G. F. Paniagua, J. Labelle, A. Ramos-martinez, K. Shen, E. H. Gerlt, K. Aguilar, N. Nguyen, S. C. Materna, dan S. Woo. 2024. Tissue-Specific and Endogenous Protein Labeling with Split Fluorescent Proteins. *Developmental Biology*. 514: 109–16. <https://doi.org/10.1016/j.ydbio.2024.06.011>.



**POTENSI PEPTIDA BIOAKTIF SUSU KAMBING PERANAKAN AFRICAN DWARF DAN KAMBING KACANG YANG DIFERMENTASI MENGGUNAKAN LACTOBACILLUS ACIDOPHILUS DAN BIFIDOBACTERIUM LONGUM SEBAGAI ANTI BAKTERI**

UNIVERSITAS  
GADJAH MADA

Fauzi Anwar, Prof. Dr. Ir. Tridjoko Wisnu Murti, DEA; Dr. Ir. Rio Olympias Sujarwanta, S.Pt., M.Sc., IPM., ASEAN Eng  
Universitas Gadjah Mada, 2024 | Diunduh dari <http://etd.repository.ugm.ac.id/>

- Lim, H. J., dan H. S. Shin. 2021. Antimicrobial and Immunomodulatory Effects of Bifidobacterium Strains: A Review. *Journal of Microbiology and Biotechnology.* 30 (12): 1793–1800. <https://doi.org/10.4014/JMB.2007.07046>.
- Lindawati, S. A., N. G. K. Roni, N. P. Mariani, dan A. A. P. P. Wibawa. 2014. Susu Fermentasi Kefir Sebagai Anti Hipertensi. Universitas Udayana. Denpasar.
- Magouz, O., N. Mehanna, M. Khalifa, H. Sakr, S. G. Reigl, S. Dalabasmaz, dan M. Pischetsrieder. 2023. Profiles, Antioxidative and ACE Inhibitory Activity of Peptides Released from Fermented Buttermilk Before and After Simulated Gastrointestinal Digestion. *Innovative Food Science & Emerging Technologies.* 84 (1): 1-19. <https://doi.org/10.1016/J.IFSET.2022.103266>.
- Maheswari, R. R. A., J. Setiawan, S. Mulyanto, I. Batubara, C. Sumantri, dan A. Farajallah. 2007. Identifikasi Laktokeratina Pada Susu Kambing Kacang Dengan Metode Imunodifusi Radial Tunggal Dan Natrium Dodesil Sulfat Poliakrilamida Elektroforesis Gel. *Jurnal Ilmu Pertanian Indonesia.* 12 (3): 163–172.
- Marcos, J. F., dan M. Gandía. 2009. Antimicrobial Peptides: To Membranes and Beyond. *Expert Opinion on Drug Discovery.* 4 (1) <https://doi.org/10.1517/17460440902992888>.
- Mezaini, A., N. Chihib, A. D. Bouras, N. Nedjar-arroume, dan J. P. Hornez. 2009. Antibacterial Activity of Some Lactic Acid Bacteria Isolated from an Algerian Dairy Product. *Journal of Environmental and Public Health.* <https://doi.org/10.1155/2009/678495>.
- Mohanty, D., R. Jena, P. Choudhury, Kumar, R. Pattnaik, S. Mohapatra, dan M. R. Saini. 2016. Milk Derived Antimicrobial Bioactive Peptides: A Review. *International Journal of Food Properties.* 19 (4): 837–846. <https://doi.org/10.1080/10942912.2015.1048356>.
- Mokoena, M. P. 2017. Lactic Acid Bacteria and Their Bacteriocins: Classification, Biosynthesis and Applications against Uropathogens: A Mini-Review. *Molecules.* 22: (12-55). <https://doi.org/10.3390/molecules22081255>.
- Mora-Villalobos, J. A., J. Montero-Zamora, N. Barboza, C. Rojas-Garbanzo, J. Usaga, M. Redondo-Solano, L. Schroedter, A. Olszewska-Widdrat, dan J. P. López-Gómez. 2020. Multi-Product Lactic Acid Bacteria Fermentations: A Review. *Fermentation.* 6 (23): 1–21. <https://doi.org/10.3390/fermentation6010023>.
- Murti, T. W. 2016. *Pascapanen Susu.* Yogyakarta: Gadjah Mada University Press.
- Nayik, G. A., Y. D. Jagdale, S. A. Gaikwad, A. N. Devkatte, A. H. Dar, dan M. J. Ansari. 2022. Nutritional Profile, Processing and Potential Products: A Comparative Review of Goat Milk. *Dairy.* 3 (3): 622–647. <https://doi.org/10.3390/dairy3030044>.



- Oseni, S. O., dan B. A. Ajayi. 2014. Phenotypic Characterization and Strategies for Genetic Improvement of WAD Goats under Backyard Systems. *Open Journal of Animal Sciences.* 04 (05): 253–262. <https://doi.org/10.4236/ojas.2014.45032>.
- Perez, R. H., T. Zendo, dan K. Sonomoto. 2014. Novel Bacteriocins from Lactic Acid Bacteria ( LAB ): Various Structures and Applications. *Microbial Cell Factories.* 13 (53): 1–13. <https://doi.org/10.1186/1475-2859-13-S1-S3>.
- Rachman, S. D., S. Djajasoepena, D. S. Kamara, I. Idar, R. Sutrisna, A. Safari, O. Suprijana, dan S. Ishmayana. 2015. Kualitas Yoghurt Yang Dibuat Dengan Kultur Dua (Lactobacillus Bulgaricus Dan Streptococcus Thermophilus) Dan Tiga Bakteri (Lactobacillus Bulgaricus, Streptococcus Thermophilus Dan Lactobacillus Acidophilus). *Chimica et Natura Acta.* 3 (2): 76–79. <https://doi.org/10.24198/cna.v3.n2.9192>.
- Rizqiati, H., S. Susanti, A. Ni'matullah, dan B. Slamet. 2021. Pengaruh Waktu Fermentasi Terhadap Sifat Fisiko Kimia Kefir Whey Dari Susu Kambing. *Journal of Agro-Based Industry.* 38 (07): 54–60.
- Rusdiana, S., L. Praharani, dan S. Sumanto. 2016. Kualitas Dan Produktivitas Susu Kambing Perah Persilangan Di Indonesia. *Jurnal Penelitian Dan Pengembangan Pertanian.* 34 (2): 79. <https://doi.org/10.21082/jp3.v34n2.2015.p79-86>.
- Salminen, S., A. Von Wright, L. Morelli, P. Marteau, D. Brassart, W. M. De Vos, dan R. Fondén. 1998. Demonstration of Safety of Probiotics. *International Journal of Food Microbiology.* 44 (1–2): 93–106. [https://doi.org/10.1016/S0168-1605\(98\)00128-7](https://doi.org/10.1016/S0168-1605(98)00128-7).
- Sánchez, A., dan A. Vázquez. 2017. Bioactive Peptides: A Review. *Food Quality and Safety.* 1 (1): 29–46. <https://doi.org/10.1093/fqs/fyx006>.
- Shahid, S., A. A. Leghari, M. Anam, T. Gull, J. Ashraf, H. Tahir, H. Liaqat, dan M. W. Iqbal. 2016. Development of Yoghurt Spread from Goat Milk and Its Qualitative Valorization Using Chia Seed Oil. *Food Technology and Nutritional Sciences.* 7 (1): 1–23. <https://doi.org/10.17140/AFTNSOJ-7-172>.
- Sharma, H., F. Ozogul, E. Bartkienė, dan J. M. Rocha. 2021. Impact of Lactic Acid Bacteria and Their Metabolites on the Techno-Functional Properties and Health Benefits of Fermented Dairy Products. *Critical Reviews in Food Science and Nutrition.* 1–23. <https://doi.org/10.1080/10408398.2021.2007844>.
- SNI. 1992. Standar Nasional Indonesia: Cara Uji Makanan Dan Minuman. Badan Standarisasi Nasional. Jakarta: Badan Standarisasi Nasional.
- Soccol, C. R., L. P. Vandenberghe, M. R. Spier, A. B. P. Medeiros, C. T. Yamaguishi, J. D. D. Lindner, A. Pandey, dan V. Thomaz-Soccol. 2010. The Potential of Probiotics: A Review. *Food Technology and Biotechnology.* 48 (4): 413–434.



**POTENSI PEPTIDA BIOAKTIF SUSU KAMBING PERANAKAN AFRICAN DWARF DAN KAMBING KACANG YANG DIFERMENTASI MENGGUNAKAN LACTOBACILLUS ACIDOPHILUS DAN BIFIDOBACTERIUM LONGUM SEBAGAI ANTIBAKTERI**

UNIVERSITAS  
GADJAH MADA

Fauzi Anwar, Prof. Dr. Ir. Tridjoko Wisnu Murti, DEA; Dr. Ir. Rio Olympias Sujarwanta, S.Pt., M.Sc., IPM., ASEAN Eng  
Universitas Gadjah Mada, 2024 | Diunduh dari <http://etd.repository.ugm.ac.id/>

Sudarmadji, S., B Haryono, dan Suhardi. 1997. Prosedur Analisa Untuk Bahan Makanan Dan Pertanian. Yogyakarta: Liberty.

Suranindyah, Y. Y., D. H. A. Khairy, N. Firdaus, dan Rochijan. 2018. Milk Production and Composition of Etawah Crossbred , Sapera and Saperong Dairy Goats in Yogyakarta , Indonesia. International Journal Dairy Science. 13 (1): 1–6. <https://doi.org/10.3923/ijds.2018.1.6>.

Susanti, R, dan E. Hidayat. 2016. Profil Preotein Susu Dan Produk Olahannya. Jurnal MIPA. 39 (2): 98–106.

Syainah, E., S. Novita, dan R. Yanti. 2014. Kajian Pembuatan Yoghurt Dari Berbagai Jenis Susu Dan Inkubasi Yang Berbeda Terhadap Mutu Dan Daya Terima. Jurnal Skala Kesehatan. 5 (1).

Tang, H., W. Huang, dan Y. Yao. 2023. The Metabolites of Lactic Acid Bacteria : Classification , Biosynthesis and Modulation of Gut Microbiota. Microbial Cell. 10 (3): 49–62. <https://doi.org/10.15698/mic2023.03.792>.

Tharmaraj, N, dan N. P. Shah. 2009. Antimicrobial Effects of Probiotics Against Selected Pathogenic and Spoilage Bacteria in Cheese-Based Dips. International Food Research Journal. 16: 261–76.

Wang, Y., J. Wu, M. Lv, Z. Shao, M. Hungwe, J. Wang, X. Bai, J. Xie, Y. Wang, dan W. Geng. 2021. Metabolism Characteristics of Lactic Acid Bacteria and the Expanding Applications in Food Industry. Frontiers in Bioengineering and Biotechnology. 9: 1–19. <https://doi.org/10.3389/fbioe.2021.612285>.

Yu, Y., S. Lin, Z. Chen, B. Qin, Z. He, M. Cheng, M. Sun, dan J. Sun. 2023. Bacteria-Driven Bio-Therapy: From Fundamental Studies to Clinical Trials. Nano Today. 48. <https://doi.org/10.1016/j.nantod.2022.101731>.

Zacharof, M.P., dan R.W. Lovitt. 2012. Bacteriocins Produced by Lactic Acid Bacteria a Review Article. Asia-Pacific Chemical, Biological & Environmental Engineering. 2: 50–56. <https://doi.org/10.1016/j.apcbee.2012.06.010>.

Zamfir, M., R. Callewaert, P. C. Cornea, dan L. D. Vuyst. 2000. Production Kinetics of Acidophilin 801 , a Bacteriocin Produced by Lactobacillus Acidophilus IBB 801. FEMS Microbiology Letters. 190: 305–8.