

# Lactic Acid Bacteria and Bifidobacteria

## Current Progress in Advanced Research



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Lactic acid bacteria (LAB) and bifidobacteria are amongst the most important groups of microorganisms used in the food industry. For example, LAB are used in the production of fermented products, such as yoghurts, cheese and pickled vegetables. In addition LAB can inhibit the growth of spoilage microbes and/or pathogens in their environment by lowering the pH and/or through the production of antimicrobial peptides, called bacteriocins. Both LAB and bifidobacteria are also thought to have health-promoting abilities and many are used as probiotics for the prevention, alleviation and treatment of intestinal disorders in humans and animals.

In this comprehensive book, expert international authors review the most recent cutting-edge research in these areas. Topics include: *Lactobacillus* genomics; *Bifidobacterium* gene manipulation technologies; metabolism of human milk oligosaccharides in bifidobacteria; proton-motive metabolic cycles; oxidative stress and oxygen metabolism; *Bifidobacterium* response to O(2); bile acid stress in LAB and bifidobacteria; protein structure quality control; bacteriocin classification and diversity; lactococcal bacteriocins; lactobacilli bacteriocins; other bacteriocins; production of optically pure lactic acid; antihypertensive metabolites from LAB; the anti-*H. pylori* effect of *Lactobacillus gasseri*; probiotics for allergic rhinitis; probiotics health claims in Japan and Europe. Essential reading for every researcher working with LAB, bifidobacteria and probiotics, from the PhD student to the experienced scientist.

- Chapter 1.** Genomics of the Genus *Lactobacillus*. Aleksandr Barinov, Alexander Bolotin, Philippe Langella, Emmanuelle Maguin, Maarten Van De Guchte
- Chapter 2.** Current Status of *Bifidobacterium* Gene Manipulation Technologies. Satoru Fukiya, Tohru Suzuki, Yasunobu Kano and Atsushi Yokota
- Chapter 3.** Metabolic Pathway of Human Milk Oligosaccharides in Bifidobacteria. Motomitsu Kitaoka, Takane Katayama, and Kenji Yamamoto
- Chapter 4.** Energy Generation Coupled with Decarboxylation Reactions in Lactic Acid Bacteria. Kei Nanatani and Keietsu Abe
- Chapter 5.** Oxidative Stress and Oxygen Metabolism in Lactic Acid Bacteria. Yuji Yamamoto, Philippe Gaudu and Alexandra Gruss
- Chapter 6.** Response of *Bifidobacterium* species to oxygen. Shinji Kawasaki
- Chapter 7.** Bile Acid Stress in Lactic Acid Bacteria and Bifidobacteria. Abelardo Margolles and Atsushi Yokota
- Chapter 8.** Quality Control of Protein Structure in Lactic Acid Bacteria. Shinya Sugimoto and Kenji Sonomoto
- Chapter 9.** Classification and Diversity of Bacteriocin. Takeshi Zendo and Kenji Sonomoto
- Chapter 10.** Lactococcal Bacteriocins. Fuminori Yoneyama, Takeshi Zendo, and Kenji Sonomoto
- Chapter 11.** Lactobacilli Bacteriocins. Yasushi Kawai and Tadao Saito
- Chapter 12.** Other Bacteriocins. Takeshi Zendo, Kenji Sonomoto, Yasushi Kawai and Tadao Saito
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- Chapter 15.** Antihypertensive Metabolites From Lactic Acid Bacteria. Naoyuki Yamamoto
- Chapter 16.** *Lactobacillus gasseri* OLL2716 (LG21): Anti-*Helicobacter pylori* Lactic Acid Bacterium. Katsunori Kimura
- Chapter 17.** Effects and Mechanisms of Probiotics on the Prevention and Treatment of Allergic Rhinitis. Toshitaka Odamaki, Noriyuki Iwabuchi and Jin-zhong Xiao
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