

# Development of natural antimicrobials for food and feed applications: From screening to practical applications

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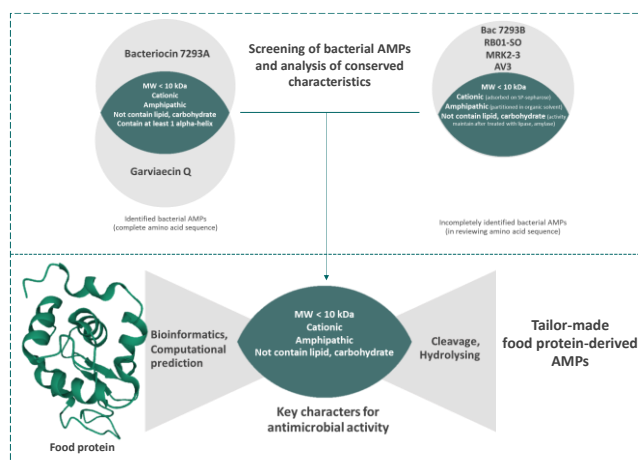
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**Abstract:** Emergence of drug-resistant bacteria together with the pressure of consumer health concern on antibiotics and chemical preservatives have driven exploring of natural antimicrobial compounds as an alternative to synthetic antimicrobial agents. Microbial-derived and food protein-derived antimicrobial peptides (AMPs) are promising alternatives due to their mode of action, long history of safe use and safe origin. By using our developed integrative approach for screening bacterial AMPs, at least three novel and some other peptides with antimicrobial effectiveness against foodborne pathogens have been discovered from Thai fermented food isolates. Their antimicrobial efficiency has been demonstrated in several food models suggesting the feasibility to be used as food preservative. Although their applications are still legally limited, analysis of newly discovered AMPs through the bioinformatics tools reveals some key characteristics of peptides relevant to the displayed antimicrobial activities. Through a controlled proteolysis of hen egg white lysozyme, 5 novel AMPs were found to exhibit antimicrobial activity against several economically significant pathogens in food and feed industry. An industrial-scale production of lysozyme peptide under GMP standard has been successfully established. New challenges and future perspectives of these natural antimicrobials will be presented.

## Graphical abstract:



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