Universitat Autònoma de Barcelona

ANTIMICROBIAL PEPTIDES OF DAIRY PRODUCTS

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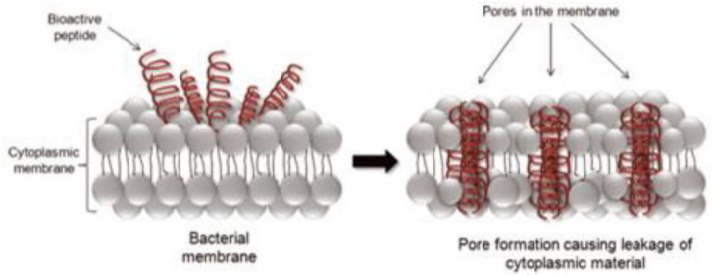
INTRODUCTION

- Bioactive peptides are encrypted fragments that remain inactive in precursor protein sequence
- When released by the action of **proteolytic enzymes**, they have a positive effect on health, such as antihypertensive, antimicrobial and antithrombotic among others.
- Potential bioactive peptides have been identified from various proteins belonging to current diet, but **milk** proteins remain the major source of bioactive peptides.
- **Antimicrobial** peptides may have many applications, which have been subject to intensive investigations for detecting those peptides and producing them on scale, including those in **biomedical devices** and **food preservation**.

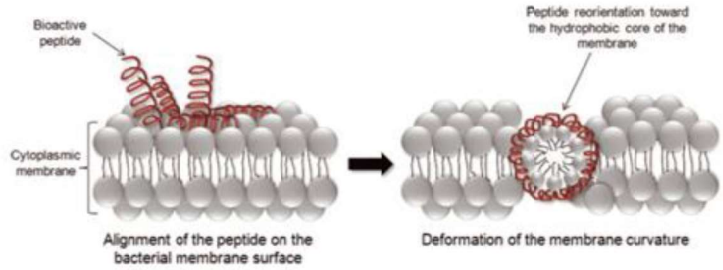
OBJECTIVES

Describe the main bioactive peptides with antimicrobial activity, their mechanisms of action on microorganisms, their industrial-scale production and their potential for the application as functional foods or pharmaceutical products.

MECHANISMS OF ACTION

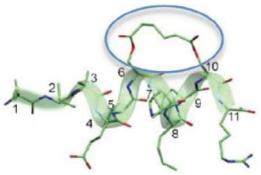


Barrel-stave model (Reddy *et al.*, 2004)



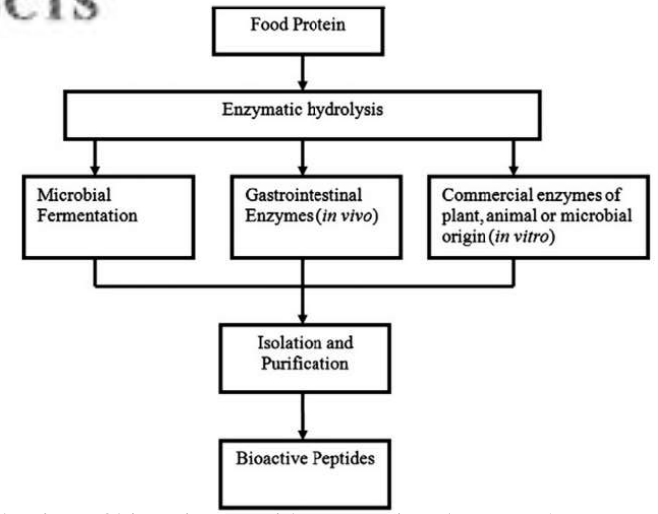
Carpet model (Reddy *et al.*, 2004)

ANTIMICROBIAL ACTIVITY



Casecidins → *Staphylococcus spp.*, *Sarcina spp.*, *Bacillus subtilis*, *Streptococcus pyogenes* and *Diplococcus pneumonia*

Lactoferricin B → *Bacillus spp.*, *Escherichi coli*, *Candida albicans*, *Listeria spp.*, *Streptococci spp.*, *Klebsiella spp.*, *Staphylococci spp.*, *Proteus spp.*, *Pseudomonas spp.* and *Salmonella spp.*



Production of bioactive peptides (Agyei and Danquah, 2011)

MATERIAL AND METHODS

Keywords: bioactive peptides, antimicrobial, milk, dairy products.
Searched on: Science Direct and Scopus.

CONCLUSIONS

Antimicrobial peptides from diary products have potential as pharmaceutical products and food systems. Analysis *in vitro* confirm the advantages over conventional antibiotics, the peptide more studied is lactoferricin B. Bioinformatics approaches are also incorporated in bioactive peptide research for prediction and selection of active properties. With tools like bioinformatics you can predict peptide sequences likely to exhibit specific antimicrobial activity.