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BOOK REVIEW* / LIVROS*

BOMAN, Hans G.; MARSH, Joan & GOODE, Jamie A., ed. – **Antimicrobial peptides**. Chichester, John Wiley & Sons, 1994. 283p. illust. (Ciba Foundation Symposium, 186). ISSN: 0-471-95025-4.

This volume contains papers presented at the 1994 Symposium on Antimicrobial Peptides, held at the Ciba Foundation, London. Antimicrobial peptides are host-defense effector molecules attracting increasing interest. Recent efforts by a group of investigators have elucidated this mechanism of animal host defense. As pointed out by H.G. Boman in his chairman's closing remarks, there are now 50-100 identified antimicrobial peptides and this number is rapidly increasing. They have been found in a variety of animals, plants and microbes. On a biochemical/functional basis, there are already five peptide families. The antibacterial activity of these peptides is generally of broad-spectrum type. The targets of most of them are membranes, and the target specificity avoids host damage in most cases.

For animals, these antibacterial peptides serve as immune substances and they are primary defense agents of innate immunity rather than secondary metabolites. In a very interesting chapter, P. Elsbach first reviews structural properties of the bactericidal permeability-increasing protein (BPI), a highly conserved host-defense molecule produced and stored by myeloid cells only and a major constituent of the primary granules of human and rabbit polymorphonuclear leukocytes. The author discusses also the function of BPI as a potent antibacterial and anti-endotoxin agent and its potential use for the protection of animals. Proteolytic enzymes and other molecules structurally related to proteases also play a role in innate immunity and are often found in close association with antimicrobial proteins. J.E. Gabay summarizes recent information on three members of a family of antimicrobial proteins contained into the azurophil granule of human neutrophils (cathepsin G, elastase and proteinase-3) with structural homology to serine proteases and one that is a proteolytically inactive homologue (azurocidin). Finally, C. L. Bevins reviews antimicrobial peptides in mucosal immunity, focusing on their potential role in the control of the natural flora on the skin, in the air ways and in parts of the digestive and reproductive systems.

In spite of obvious differences, the immune systems of insects and vertebrates are libely to be of common origin. As a defense against bacteria, infected insects synthesize a large number of antibacterial proteins and peptides that accumulate in the haemolymph when insects are in an acute phase. In this field, D. Hultmark presents the fruit fly **Drosophila melanogaster** as a model system for the study of antibacterial peptides and covers what is know about antibacterial response in that insect. Also in this field, S. Natori presents evidence that the fly **Drosophila** has the ability to mount a potent defense response against microbial parasites by mobilizing several antimicrobial proteins. P.J. Ham et al. focus on the induction and characterization of antibacterial peptides in insect vectors of tropical parasitic diseases. Implications for their possible use in the disease vector control strategies are also discussed by the authors.

Finally, the potential therapeutic applications of antimicrobial agents of animal origin are discussed by L. Jacob and M. Zasloff in a very interesting chapter. The authors focus specially on a family of antimicrobial peptides (magainins) found in the skin of **Xenopus laevis** that kill microbial targets through disruption of membrane permeability. Megainins exhibit activity against Gram-negative and Gram-positive bacteria, fungi and protozoa, and are currently in human phase IIb/III clinical trials in studies to evaluate their efficacy as a tropical agent for the treatment of impetigo.

This excellent book introduces new and recent keys concepts in a manner that can be understood by post-graduates and clinicians who wish to be brought up to date on antimicrobial peptides.

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* *This book is available at the Library of the Instituto de Medicina Tropical de São Paulo.*