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BOOK REVIEW

Gerontological Aspects of Genome Peptide Regulation

(by V. Kh. Khavinson and V. V. Malinin, KARGER, 2005, 104 p., 70€)

The monograph by V. Kh. Khavinson and V. V. Malinin *Gerontological Aspects of Genome Peptide Regulation* combines consideration of two major problems. On one hand, this is a problem of peptide regulation that has become one of the key problems of physiology in recent years. A thousand peptide regulators are already elucidated and tens of thousands of publications devoted to their structure, functions, and synthesis appear each year. The problem of genome peptide regulation comes first among many functional properties of peptides. In essence, the study of this problem is beginning to emerge, and it is the bulk of the subject matter of the monograph. On the other hand, it is obvious that the study of aging includes consideration of changes in peptide regulation among all regulatory systems of the organism. Therefore cumulative analysis of two urgent problems—peptide regulation of genome and gerontological phenomena—is quite appropriate. However, up to now nobody has carried out this analysis.

This can be due to different reasons. There are an enormous number of publications devoted to peptide regulation, but peptide involvement in aging processes is still not clearly understood and there are not enough experimental material for the joint analysis of the problem of peptide regulation at genome level and aging process. The authors of this new monograph, having great experience in gerontology, undertook the hard work to reveal plausible data in this field, described a comprehensive idea of the present state of the problem, and generalized the results of their own investigations.

The monograph consists of 10 rather short but very informative chapters. The first one is devoted to common current view of geroprotective mechanisms of peptide action. It demonstrates a complicated picture of peptide pool in various organs and tissues, its place in homeostasis, and changes during aging. The main content of this chapter is the participation of peptides in proliferation and differentiation. On the basis of the data analyzed, the authors conclude that aging is an evolutionarily determined process of age-related changes in expression and structure of genes. This is the reason for violating the peptide synthesis in various organs and tissues, and as a consequence their structure and functions are changed, promoting development of pathological phenomena.

This basic conception is supported (chapters 2-8) by results of extensive investigations which have been carried out by the authors in Russia, basically in the St. Petersburg Institute of Bioregulation and Gerontology of the North-West Branch of the Russian Academy of Medical Sciences. These chapters cover gerontological aspects of genome peptide regulation. The attention of the reader is focused on the mechanisms of the geroprotective action of peptides related to chromatin activation, increase in telomerase enzyme activity, and elongation of telomeres in different cells. Possible mechanisms of embedding of some peptides in DNA double helix and peptide–nucleotide interactions are especially considered in chapter 9. Finally, the transition from geroprotective properties of peptides to pharmacogenomics is considered in chapter 10.

However, to rewrite the monograph has no sense, it is better to read it. Let us repeat once more that the study of genetic mechanisms of peptide regulation has allowed the authors to justify a new concept based on the evolutionary role of peptides in living organisms. Practical use from the performed analysis lies in the fact that the study of peptide action on expression and structure of genes opens the way to prevent premature aging, to understand mechanisms of pathologies connected to this process, and to solve the problem of active life prolongation. All this installs hope for successful control of senile illnesses in the future.

The edition of this monograph has no analogs.

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