МОНОГРАФИИ

Вышла в свет монография академика НАН РА директора Института биохимии НАН РА проф. А.А.Галояна "Биохимия новых кардиотропных гормонов и иммуномодуляторов функциональной нейросекреторно-гормональной системы гипоталамус-сердце" (на англ. яз., "Наука", Москва).

Научной общественности хорошо известны многолетние исследования академика А.А.Галояна и его сотрудников, касающиеся новых открытых ими гормонов гипоталамо-нейрофизарной системы, нейроэндокринных механизмов регуляции сердечно-сосудистой системы и, в частности, коронарного кровообращения.

А.А.Галояном установлено наличие функциональной системы нейросекреторный гипоталамус—эндокринное сердце, осуществлено выделение и идентификация нейрогормонов и биологически активных соединений, ответственных за интеграцию этой системы. Как отмечает в своем предисловии к монографии крупнейший нейрохимик современности директор Центра нейрохимии США проф. А.Лайта, теоретическое значение этих концепций трудно переоценить.

Открытие новых иммуномодуляторов мозга академиком А.А.Галояном, расшифровка их первичной структуры и химический синтез, несомненно, играют важную роль в развитии биологии и медицины.

Ниже приводится полный текст предисловия к монографии проф. А.Лайта.

The discovery, fairly recent, of neurosecretion of the hypothalamus peptides that govern the release of pituitary hormones represents a major milestone in our understanding of endocrine control; it is of great importance both for endocrinology and development of therapy based on influencing the hormone action. Few recent discoveries have had wide implications in the problem and have led to the formation of such a vast new field of science.

It is not surprising that this finding was made so recently, since neuropeptides exist and' function at very low levels, and their isolation and identification require advanced techniques and materials that have become available only some years ago. The targets of hypothalamic neuropeptides are very specific, and only a few of them have been identified; the function, storage, and release of these specific hormones are unique processes.

During the past few years Dr. Galoyan, with his collaborators, added a new dimension to this area. He found a new target tissue, the heart, and discovered that this organ can also govern the functions of specific peptides and feedback mechanisms exist via peptides between the heart and hypothalamus. To the known endocrine control of blood pressure through changes in capillary muscle tone, Dr. Galoyan's studies added evidence for such effects on the heart muscle. The most important muscle function is modulated by compounds studied in the laboratory headed by Dr. Galoyan.

As could be expected, such crucial biological activity had to be manifested under the precise control and modulated by a complex set of processes. Reactive structures in the heart are involved representing a set of active peptide factors that are produced from precursors via regulated processes, released under specific conditions, stored at specific sites, further metabolized by reactions involving the participation not only of numerous processes, but also of numerous structures and several organs; each step, each interaction, representing a subject for a major study. Many of these processes have been carefully examined by Dr. Galoyan and his collaborators over the past three decades. As Dr. Galoyan describes it, the theoretical values of these concepts and their importance for practical therapeutical applications cannot be overestimated.

Apparently, several classes of peptides are active; the class with a coronary dilatory function differs in its mechanism of action from two other classes with a coronary constrictory function. Calcium is involved in the activity of these peptide classes; the activity of one class may involve calcium translocation and other effects. An additional exciting contribution of Dr. Galoyan's studies involves calcium activated enzyme activity, with the peptides able to substitute for calcium. This novel concept and the findings of recent years supporting it, represent an important new area of research, and it reserves the detailed discussion presented in a special section of this book.

Thus, to the hypothalamic-pituitary-adrenal axis and the hypothalamic pituitary-gonadal axis this work adds the possibility of another one, the hypothalamicpituitary-cardiac system, with possible involvement of pancreas in its fuctioning. There is a further possibility that a number of yet unidentified additional systems exist, connecting other organ functions to the hypothalamic-pituitary axis. As pointed out in Section 5 of the book, the existing releasing factors were found to affect processes in various organs, and the effects are distinct in different organs.

To make the study definitive, the peptides must be all isolated, their structure determined, and their activity compared to that of their synthetic analogs. This will be a difficult task, involving a great deal of work, but Dr. Galoyan's group, with others, are well on their way to accomplishing this work.

Little is known about the metabolism of the peptides. It is likely that they are formed from larger precursor proteins, possibly by more than one protease, and are broken down by various peptidases. The studies attempting to identify the proteases responsible for the production of the peptides, form an important part of the contributions of this group, and their description is relevant to the last chapter of the book.

Conditions for research projects, especially for such complex projects, are not as favorable today as they have been in the past, and will require more dedication, more imagination, and more work. One can only wish the investigators to make further advances and have success in this very important set of studies.

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