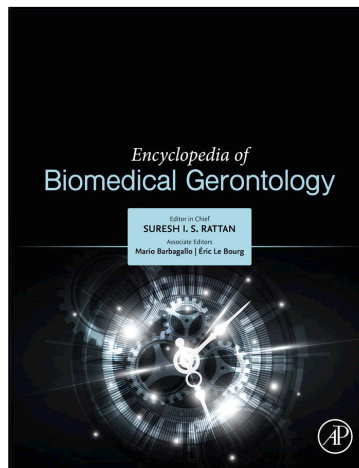


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Aging of the Endocrine System

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Glossary

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AXES A systematic arrangement of the hypothalamus, pituitary, endocrine glands and target organs exhibiting a specific endocrinal function, along with the feedback control loop.

Endocrine glands A group of specialized cells synthesizing/storing hormones. They release hormones into the blood circulatory system.

Endocrine system A systematic anatomical arrangement of glands synthesizing hormones and organs perceptive to hormones.

Endocrinology The science of studying cells or organs communication via hormones.

Gerontology The scientific study of the process of aging.

Homeostasis A steady state equilibrium of chemical messengers released from the endocrine glands to elicit a specific response in the targeted organ.

Hormones A chemical messenger released from the endocrine glands or specialized cells to elicit a specific response in the targeted organ.

Receptors A molecule on the targeted cell surface or in cytoplasm/nucleus which interacts with the hormone and activates downstream intracellular signaling pathway to produce the required biological function.

Signaling pathway/cascade An array of molecular interactions which relay, transduce and amplify the hormonal signal into the effective biological action.

tissue-specific IGF-1/PI3K/Akt in mouse model that may play a role in resisting the aging process. Physical exercise brings about metabolic changes which help in endocrinal regulations to maintain homeostasis. It induces anabolic effects on skeletal system via regulation of IGF-1. Physical exercise and body weight loss improve insulin sensitivity, prevent glucose intolerance and type 2 diabetes mellitus during aging (Shimokawa, 2017; Kharwanlang and Sharma, 2017; Wang et al., 2017; Hadem and Sharma, 2016; Janssen, 2016; Ryan, 2000).

Conclusion

Endocrine system is indispensable for life in addition to the nervous system. Fundamental biological functions such as reproduction, growth, salt-water balance and emergency responses such as fight or flight are regulated to a fine tuning by the endocrine system in young and adulthood. However, human beings during old age are deprived to some extent or fully of the above biological functions which may exhibit gender wise manifestations. Basically, the alteration in the above biological functions during aging is a consequence of altered hypothalamic-pituitary axes due to diminished hypothalamic responses to incoming downstream signals, diminished responses of the endocrine glands to the pituitary secretions and may be due to alterations of intracellular signaling players. The aging endocrine functions and the related disorders pose a major problem in the management of geriatric health care. In addition, the current increasing trend in the average lifespan of human being due to man's achievement in medical care and hygiene will aggravate the problems unless the disorders of the aging endocrine system are either diminished, removed and/or delayed in elderly individuals. Dietary restriction without malnutrition, physical exercise and nutraceutical interventions in elderly people reveal positive results in managing some of the endocrine disorders. Cutting edge frontier and information dissemination research in endocrinology and aging promises a healthy aging for graying populations.

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