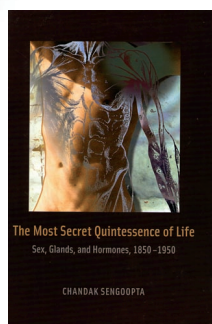




The Most Secret Quintessence of Life



Sex, Glands, and Hormones, 1850–1950. By *Chandak Sengoopta*. University of Chicago Press, Chicago 2006. 354 pp., hardcover \$ 45.00.—ISBN 0-226-74863-4

In *The Most Secret Quintessence of Life*, the author, Chandak Sengoopta, gives a historical overview of the development of biomedical research in the field of gonads, hormones, and their various effects on the human body and social behavior. Sengoopta (a historian of science and medicine at Birkbeck College, University of London) describes how the theories of gonad function and sexual endocrinology were explored by researchers and applied by clinicians over the period between 1850 and 1950.

The book starts with a chapter on “The Gonads before the Endocrine Era”, in which the author discusses how various scientific theories about the functions of the ovaries and testicles developed, up to the final recognition that, besides producing human eggs and sperms, they work as endocrine glands for the production of important hormones. For most of the later 19th century, the gonads were not considered as organs of internal secretion. It was supposed that their physiological and behavioral effects were mediated by the nervous system. With the innovations in surgical techniques that became available late in the century, removal of the

ovaries was established as a treatment for various female disorders. It was believed that the positive effect of these operations was a result of the removal of the negative influence of this organ on the nervous system. At that time, progress in physiological research was essentially based on surgical techniques. The function of an organ was determined by examining the biological changes after its careful removal, or by severing its connection to other organs in animal studies. It was found that the effects of ovary removal did not occur if the same ovary, or one from another animal, was successfully transplanted, even if the transplant was established in a position without nerve connections. Similar results were found from experiments on testicle removal and/or transplantation. These results led to the conclusion that these organs must play their physiological role in the body independently of the nervous system through the secretion of powerful substances. As a consequence, hormones became recognized as important molecules with the capability to control many important functions in the human body.

One of the major topics of the book is the close relationship between the observations of experimental researchers in the laboratory and the application of sex hormones in clinical practice. Especially in the 1920s, which are described as “the heroic age of the endocrine glands”, the gonads were the focus of tremendous research efforts, because of their roles in sexuality and aging. Rejuvenation was one of the major topics that also attracted great interest from the public. However, this was only one aspect of the research efforts in the years between the two world wars on what the author describes as “sex and the endocrine orchestra” (Chapter 4). The gonads, up to then the main focus of interest, became seen as part of a much more complicated biological system, which contained the pituitary, adrenals, and other endocrine glands. The discovery that men also produce estrogens and women produce androgens revolutionized the concepts of maleness and femaleness and the understanding of hormone bisexuality.

The final chapter of the book deals with the clinical use of the new hormones in therapeutic practice. In the

1930s, clinical endocrinology was drastically changed through the introduction of pure hormone formulations, which were developed by close collaboration between academic hormone biochemists and pharmaceutical companies. Endocrinology research based on surgery was now obsolete, and biochemists took the lead, since nobody could claim to have determined a hormone’s physiological action unless he possessed a pure and chemically characterized sample of the substance. However, clinicians still retained a powerful role as authenticators of new knowledge, as the highly purified extracts would not have been of much use to their manufacturers without proof in clinical therapy.

It was discovered that there were more hormones at work, in particular those of the pituitary gland, and the hormones of the testes and ovary were no longer seen as the only players. Furthermore, the chemical identification of androgens and estrogens had made it obvious that both classes of hormones play important roles in normal male and female physiology. Interaction and regulation of hormones became the prevailing topic of research activities. The use of estrogens for hormone replacement in the menopause became a particularly successful form of hormone pharmacotherapy in the 1930s, but testosterone treatment of the male climacteric was promoted with much less success. The experimental basis of hormone contraception was also established during that era. Results from these clinical studies led to a revision of scientific theories about the physiological roles of the sex glands and the hormones secreted by them. With the recognition of the role of the hypothalamus for the control of endocrine output and the biological feedback loop in sex hormone production, the whole picture became even more complex.

A short epilogue on “The Gonads, the Brain, and the Neurohumoral Body” concludes the book. By ending with the re-entry of the neural system into scientific theories of the development, maintenance, and aging of the human body, and the rise of neuro-endocrinology, the book closes the cycle to its starting point in 1850, with the complex interactions between nerves and glands now much better understood in more detail.

Chandak Sengoopta takes the reader on a journey through 100 years of experiments on sex glands and hormones. He shows that the relationship between scientific research and clinical therapeutics in endocrinology was further complicated by the social, cultural, and moral implications of developing theories about the nature of human sexuality and gender.

The Most Secret Quintessence of Life is extremely well researched, with more

than 1200 literature citations, which extend from original research publications to popular novels by writers such as Agatha Christie and Arthur Conan Doyle. The book is highly readable because of its clear line of arguments and the narrative style of the author.

Overall, the book can be highly recommended to everybody who is actively involved in biomedical research and has an interest in the historical development of endocrinology and ther-

apeutic concepts in modern medicine. Despite the fact that it contains not a single chemical structure, we believe that the book will be of interest to many readers of this journal.

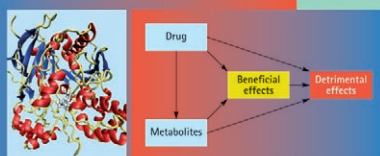
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