Melatonin And The Mammalian Pineal Gland 1st Edition | 15a336178dda1afcf42ab2c924168a5f

Melatonin Accelerates Germination and Flowering

The Pineal Organ, its Hormone Melatonin, and the Photoneuroendocrine System

A Synopsis of Parkinson's Disease

The Pineal Gland and its Endocrine Role

Therapeutic Potential of Melatonin

Structure and Function of the Epiphysis Cerebri

Melatonin after Four Decades

Approaching Complex Diseases

The Pineal Gland During Development

Photoperiodism, Melatonin and the Pineal

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Advances in Pineal Research

There is considerable circumstantial evidence linking the pineal gland with schizophrenia. Moreover, the pineal hormone melatonin, and the enzyme, HO MT, which facilitates the final stage in its biosynthesis, have been implicated in the disease. The present work set out to establish the possible potential role of pineal HO MT in the biogenesis of schizophrenia. The localization of neurotrophic and hallucinogenic drugs in the pineal glands of rats together with isolated reports of the effects of other psychoactive drugs on pineal biochemistry suggested the possibility that the pineal might be a site of action. Consequently, biochemical studies were initiated to examine the effects of these drugs on pineal HO MT activity. The neuroleptic drugs haloperidol and fluphenazine inhibited HO MT in vitro. Kinetic studies with haloperidol revealed that this inhibition was non-competitive in nature. It is suggested that this mechanism could be a possible mode of action of the antipsychotic drugs in vivo. Conclusions were drawn that this volume shows that melatonin receptors are more widely distributed than originally thought and exhibit wide species variations in terms of their physiology. The book concludes that the formation of melatonin was influenced by environmental lighting. Anaesthetists found that the pineal was innervated by sympathetic nerves and that the gland had photoreceptor elements. It was also shown that the gonads were influenced by light via the pineal gland. Research on the pineal gland became of increasing interest to anatomists, biocble, pharmacologists and endocrinologists. With the expanding knowledge concerning the function of the pineal gland contributed by the wide variety of disciplines, it was thought that a study workshop would be timely.
schizophrenia. In addition, hallucinogenic compounds can produce symptoms in normal subjects which are often indistinguishable from schizophrenia. Studies with several hallucinogens revealed that
these drugs activated the pineal enzyme, IDOMT.” The balance of serotonin, dopamine and noradrenaline is thought to be important in maintaining normal behaviour. These experiments have led, therefore, to the hypothesis that the effects of psychoactive drugs might be mediated by their ability to interfere with melatonin synthesis and thus alter serotonin levels in the hypothalamus and melanocyte stimulating hormone (MSH) stimulating adrenocortical transaminations has been investigated. The enzyme was found to act on alternative substrates “in vitro” to yield flavonoids, 3,4,5-trimethoxy-phenylethylamine (NADME), a compound which has been linked with causal factors in schizophrenia. Pigmentation effects have also been associated with schizophrenia, both through the formation of melanin by a light-sensitive amino acid at the end of the amino acid chain, known. The possibility that melanin formation itself or melatonin synthesis might be modulated at the molecular level by catecholamine/melochrome complex formation was also investigated. Kinetic studies of the inhibition of the tyrosinase catalysed oxidation of dopamine and L-DOPA by hydroxyindoles have shown that this was.

The Pineal Gland and Its Hormones

This book resolves to bridge the communication gap between research and clinical practice for circadian rhythm sleep-wake disorders. Beginning with a scientific background on biological rhythms, opening chapters describe the crucial nature of maintaining delicate temporal organization of physiological and molecular events within the body. Following this are discussions on circadian physiology and methods of circadian assessments. Subsequent chapters then relay comprehensive information regarding the International Classification of Sleep Disorders-defined circadian rhythm sleep-wake disorders (CRSWDs), specifically discussing etiology and epidemiology, but focusing on evidence-based treatment data. Concluding discussions provide guidance for the application of light therapy and discuss future roles for optimized lighting environments. Balanced and market-demanded, Circadian Rhythm Sleep-Wake Disorders: An Evidence-Based Guide for Clinicians and Investigators is an invaluable resource for Sleep Medicine clinicians, circadian researchers, and other interested parties.

Melatonin

Paperback. This book contains a state-of-the-art view of the field of pineal research. It focuses on the pineal itself as well as on its relationship to endocrine function and psychiatric disorder. The following issues are covered by experts in the field: regulation of the pineal gland and in particular its relationship to circadian rhythms, the role of the pineal gland in seasonal and non-seasonal reproduction, the role of the pineal in humans and mammalian physiology, abnormalities of the pineal gland in depressive illness, and brain targets for pineal actions.

Rhythms in Fishes

A panel of leading experts integrates the latest findings from basic and clinical science to create a comprehensive treatment of the processes by which the brain acts as an endocrine organ, not only to control hormone release, but also to maintain homeostasis and circadian behavior. This book is recognized both as leaders in their fields and as skilled teachers-provide systematic coverage of the analytical, anatomical, functional, clinical, and pathological aspects of neuroendocrinology. Topics range from the interactions between the nervous and endocrine systems to the regulation of reproduction, development, metabolism, fluid balance, and biological rhythms. Neuroendocrinology in Physiology and Medicine offers an unprecedented marriage of clinical and basic knowledge that has been missing from classical neuroscience, endocrinology, and physiology texts. It will teach today’s medical students and serve researchers as a valuable reference to this rapidly growing field.

The Mechanisms of Opioid Receptor Mediation of Melatonin Synthesis in Mammalian Pineal Glands

Role of Melatonin and Pineal Peptides in Neuroimmunomodulation

This volume provides the reader with an overview of an intriguing and interdisciplinary field of research. For the first time the mammalian pineal gland, its mode of action and its physiological effects are discussed in a comprehensive, single-authored work.

Recent Progress of Pineal Research - 40 Years After Discovery of Melatonin

Melatonin: Biosynthesis, Physiological Effects, and Clinical Applications provides a thorough review of recent advances in major areas of melatonin research. The book is arranged in a logical sequence, beginning with the history of melatonin and then proceeding to cover its biochemistry and secretion, physiological effects, and clinical significance. New findings and current concepts are emphasized, and a significant amount of previously unpublished data are included. The book will be an important resource for neurobiologists, cell biologists, ophthalmologists, endocrinologists, neuroendocrinologists, reproductive biologists, psychiatrists, and other researchers and clinicians interested in melatonin.

Biological Timekeeping: Clocks, Rhythms and Behaviour

Melatonin in the Promotion of Health, Second Edition

Research related to the pineal gland has advanced rapidly in the last three decades since the discovery of its most important hormone, melatonin. This indoleamine has been shown to have a large variety of effects in the organism; the bulk of these actions were initially thought to relate the pineal gland to the reproductive and endocrine systems. It is now apparent, however, that the physiological interrelationships between the pineal gland and its hormones have far greater clinical significance. Melatonin is effective not only in the pineal gland but throughout the organism, affecting a variety of systems and disease states. This book is intended for the scientist or clinician interested in the role of this hormone in the promotion of health.

Neuroendocrinology in Physiology and Medicine

It was only in the past few decades that we realized life is basically a coordinated interplay between cyclic biochemical processes in widely different forms and periods of time. This recognition greatly altered our understanding on how living organisms function. The Avian Pineal Gland discusses one specific aspect of biological cycles: the mechanism of the circadian melatonin secretion from the chicken pineal gland. The pineal gland plays a key role in controlling circadian and seasonal rhythmic processes in virtually all vertebrate species. Also, the avian pineal gland is an excellent model for studying the mechanism of the circadian processes, since this organ is relatively simple in structure and it possesses all the known features of a fully functioning circadian biological clock.

Melatonin-mediated Desensitization of Mammalian MT1 and MT2 Melatonin Receptors

Previous hopes and hopes have cloued the use of melatonin, the pineal gland indoleamine hormone, as a health food supplement. Recently however, significant advances have been made in our understanding of the signal transduction mechanisms of many well known and potential physiological and pharmacological actions of melatonin in mammals. This timely publication was put together by an international group of pineal researchers whose major research focus is unraveling the mammalian physiology and pharmacology of melatonin at the cellular, tissue and organismic levels. It gathers together all the information on the receptor mechanism actions. The respective articles address the roles played by G protein-coupled melatonin receptor subtypes in the modulation of biological rhythms in mammals, including the seasonal reproductive responses. The different responses of feline and mammalian melatonin receptors in the regulation of seasonal and immune responses and epithelial cell biology are also discussed. In addition, the biochemical mechanisms of the free radical scavenging functions of melatonin, using physiological and pharmacological concentrations are authoritatively reviewed in the specific contributions of this publication.

Dopamine Rhythms in the Mammalian Retina

Progress in Tryptophan and Serotonin Research

In this volume, current knowledge on light as a regulator of biological rhythms is considered from both basic science and clinical perspectives. Chapters by leading experts cover the whole range of biological rhythms, from infradian and circadian to the longer ultradian rhythms, in a wide variety of mammalian species. The chapters on human sleep provide a basis on which to establish mechanisms for mediating the therapeutic and physiologically beneficial effects of light as a regulator of rhythms in health and disease.

The Pineal

Vertebrate Circadian Systems

In the forty years since melatonin's isolation and characterization, a large and multifaceted database has accrued. This book documents the diverse research contributions of most of the major laboratories in the field of melatonin research, as presented in a special conference marking the 40 year anniversary of the isolation and chemical identification of this hormone. In addition, many chapters by younger scientists provide an exciting glimpse of where melatonin research is heading in the future.

Biochemical Studies of the Mammalian Pineal Gland

Melatonin, the pineal hormone, is a pleiotropic molecule acting in the center of the integrative molecular mechanisms of the organism, based on interconnections of the regulatory systems: neural, endocrine, immune, and genetic, conveying into the uniqueness of human architecture. This book provides a systematic and updated overview of melatonin biochemical mechanisms of action, from fundamental to cellular, tissue and organismic levels, and to the analysis of the complex interactions between the regulatory systems. Each chapter is written by a recognized expert from the respective field.

Melatonin for treatment of sleep disorders

Melatonin (MEL) is a hormone secreted by the mammalian pineal gland in response to photoperiod and seasonal changes. In humans, the circadian rhythm of melatonin secretion is under the control of the suprachiasmatic nucleus of the hypothalamus. This indoleamine has been found in many organisms. In plants, MEL has been detected in flowers, seeds, leaves, stems, and roots. It has been reported that MEL stimulates hypocotyl and root growth of lupin and Wisconsin Fastplants seedlings. In this study, the effect of exogenous MEL on the germination and development of tobacco seeds (Nicotiana tabacum cv. Havana) was investigated. The results indicate that MEL breaks photodormancy, accelerates germination rate, and promotes faster emergence of cotyledons. Changes during development associated with periodic addition of exogenous MEL revealed that MEL is a growth promoter in tobacco plants. From seedling stage all the way to flowering, MEL consistently affected tobacco growth and development. The MEL effects as a growth promoter were concentration dependent in some cases and not in others. Application of 10 μM MEL slightly inhibited tobacco growth. At this MEL concentration tobacco plants never flowered. Melatonin is a good candidate to be elevated to a growth hormone status in control systems that functioned based on photoperiod in the past.
Receptor and Non-Receptor Mediated Actions of Melatonin

This volume contains the written contributions to the proceedings of a workshop related to the pineal gland and its hormones, which was held in Erice, Italy, on June 7 - June 13, 1994. This series of workshops, which began in 1982 and which have been held at four-year intervals since that time, has provided important continuity for advancing the state of knowledge relating to this very important investigative area. The enthusiasm for these conferences has increased steadily, as reflected in the number of individuals applying to attend and in the input of individuals who participate in the meeting. The 1994 meeting was important because of its timeliness. In the two years preceding the meeting a number of revolutionary discoveries were made relative to the actions of the pineal hormone melatonin. The Xenopus melatonin receptor was cloned, melatonin was demonstrated to be a potent antioxidant, the significance of melatonin receptors at the level of pars tuberalis in the regulation of the hypothalamo-pituitary-gonadal axis was questioned, a number of melatonin receptor analogues were discovered and successfully utilized, the mechanisms by which melatonin retards initiation and promotion of cancer was further elucidated, the clinical aspects of the pineal gland was re-scrutinized. Reviews relating to each of these subjects, as well as many others, are contained in this proceedings book. This volume represents an up-to-date repository for the most recent information related to this rapidly advancing field.

Melatonin

Over the past decade, the potential of the pineal hormone melatonin as a therapeutic agent in a variety of diseases has been recognized. This book is the first to review the effect of melatonin in sleep disorders, its possible use as an immunoregulatory agent and clinical results obtained in cancer immunotherapy. Several papers are devoted to the pharmacological and molecular characterization of melatonin receptors in a variety of cell types. Other contributions further investigate the immunoenhancing effect of melatonin, such as in viral encephalitides and bacterial infections, and consider possible therapeutic indications. Melatonin is also reported to exert important hematopoietic effects by stimulating the production of novel T helper cell opioid cytokines. Other basic studies introduce new perspectives describing melatonin as a potent free radical scavenger. This book should be read by clinicians working in the fields of sleep disorders, oncology and infectious diseases as well as by scientists active in the field of neuroimmunomodulation. It will also be very useful to all those interested in melatonin as a therapeutic agent.

The Multi-oscillatory Circadian System in the House Sparrow, Passer Domesticus

Light and Biological Rhythms in Man

Melatonin and the Mammalian Pineal Gland

Tush, my good lord, this superficial tale Is but a preface of her worthy praise; King Henry the Sixth: Part I, Act V, Sc. 5 This volume is the direct result of a NATO. Advanced Study Institute (ASI) of the same title, held at Bishop's University, Lennoxville, Quebec, Canada in August 1993. All the major presentations had been commissioned, so to speak, during the organisational phase. This was done with the view of not only having a structured ASI, which is expected to be a high-level tutorial activity, but also the ensuing volume. As will be indicated in the general introduction, there have been a couple of meetings and publications dealing with rhythms in fishes in the past twenty years. However, as in other disciplines, there has been substantial progress in this field also. Further, I wished to cover almost all aspects and come out with a volume which will be as complete as possible. Of course, this failed to materialise. In spite of starting the arrangements two years before the event, several lecturers were not able to attend due to a number of reasons. Some could be replaced while others could not Taking into account their individual specialties, I asked about twenty active workers in the field to provide provoking overviews, not simply reviews of their own work. Also, this being a NATO.

The Avian Pineal Gland

Parkinson disease is a disabling neurological condition with both motor and non-motor symptoms for which no cure is available at this stage. This book is unique in covering the most important topics related to Parkinsons disease. Current research and updates about some non-motor symptoms, as well as surgical treatment of Parkinsons disease, in addition to the long term complications of pharmacological treatments have been presented. This book can be used by physicians, researchers and neuroscientists who want to learn new information about these topics related to Parkinsons disease. Authors of the individual chapters are well known in their fields and the book has been edited by a world renowned Parkinsons disease expert.

Circadian Rhythm Sleep-Wake Disorders

Melatonin is a hormonal signal for the photoperiod and is intricately involved in many aspects of circadian and seasonal physiology. This idoleamine is synthesized in the pineal gland and retinas of many vertebrate species. In mammals, melatonin of pineal origin is synthesized in pinealocytes that receive photic information indirectly via the retina, brain, and sympathetic nervous system. In many non-mammalian vertebrates, the hormone-producing cells of the pineal organ are the directly light-sensitive, pineal photoreceptors. This publication contains state-of-the-art approaches to the study of pinealocytes, including confocal microscopy with three-dimensional reconstruction, calcium imaging of identified cells, patch-clamp analysis of novel ion channels, and new techniques for the identification of melatonin receptors in a variety of cell types. Most of the papers include the results of new experiments and present original data. Other contributions further investigate the immunoenhancing effect of melatonin, such as in viral encephalitides and bacterial infections, and consider possible therapeutic indications. Melatonin is also reported to exert important hematopoietic effects by stimulating the production of novel T helper cell opioid cytokines. Other basic studies introduce new perspectives describing melatonin as a potent free radical scavenger. This book should be read by clinicians working in the fields of sleep disorders, oncology and infectious diseases as well as by scientists active in the field of neuroimmunomodulation. It will also be very useful to all those interested in melatonin as a therapeutic agent.

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