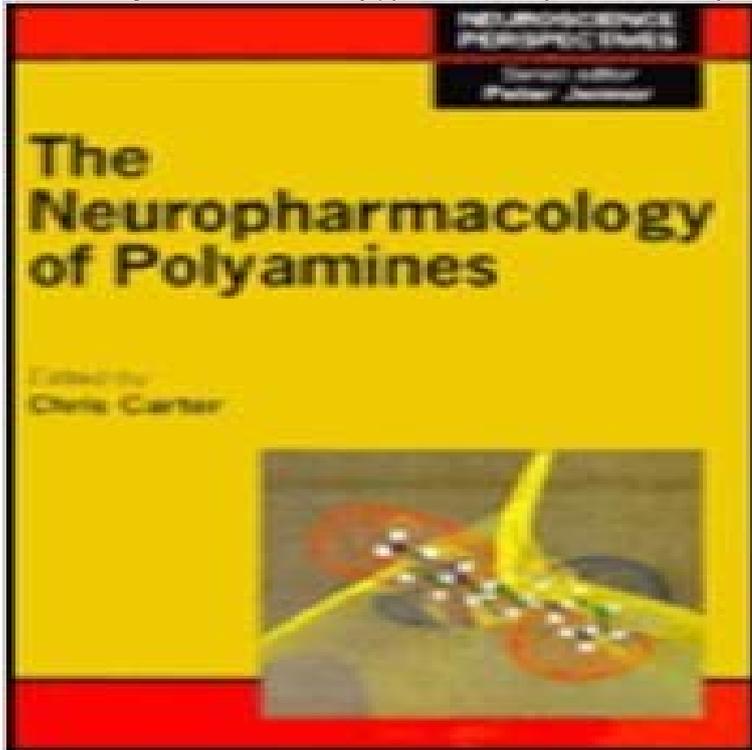


Neuropharmacology of Polyamines (Neuroscience Perspectives)



Polyamines have had a hard time competing for research interest. As anyone who has studied polyamines knows, it is possible to observe some sort of polyamine effect in almost any assay system at high concentrations, and their generality of action has obviously been a deterrent to intensive research. Most of the research is concentrated in the field of cancer and relatively little polyamine research is neuroscience related, although in 1926 spermine (then known as neuridine) was first isolated from brain tissue. Further research revealed the existence of uptake and release mechanisms for brain polyamines, as seen with other substances more commonly accepted as neurotransmitters. Polyamines were also found to play a regulatory role in cellular calcium homeostasis and to have a metabolism that is deregulated in response to cerebral trauma or ischaemia, and finally to modulate the NMDA receptor. It was this last effect which tipped the balance in favour of intensive research into polyamines in the brain. Despite their ubiquity and demonstrated links with many important physiological regulatory processes, there is no coherent hypothesis to explain their presence or role in cellular physiology. This book does not provide such a hypothesis, but attempts to group the known effects and properties of polyamines as applied to neuroscience and to stimulate interest in this field. The polyamines are deliberately treated as neuromodulators or neurotransmitters with an important and specific function in the brain. This assumption is far from proven, but it is hoped that enough interest in this research area will be stimulated which will result in a more precise definition of polyamine function in the future.

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