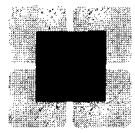

INTRODUCTION

Understanding the actions of adrenergic receptors

CATECHOLAMINES are neurohumoral substances that mediate a variety of physiologic and metabolic responses in animals and in man. The idea that catecholamines bind to specific receptors, resulting in differing responses in various tissues, dates back more than 80 years. More than 40 years ago, recognized differences in the ability of various catecholamines to stimulate a number of physiologic processes enabled the separation of adrenergic receptors into two distinct types, which were termed alpha adrenergic and beta adrenergic receptors.

See Graham (pp 481–491)

Subsequent research has resulted in still further subdivision of adrenergic receptors. The alpha receptors have been divided into $alpha_1$ and $alpha_2$ receptors, while beta receptors can be subdivided into $beta_1$ and $beta_2$ subtypes. These distinctions were enabled by demonstrating differing effects of naturally occurring catecholamines, norepinephrine and epinephrine, along with the synthetic catecholamine isoproterenol, on selected physiologic effects.

A better understanding of these adrenergic receptors is the subject of the following review by Dr. Robert M. Graham. Clinicians will appreciate that understanding adrenergic receptor actions is basic to understanding the practical clinical pharmacology and multiple therapeutic actions of this important group of agents that is being used increasingly in the management of both cardiovascular and noncardiovascular diseases.

Dr. Graham serves as the first Robert C. Tarazi Chairman, Department of Heart and Hypertension Research, in the Research Institute of The Cleveland Clinic Foundation. His major research interests are in antihypertensive pharmacology, the cellular and molecular characterization of adrenergic receptors and their role in sympathetic neural transmission, and the molecular mechanisms of signal transduction.

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