BMC Pharmacology

Oral presentation

Regulation of cyclic nucleotide hydrolysis by cGMP

Joseph A Beavo*

Address: University of Washington, Dept of Pharmacology, Seattle, USA

Email: Joseph A Beavo* - beavo@u.washington.edu

* Corresponding author

from 2nd International Conference of cGMP Generators, Effectors and Therapeutic Implications
Potsdam, Germany, 10–12 June, 2005

Published: 16 June 2005

BMC Pharmacology 2005, **5**(Suppl 1):S9 doi:10.1186/1471-2210-5-S1-S9

In this presentation I will discuss some of the physiological roles played by cyclic nucleotide phosphodiesterases that either hydrolyze cGMP or are regulated by cGMP. This will include potential new roles for PDE1B in the differentiation of monocytes into macrophages and dendritic cells. I will also discuss the concept that in many systems cAMP and cGMP act as physiological "brakes" on the function of the cells. Recently, it is becoming clear that one of the major reasons for having so many different cyclic nucleotide phosophodiesterases in the genome, is so that their expression can be individually regulated as a mechanism of releasing these "brakes" and thereby allowing the function to proceed. Examples that will be discussed include, regulation of fluid volume in the circulatory system, activation and function of T cells, proliferation of smooth muscle, and differentiation of monocytes. Finally, I will discuss some of the structural basis for the ability of cGMP to bind to and activate the cyclic nucleotide binding GAF domains on several different phosphodiesterases.