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Commentary
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Commentary on Structure–activity Features of Purines and Their Receptors: Implications in Cell Physiopathology

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COMMENT

The fusion of a pyrimidine ring with an imidazole one results in purine molecule which is the basic structure of a very important group of biological molecules known as purines. Purine nucleotides (e.g. ATP, ADP and AMP) or nucleosides (e.g. adenosine, ADO) play a relevant role as metabolic (and bioenergetics) intermediates and regulators, as well as in the transmission of genetic inheritance by constituting the nucleic acids. To affect cell physiology, purines such as ATP or adenosine (ADO), interact with specific purinergic receptors which are membrane proteins that stimulate cell signaling pathways allowing cell communication. Evidently, when purine physiology presents a homeostatic imbalance the stability and the survival of cell become compromised. In this paper, the relevance of the different roles that purines play in cell function is discussed considering not only their role as individual molecules but also as effectors of those purinergic receptors and their consequences when that interaction fails, particularly in the context of cancer physiopathology and specifically in terms of hepatocarcinoma, so this work not only provides a general view of purine physiology in basal and in pathological conditions but also it integrates those concepts with a structure-activity perspective. In this sense, the analysis made by the authors of how chemical modification of ADO molecule (as mother structural frame) influences the anti-carcinogen activity of many already reported ADO derivatives, provides a generalized and integrated view that may orient the synthesis of new and more effective compounds with anti-carcinogen activity.