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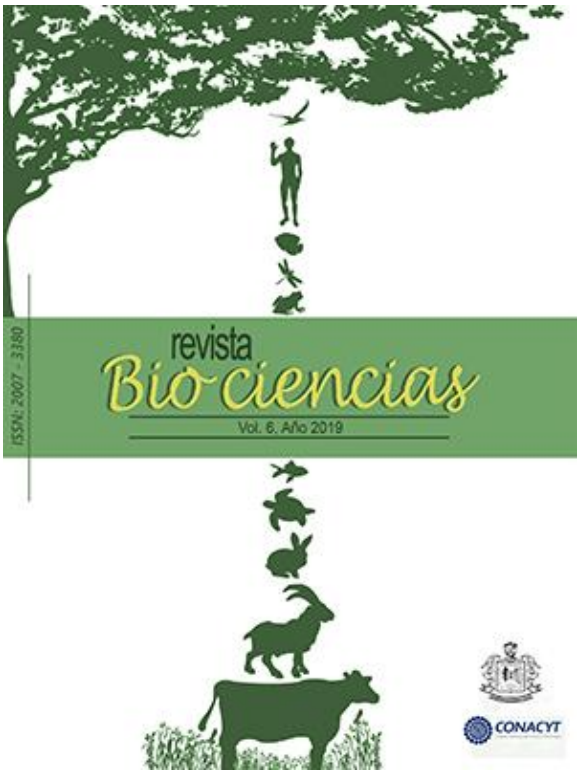
IV Congreso de la Sociedad Mexicana de Neuroinmunoendocrinología

Puerto Vallarta Jalisco, México. 21 al 24 de Octubre del 2019.



Revista Bio Ciencias
https://revistabiociencias.uan.edu.mx
ISSN 2007-3380

Pharmacological Properties of P2X Receptors in Human Macrophages.

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Several immune cell types respond to extracellular ATP as a danger signal under situations of cell death, stress or hypoxia. In monocytes and macrophages, ATP promotes the activation of the inflammasome and the release of interleukins through the activation of P2X and P2Y receptors. P2X receptor are ion channels involved in physiological and pathophysiological processes of immune system, such as multiple sclerosis, encephalomyelitis and lupus erythematosus. Understanding of the immunomodulator mechanisms of nucleotides in human macrophages could help to develop new therapeutic strategies for immune disease and inflammation. Expression analysis of the P2X1, P2X4 and P2X7 subunits was done using the single cell-PCR technique. The pharmacological characterization of P2X receptor was carried out analyzing the ATP-induced currents in the presence of suramin, a selective antagonist of P2X receptors. Of 24 macrophages obtained, 25% expressed mRNA of the P2X1 subunit, 20.8% P2X1*del*, 12.5% P2X4 and 45.8% P2X7. ATP currents mediated by native P2X receptors showed an EC50 = 3.1 μM and have a desensitization kinetics very similar to that observed for recombinant P2X1 and P2X1*del* receptors expressed in oocytes. In addition, it was observed that suramin has inhibitory and potentiator effects on native P2X receptor and recombinant P2X1 and P2X1*del*. These results suggest that the effects of extracellular ATP in human macrophages could be mediated by the receptors formed by the P2X1 and P2X1*del* subunits, or by heteromeric receptors.

Cite this paper/Como citar este artículo: Vargas-Martínez E.M., Gómez-Coronado K.S., Espinosa-Luna R., Montaño-Ramírez L.M., Valdez-Morales E.E., Guerrero-Alba R.*, Barajas-López C. (2019). Pharmacological Properties of P2X Receptors In Human Macrophages. *Revista Bio Ciencias* 6: (Suppl) Memorias IV Congreso de la Sociedad Mexicana de Neuroinmunoendocrinología. e839. https://doi.org/10.15741/revbio.06.suppl.e839