ATP REDUCES ABILITY OF LEUKEMIA CELLS TO FORM COLONIES

Ferrari, A.S.¹, Araujo-Júnior, R.T.¹, Miranda, A.², Paredes-Gamero, E.J.¹,³
¹Departamento de Bioquímica, Universidade Federal de São Paulo, São Paulo, Brazil.
²Departamento de Biofísica, Universidade Federal de São Paulo, São Paulo, Brazil.
³Centro Interdisciplinar de Investigação Bioquímica, Universidade de Mogi das Cruzes, São Paulo, Brazil.

Stem cells are characterized by their unlimited ability to divide, and differentiates in several kind of specialized cells. Moreover, stem cell resides in a quiescent state for prolonged periods of time. Malignant stem cells have been described in several types of cancers. These cells types are rare and possess distinct properties from most other tumors cells. Leukemia stem cells might originate from normal hematopoietic stem cells and are resistant to chemo and radiotherapy. Extracellular nucleotides are emerging as key regulators of cell proliferation, differentiation in hematopoietic system in different tissues. In this study, the effect of extracellular ATP in colony formation capacity, viability and differentiation of murine leukemia stem cells (LSC/Lin⁻⁻⁻⁻⁻ c-Kit⁺ Sca1⁺) was tested. C1498 leukemic murine cells were stimulate with 0.3 mM and 1 mM of ATP and the colony formation capacity was tested using Base Methylcellulose Medium for mouse cells, the colonies were counted after 7 and 14 days. Cell differentiation and viability were analyzed by flow cytometer. ATP (1 mM) was able to reduce the colony formation capacity at both concentrations and the cell lineage of murine leukemia C1498 show decrease in the viability after 72 h. Furthermore 0.3 mM of ATP was able to differentiate leukemic stem cells of this same leukemia lineage. This, our data suggest that ATP induces the differentiation of murine leukemia stem cells.

Keywords
ATP; Leukemic Stem Cell; Leukemia

Acknowledgments
FAPESP and CNPq