Expression of Recombinant Human Granulocyte Colony-Stimulating Factor in *Escherichia coli*

Gomes, F.R. [1], Morale, M.G. [1], Ho, P.L.[1]

[1]Centro de Biotecnologia, Instituto Butantan, São Paulo, Brazil;

Granulocyte colony-stimulating factor (G-CSF) is a glycoprotein, growth factor and cytokine produced by different tissues to stimulate the bone marrow to produce granulocytes and stem cells. In oncology and hematology, a recombinant form of G-CSF is used by cancer patients for recovery from neutropenia after chemotherapy, allowing higher-intensity treatment regimens. This factor is a medicine of high cost and also the only mean available to purchase it in Brazil is from importation. rhG-CSF commonly available commercially is derived from the cytoplasmic expression in *Escherichia coli*. In this work, we will comparer two constructions: one for expression of G-CSF using the L-asparaginase II export signal, and another one without this signal. The cloning of the two constructions was made in PET37b vector and with a syntetic sequence of rhG-CSF. The proteins were expressed in LB and minimal medium, in different temperatures (25°C, 30°C and 37°C). The most efficient expression was achived in the induction of rhG-CSF without the export signal in minimal medium at 37°C. The next steps include the purification of the factor and tests of its biological activity. This work is important for the future production plans of the Instituto Butantan, as a way of having this product available for the Brazil's Unified Health System (SUS). Our results will allow later studies aiming the production of G-CSF in bioreactors for the scale up, with the pureness and biological activity required for clinical tests.

Key words: rhG-CSF, expression, *Escherichia coli.*

Supported by: Capes and Fapesp