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Glucagon biosimilar: New perspective for low-price biopharmaceutical products for SUS

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According to the World Health Organization, one third of the world population does not have access to therapeutic drugs. In Brazil, SUS is a public institution responsible for the distribution the most needed drugs to the population free of cost since 1993, after an incentive from the Ministry of Health. Nevertheless, most of these drugs are not produced in Brazil and are imported from other countries, which significantly increase their cost. During the year of 2010, the Brazilian Government spent 10 billion dollars on the acquisition of therapeutic drugs, including the hormone glucagon, which was added to the list in 2008. However, due to the fact that some expensive drugs have expired patents, the production of these drugs locally may be possible. Therefore, we present the development of a methodology to obtain recombinant glucagon, aiming to produce this therapeutic protein in Brazil, in order to decrease the prices of therapeutic drug and enhance the national biotechnological industry. In this way, the glucagon gene was synthesized, cloned into an expression vector and expressed in Escherichia coli cells in different temperatures and concentrations of IPTG. The glucagon-GST was purified by affinity chromatography and the fusioned protein was cleaved. The 3.5 kDa peptide was visualized by Tris-tricine gel and the sequence was confirmed by MALDI. The purified recombinant peptide showed activity after in vivo assays. Preliminary scaling up expression of glucagon showed that its production is maintained in high levels, suggesting its potential for industrial development and future application in the market.

Biography

Patricia Pelegrini has completed her Ph.D at the age of 27 years from Catholic University of Brasilia – Brazil and has done postdoctoral studies from different places, such as the International Centre for Genetic Engineering (New Delhi – India), Institut de Recherche pour le Développement (Montpellier – France) and Embrapa – Genetic Resources and Biotechnology (Brasilia – Brazil). Nowadays, she is the director of Technologies from BioLife Brazil Ltda., a Biotechnology Company, and is Professor at Alvorada College – Brasilia. She has published more than 15 papers and book chapters in reputed journals, as well as has been supervisor of Graduate, Master and Doctorate students.

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