

RECOMBINANT HUMAN THYROTROPIN (REC-hTSH): DEVELOPMENT OF A BIOTECHNOLOGY PRODUCT FOR DIAGNOSTIC AND THERAPEUTIC USE. Peroni CN, Affonso R, Bartolini P, Bellini MH, Morganti L, Murata Y. Instituto de Pesquisas Energéticas e Nucleares, IPEN-CNEN/SP - Brasil

Thyrotropin is a glycoprotein hormone secreted from the anterior lobe of the pituitary which acts in the regulatory chain of the hypothalamus pituitary-thyroid axis and stimulates production and secretion of thyroid hormones from the thyroid gland. Being present in extremely low amounts in the human pituitary, together with other glycoprotein hormones (luteotropin and follicitropin) whose similar physico-chemical properties make its purification extremely difficult, the preparation of this hormone by DNA recombinant techniques is particularly interesting. The recombinant hTSH thus obtained can be used "in vitro" for the preparation of immunoassay reagents and "in vivo" to stimulate I-131 uptake, without the disadvantages of induced hypothyroidism, in the diagnosis and therapy of thyroid carcinoma.

Our laboratory started the preparation of reo-hTSH in Chinese Hamster Ovary (CHO) cells through the isolation, from a cDNA pituitary library, of the two genes coding for the alpha and beta subunits which form the mature hormone. A new generation of improved vectors for stable expression of foreign genes in mammalian cells is being used: they contain, among other elements, amplifiable marker genes like dihydrofolate reductase (DHFR) or adenosine deaminase (ADA) and a putative internal ribosomal entry site isolated from the encephalomyocarditis (EMC) virus. Choosing a strategy of sequential transfection, selection and amplification the gene coding for the hTSH alpha subunit has been inserted into one of these vectors (pEDdc, kindly donated from the Genetics Institute, Boston, MA, USA) in order to obtain a stable alpha chain-secreting transformed CHO cell line.