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PHYSICO-CHEMICAL CHARACTERIZATION OF ALPHA AND BETA SUBUNIT OF RECOMBINANT HUMAN GLYCOPROTEIN HORMONES: hTSH, hFSH AND hLH

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Human thyrotropin (hTSH), human follitropin (hFSH) and human lutropin (hLH), hormones produced by the anterior pituitary gland, are heterodimers composed of a common α - subunit non-covalently linked with the hormone specific β -subunits. Alpha and beta subunits of these CHO-derived glycoprotein hormones, obtained via chemical dissociation and reversed-phase high-performance liquid chromatography (RP-HPLC), were characterized and compared to the natural pituitary subunits, concerning their hydrophobicity, charge distribution and molecular mass. When analyzed via SDS-PAGE, the α - subunits of these three recombinant glyco hormones presented different migration rates (m_R), being $m_R \alpha$ -hFSH < $m_R \alpha$ -hLH < $m_R \alpha$ -hTSH. The same differences were also found in the α -subunits of the native pituitary hormones, which showed minor differences in comparison with the recombinant preparations. Also the β -subunits, either recombinant or native, presented analogous differences. Concerning human glycoprotein hormones subunits hydrophobicity, evaluated by RP-HPLC, we found: α -hTSH < α -hLH < α -hFSH and β -hFSH < β -hTSH < β -hLH. It is noteworthy that the scale of hydrophobicity of the three heterodimers is the same as that of their β -subunits. MALDI-TOF mass spectrometry together with isoelectric focusing profiles of the subunits of these three hormones were also obtained. These characterizations are extremely important for the pharmacological control of these important biopharmaceuticals.

Key words: hFSH, hLH, hTSH, subunits

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