

Ghrelin and Growth Hormone Secretagogue Receptor localization in human iris and ciliar body

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Ghrelin (Ghr) is a 28-amino acid peptide identified as endogenous, acylated ligand for the growth hormone (GH) secretagogue G-protein-coupled receptor (GHSR). Mainly synthesized from X/A like neuroendocrin cells of gastric fundus, Ghr acts directly on the pituitary gland inducing GH release; moreover Ghr regulates food intake resulting tightly associated with obesity. Several studies reported that Ghr is widely expressed in different tissues and, besides its orexigenic activity, effects on cardiovascular, pulmonary, reproductive and central nervous systems have been described. Recently, functional studies on rats and rabbits indicated Ghr as modulator of iris smooth muscles activity since induces relaxation of both sphincter and dilator muscles. Moreover Ghr mRNA has been found in the ciliary epithelium of ciliar body (CB). On the basis of these observations, we purposed to investigate Ghr and GHSR expression in human eye. The immunohistochemical analysis performed on iris and ciliar body specimens from post-traumatic explanted human eyeballs evidenced that Ghr and its receptor were co-expressed from the pigmented epithelium (PE) of both iris and CB, whereas we did not detect immunoreactivity in smooth muscle cells. Since human ciliar epithelium is a major site of production of neuroendocrine peptides found in aqueous humor (AqH), we analyzed AqH for the Ghr presence but the Enzymatic Immunoassay performed on 80 samples gave always negative results. In conclusion, our data suggest that Ghr may activate autocrine/paracrine signalling in human PE of CB and iris; the absence of GHSR- immunoreactivity on iris smooth muscle cells seem to rule out the possibility that Ghr can exert its myo-active effects directly.

Keywords: Ghrelin, ciliar body, iris, pigmented epithelium.