

Hormonal Production of the Developing Gastrointestinal Tract of Rat

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The aim of our study was to investigate the production of ghrelin and serotonin in the developing gastrointestinal tract of a rat and its paracrine role in the gastrointestinal wall. The earliest occurrence of ghrelin-producing cells we founded in the endoblastic epithelium of rat embryos on 12th day gestation. In the following periods this number increased. GHSR-1 was expressed during the same period in endoblast and myoblast cells of the developing digestive tube of embryos and fetuses as well as in the covering epithelium and glands of the stomach and small intestine of newborn rats. Serotonin-producing cells we found as late as one-day old rats. At that time there was presence of 5-HTR3 in smooth muscle cells. In conclusion, ghrelin-producing cells are among the earliest differentiating cells in the digestive tube and the presence of GHS-R1 reveals the ability of ghrelin to carry out paracrine regulation of organogenesis and histogenesis of the gastrointestinal tract. After birth serotonin-producing cells are already differentiated and the gastrointestinal wall is ready to respond to serotonin and ghrelin signals through the GHSR-1 and 5-HTR3 in the smooth muscle and glandular cells.

Key words: ghrelin, GHS-R1, serotonin, 5-HTR3, gastrointestinal tract, embryo