

**Abstract:**

The maintenance of body homeostasis requires precise communication between all cells of an organism. Major contributors to that are gastrointestinal hormones, which are important signaling molecules taking part in distribution and processing of ingested nutrients. Each hormone is produced by specialized cell type and its secretion is regulated by presence of particular nutrient. Considering differences in anatomy of the gastrointestinal tract the localization of hormone producing cells varies along the tract. The effects of gastrointestinal hormones are wide and play an important role in energy control in organism. Some hormones (gastrin) act locally, others (incretins, ghrelin) are coupled with signaling pathways in central and peripheral neuronal system. This connection with neuronal system allows gastrointestinal hormones to regulate also hunger and satiety. Gastrointestinal hormones are tightly connected with many diseases. Due to inappropriate nutrient intake (excessive intake of lipids or carbohydrates) functions of hormonal regulatory systems are impaired and this leads to development of serious diseases. The most known diseases arising from nutritional and hormonal disbalances are insulin resistance and type II diabetes mellitus. Reciprocal coordination between all hormones is the key factor in maintenance of lipid metabolism and glucose homeostasis.

**Key words:** gastrointestinal tract, hormones, glucose homeostasis, insulin resistance, lipid metabolism