Principles of endocrinology

The word hormone is derived from the Greek hormao meaning ‘I excite or arouse’. Hormones communicate this effect by their unique chemical structures recognized by specific receptors on their target cells, by their patterns of secretion and their concentrations in the general or localized circulation

Their functions can be broadly grouped into several categories: reproduction and sexual differentiation; development and growth; maintenance of the internal environment; and regulation of metabolism and nutrient supply. A single hormone may affect more than one of these functions and each function may be controlled by several hormones. For example, thyroid hormone is essential in development as well as many aspects of homeostasis and metabolism, whilst glucocorticoids, such as cortisol, are important both in growth and nutrient supply and are also modulators of immune function. The roles several hormones play in one function is exemplified by the control of blood glucose which involves the pancreatic peptide insulin and its counter regulatory hormone, glucagon, as well as cortisol, growth hormone and epinephrine. Hormones act in concert and thus, an abnormality in a controlled variable, such as blood glucose concentration may result from defects in the control of any one of several hormones.

The secretion of hormones is subject to negative feedback control, and there are several ways by which this is achieved. Feedback loops may involve the hypothalamo-pituitary axis that detects changes in the concentration of hormones secreted by peripheral endocrine glands or a single gland may both sense and respond to changes in a controlled variable.