

OPERATION OF HOMEOSTASIS

The purpose of this essay is to explain the meaning and mode of the operation of homeostasis, with regard to the nervous and endocrine system, in relation to osmoregulation. In humans, the internal environment of our bodies must have certain conditions within tolerable limits to continue the healthy functioning of life. This is done by a process called negative feedback control, where various receptors and effectors bring about a reaction to ensure that such conditions remain favourable. It will be discussed within this essay the operation of homeostasis and the control by negative feedback. It will also be stated the relation of osmoregulation to homeostasis.

The endocrine system and the nervous system work in distinctive and different ways in the control and coordination of body activities. However, the activities of the two systems are coordinated by the pituitary gland, the master gland of the endocrine system working in tandem with the hypothalamus, the control center of the autonomic nervous system of the brain. The hypothalamus secretes hormones that regulate the functioning of the pituitary. The hypothalamus also monitors the level of hormones in the blood and regulates secretion by negative feedback control. The hypothalamus is the link between the nervous system and the endocrine glands. One of its major functions is to relay impulses and stimuli between the brain and organs such as the kidneys. It does this by receiving several of the chemical transmitter substances released by the nerve cells of the brain, and in response to the trigger, releases hormones. ADH, and oxytocin, are released from the pituitary under the direct control of nerve impulses generated in the hypothalamus (Weston, 2002: p21).

All the cells of the body are bathed in fluid, which supplies their nourishment and carries away waste products. The characteristics of this extra cellular fluid must remain nearly constant to enable the cells to live and work properly. The blood cells lie in the blood plasma, and other cells are surrounded by tissue fluid. Conditions in the blood are maintained at an optimum – the best values for the cells to function. Keeping constant conditions in the fluid around the cells is called homeostasis. Homeostasis involves several organs, such as the cell the heart the skin the kidneys