Eating and Drinking [1]

Sarah Mae Sincero [2]

Eating and drinking are two crucial activities needed by an individual for survival, nourishment, growth and development. Disorders related to eating and drinking develop from either the inability to satisfy or excessive satisfaction of hunger and thirst sensations.

Hunger, Eating and Satiety

Early research studies found out that the hypothalamus plays important roles in hunger, eating and satiety. In particular the lateral hypothalamus (LH) controls feeding, while the ventromedial hypothalamus (VMH) is responsible for satiety. Injury to the LH (LH lesion syndrome) results to aphagia (abnormal avoidance of eating) and adipsia (abnormal avoidance in drinking). On the other hand, VHM injury leads to excessive food intake, and thus, rapidly increased body weight. The cephalic reflex is associated to LH and acts as internal preparatory response to food. When LH is activated, the cephalic reflex is improved. Furthermore, studies show that the delectableness of the food directly affects the intensity of the cephalic reflex. This intensity is controlled by the VMH, which is activated when body nutritional needs are already satisfied (satiety point). Activation of the VMH leads to the inhibition of LH.

En routing through the LH to the basal ganglia is the dopaminergic nigrostriatal pathway (DNP). Current research suggests that the DNP is responsible for controlling voluntary eating behavior. When the DNP is destroyed, injury to the LH occurs. On the other hand, the paraventricular nucleus (PVN) is a structure in the hypothalamus that, when destroyed, causes injury to the VMH. When PVN is stimulated via alpha 1-adrenergic receptors, eating is suppressed. The inhibition of PVN via alpha 2-adrenergic receptors leads to the increase in food intake. The activity of these two receptors explains why appetite is suppressed in response to amphetamine and other adrenergic agonists.

Environmental stimuli like the sight of a preferred food may result to an increased activity in LH, thus elevating the desire to eat the food.

Thirst and Drinking

The body is comprised of about two-thirds water. When the brain detects inadequacy in body fluids, it sends signals to the urinary system to retain body fluids by decreasing the urine to be excreted. This action leads to the initiation of thirst sensation. Also, thirst can be experienced when there is an increase in sodium chloride levels in the extracellular fluids (ECF) as

detected by the osmoreceptors of the hypothalamus. This is otherwise known as osmotic thirst. This leads the release of the antidiuretic hormone (ADH), resulting to less urine excretion and more water retention. Another type of receptors that also stimulate the release of ADH is the baroreceptors of the heart, which detects if there is less ECF leading to a decrease in blood pressure.

The point of satisfaction of thirst depends on various factors. For instance, drinking is inhibited when the body feels enough presence of water in the stomach. The activation of the parainfundibular area of the hypothalamus also leads to the suppression of drinking.
