Harry okure

18/MHS07/040

Pharmacology

PHS 212

The gustatory system or sense of taste is the sensory system that is partially responsible for the perception of taste (flavor).Taste is the perception produced or stimulated when a substance in the mouth reacts chemically with taste receptor cells located on taste buds in the oral cavity, mostly on the tongue. Taste, along with smell (olfaction) and trigeminal nerve stimulation (registering texture, pain, and temperature), determines flavors of food and other substances. Humans have taste receptors on taste buds and other areas including the upper surface of the tongue and the epiglottis.The gustatory cortex is responsible for the perception of taste.

The tongue can also feel other sensations not generally included in the basic tastes. These are largely detected by the somatosensory system. In humans, the sense of taste is conveyed via three of the twelve cranial nerves. The facial nerve (VII) carries taste sensations from the anterior two thirds of the tongue, the glossopharyngeal nerve (IX) carries taste sensations from the posterior one third of the tongue while a branch of the vagus nerve (X) carries some taste sensations from the back of the oral cavity.

The trigeminal nerve (cranial nerve V) provides information concerning the general texture of food as well as the taste-related sensations of peppery or hot (from spices).

The glossopharyngeal nerve innervates a third of the tongue including the circumvallate papillae. The facial nerve innervates the other two thirds of the tongue and the cheek via the chorda tympani.

The pterygopalatine ganglia are ganglia (one on each side) of the soft palate. The greater petrosal, lesser palatine and zygomatic nerves all synapse here. The greater petrosal, carries soft palate taste signals to the facial nerve. The lesser palatine sends signals to the nasal cavity; which is why spicy foods cause nasal drip. The zygomatic sends signals to the lacrimal nerve that activate the lacrimal gland; which is the reason that spicy foods can cause tears. Both the lesser palatine and the zygomatic are maxillary nerves (from the trigeminal nerve).

The special visceral afferents of the vagus nerve carry taste from the epiglottal region of the tongue.

The lingual nerve (trigeminal, not shown in diagram) is deeply interconnected with chorda tympani in that it provides all other sensory info from the ⅔ of the tongue.This info is processed separately (nearby) in rostal lateral subdivision of nucleus of the solitary tract (NST).

NST receives input from the amygdala (regulates oculomotor nuclei output), bed nuclei of stria terminalis, hypothalamus, and prefrontal cortex. NST is the topographical map that processes gustatory and sensory (temp, texture, etc.)

Reticular formation (includes Raphe nuclei responsible for serotonin production) is signaled to release serotonin during and after a meal to suppress appetite.Similarly, salivary nuclei are signaled to decrease saliva secretion.

Hypoglossal and thalamic connections aid in oral-related movements.

Hypothalamus connections hormonally regulate hunger and the digestive system.

Substantia innominata connects the thalamus, temporal lobe, and insula.

Edinger-Westphal nucleus reacts to taste stimuli by dilating and constricting the pupils.

Spinal ganglion are involved in movement.