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ASSIGNMENT

Elucidate the pathway involved in taste

**THE TASTE PATHWAY**

The word taste, or gustation, to give its full name, refers to what is detected by the taste cells, located on the front and back of the tongue and on the sides, back and roof of the mouth. These receptor cells, or taste buds, bind with molecules from the food or drink being consumed and send signals to the brain. The way our brains perceive these stimuli is what we refer to as taste, with there being five recognised basic tastes: salty, bitter, sweet, sour and umami.

Three nerves carry taste signals to the brain stem: the chorda tympani nerve (from the front of the tongue), the glossopharyngeal nerve (from the back of the tongue) and the vagus nerve (from the throat area and palate). In addition, the trigeminal nerve carries signals from the touch / temperature / pain system. Taste signals combine in the brain stem areas involved in arousal (i.e. from sleep) then with smell signals in the brain to produce the sensation of flavour. When the taste buds from the anterior two-thirds of the tongue and soft palate are stimulated, the special visceral afferent fibers of the facial nerve (CN VII) receive that information and leave the oral cavity together with the lingual nerve. Then, in the infratemporal fossa, these special visceral afferent fibers emerge from the facial nerve and form the chorda tympani. The chorda tympani then relays sensory input to the otic and geniculate ganglia. Postganglionic fibers emerge from these ganglia and project to the brainstem and enter at the pontomedullary junction. Then they synapse within the rostral part of the nucleus of the solitary tract in the posteroinferior part of the medulla oblongata.

When it comes to the posterior one-third of the tongue and pharynx, the special visceral afferent fibers from both the superior laryngeal nerve (branch of the vagus nerve (CN X)) and the glossopharyngeal nerve (CN IX) synapse with the inferior ganglion of the vagus nerve and the inferior ganglion of the glossopharyngeal nerve (also known as the petrosal ganglion). From the inferior ganglion, the postganglionic fibers exit and course towards the same spot as the chorda tympani (the nucleus of the solitary tract) after entering the brainstem at the rostral medulla oblongata.The fibers end within the rostral segment of the of anterior (ventral) solitary nucleus. The neurons of this nucleus send fibers that join the ipsilateral central tegmental tract, and then end within parvocellular division of the ventral posteromedial nucleus of the thalamus. The fibers exiting from the thalamus form central thalamic radiations, which pass through the posterior limb of the internal capsule. These fibers end within the primary gustatory cortical areas of the cerebral cortex, found within insula and frontal operculum.