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The Taste Pathway

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There are 5 main tastes. Each taste depends on a particular receptor that's localized somewhere on the tongue. The 5 different things that we're able to taste are bitter compounds, salty compounds, sweet compounds, sour compounds, and umami. This is basically the ability to taste a particular molecule known as glutamate. Now these 5 tastes all depend on a particular receptor. There are 3 different types of taste buds. They include; fungiform taste buds; these are the ones that are mostly found over here in the anterior part of the tongue, foliate taste buds; mostly found on the side of the tongue. And finally there are taste buds known as circumvallate taste buds mostly found back in the back of the tongue.

The tongue contains small bumps called papillae, within or near which taste buds are situated. In the tongue’s taste buds, the taste receptors receive sensory input via two important mechanisms; depolarization and neurotransmitter release. Intake of salty foods leads more sodium ions to enter the receptor, causing the said mechanisms. The same is true with intake of sour foods (hydrogen ions) and sweet foods (sugar molecules), both of which result to the closing of K+ channels upon their entry.

From the axons of the taste receptors, the sensory information is transferred to the three taste pathways via the branches of cranial nerves **VII, IX and X.**

The chorda tympani of CN VII (facial nerve) carry the taste sensory input from the tongue’s anterior two-thirds. Then, the rest of the taste sensations from the throat, palate and posterior tongue are transmitted by the branches of CN IX (glossopharyngeal nerve) and CN X (vagus nerve). From these cranial nerves, taste sensory input travels through the nerve fiber synapses to the solitary tract, the ventral posteromedial thalamic nuclei, and the thalamus. In these three locations, there are clustered neurons which respond to the same taste (sweet, sour, salty or bitter).The thalamus relays the information to the primary gustatory cortex located in the somatosensory cortex. The primary gustatory cortex is where the perception of a particular taste is processed.