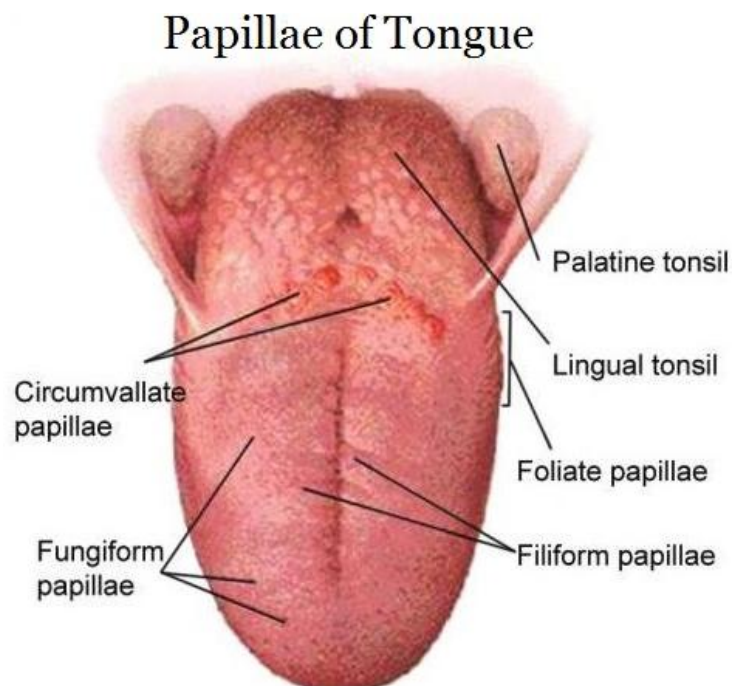


Taste

Taste is the sensation produced when a substance in the mouth reacts chemically with taste receptor cells located on **taste buds** on the tongue. The tongue is covered with thousands of small bumps called **papillae**, which are visible to the naked eye. Within each papilla are hundreds of taste buds.

Papilla are specialized epithelial cells. There are four types of papillae: filiform (thread-shape), fungiform (mushroom-shape), foliate (leaf-shape), and circumvallate (ringed-circle). All papillae except the filiform have taste buds on their surface.

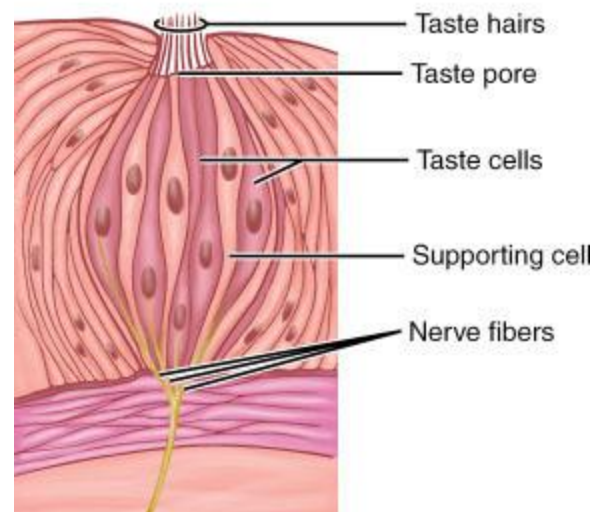
- 1) **Fungiform papillae:** as the name suggests, are slightly mushroom shaped if looked at in section. These are present mostly at the apex (tip) of the tongue.
- 2) **Filiform papillae:** these are thin, longer papillae that don't contain taste buds but are the most numerous. These papillae are mechanical and not involved in gestation.
- 3) **Foliate papillae:** these are ridges and grooves towards the posterior part of the tongue.



- 4) **Circumvallate papillae:** there are only about 7-12 of these papillae on most people and they are present at the back of the oral part of the tongue. They are arranged in a circular-shaped row just in front of the sulcus terminalis of the tongue.

Taste bud: The bud is formed by two kinds of cells: supporting cells and taste cells or gustatory cells.

The supporting cells are mostly arranged like the staves of a cask, and form an outer envelope for the bud. Some, however, are found in the interior of the bud between the gustatory cells. The gustatory cells occupy the central portion of the bud; they are spindle-shaped, and each possesses a large spherical nucleus near the middle of the cell. The peripheral end of the cell terminates at the taste pore in a fine hair-like filament, the taste hair.



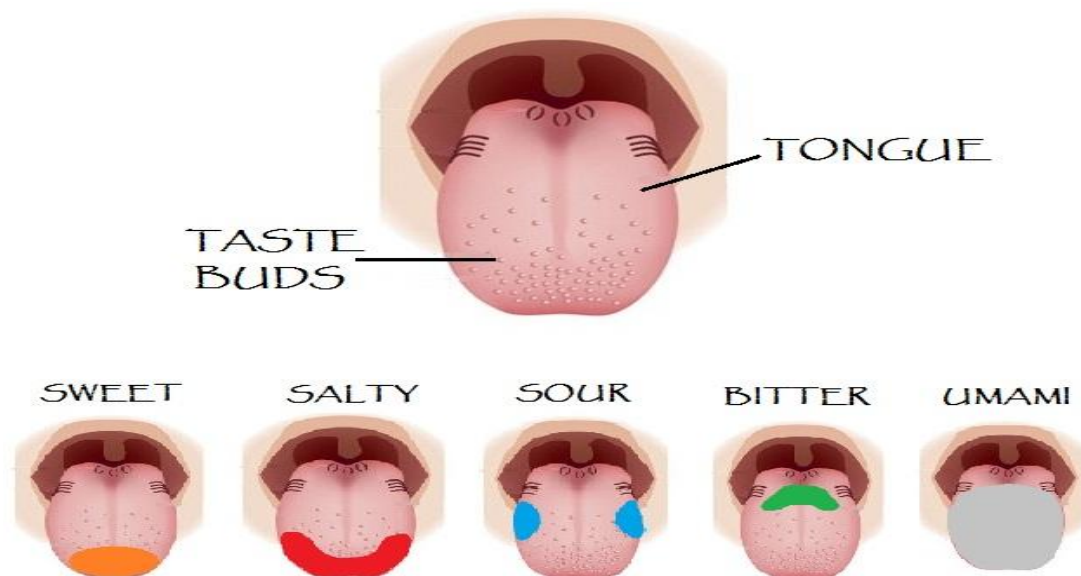
The sensation of taste can be categorized into five basic tastes:

- 1) **Salt:** a taste produced by the presence of ionized salts mainly sodium ions
- 2) **Sour:** the taste that detects acidity. The sourness of substances is rated relative to dilute hydrochloric acid.
- 3) **Sweet:** is produced by the presence of organic substances e.g. sugars, alcohols, glycols, aldehydes etc.

4) **Bitter:** is produced by long chain organic substances having nitrogen e.g. alkaloids (quinine, nicotine, caffeine etc.)

5) **Umami:** A Japanese word meaning good taste. It is produced by glutamate and monosodium glutamate. It can be tasted in cheese and soy sauce and is also found in many other fermented and aged foods.

All other tastes are combinations of the 5 basic tastes.



Mechanism of taste reception

The taste buds are stimulated by certain ions and compounds present in the food. The chemicals present in food dissolve in the saliva and enter the taste buds through the pores. Once inside, they stimulate the taste receptor cells. This stimulation is transmitted through the nerve fibers as electrical impulses. The nerve fibers of the taste receptor cells become part of the facial, the glossopharyngeal and the vagus nerves. These nerves pass through the brain stem. The sense of taste is perceived in the taste center of the cerebral cortex of the parietal lobe of the cerebral hemisphere.