

Taste Encyclopedia Article

Taste

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Taste

Taste—technically called gustation—is one of a human's five senses. The senses of smell and taste are extremely complex systems facilitated by chemoreception--special neurons sensitive to chemical substances. Humans are born with the ability to taste, although taste preferences change with maturity, some are acquired, and some must be developed: babies and children seldom enjoy strong flavors like onions or mustard. Although we can taste a myriad of flavors, taste buds sense only four separate sensations: bitter, salty, sour, and sweet. Specific combinations of these, along with texture, temperature, and--in particular--smell, allow us to differentiate and detect the difference between cottage cheese and chocolate. Inhaling or exhaling as we eat or drink is highly important to our sense of taste, as some flavors--chocolate and coffee, for example--are primarily "tasted" by their smell. The sense of taste can be adversely affected by such things as zinc deficiency, smoking, a head cold or sinus problems, deficient sense of smell, or damage to certain parts of the brain.

Taste begins when food or drink mix with saliva in the mouth and stimulate taste buds on the surface of the tongue, soft palate, pharynx, larynx, and epiglottis. It was once thought that taste buds sensitive to sweetness were located near the tip of the tongue, those sensitive to salt along the front sides, those to sour further back along the sides, and bitter was detected by taste buds at the very back of the tongue. Researchers now discount this theory, and evidence suggests that even individual taste buds and receptor cells are not specifically sensitive to an individual taste. Electrophysiological recordings show, instead, neuronal response to combinations of the four basic taste sensations, and that these combinations are decoded in the brain, not in the mouth. Humans have anywhere from 2,000-5,000 taste buds, each containing 50-150 neuroepithelial cells. Chemical stimulation initiates an action potential in these cells which interact through a complex system of electrical and synaptic responses with fibers within the central nervous system where they synapse to the medulla, the thalamus, and the postcentral gyrus. Neurons associated with smell and taste are the only nervous system cells to be replenished when old ones die or become damaged.