



NIDCD Fact Sheet

Taste Disorders

U.S. DEPARTMENT OF HEALTH & HUMAN SERVICES · NATIONAL INSTITUTES OF HEALTH · NATIONAL INSTITUTE ON DEAFNESS AND OTHER COMMUNICATION DISORDERS

How common are taste disorders?

Many of us take our sense of taste for granted, but a taste disorder can have a negative effect on a person's health and quality of life. If you are having a problem with your sense of taste, you are not alone. More than 200,000 people visit a doctor each year for problems with their chemical senses, which include taste and smell.

The senses of taste and smell are very closely related. Some people who go to the doctor because they think they've lost their sense of taste are surprised to learn that they have a smell disorder instead. To learn more about your sense of smell, read the NIDCD fact sheet *Smell Disorders* at <http://www.nidcd.nih.gov/health/smelltaste/smell.asp>.

How does our sense of taste work?

Our ability to taste occurs when tiny molecules released by chewing, drinking, or digesting our food stimulates special sensory cells in the mouth and throat. These taste cells, or gustatory cells, are clustered within the taste buds of the tongue and roof of the mouth and along the lining of the throat. Many of the small bumps on the tip of our tongue contain taste buds. At birth, we have about 10,000 taste buds, but after age 50, we may start to lose them.

When the taste cells are stimulated, they send messages through three specialized taste nerves to the brain, where specific tastes are identified. Each taste cell expresses a receptor, which responds to one of at least five basic taste qualities: sweet, sour, bitter, salty,

and umami. Umami, or savory, is the taste we get from glutamate, which is found in chicken broth, meat extracts, and some cheeses. A common misconception is that taste cells that respond to different tastes are found in separate regions of the tongue. In humans, the different types of taste cells are scattered throughout the tongue.

Taste quality is just one aspect of how we experience a certain food. Another chemosensory mechanism, called the common chemical sense, involves thousands of nerve endings, especially on the moist surfaces of the eyes, nose, mouth, and throat. These nerve endings give rise to sensations such as the coolness of mint and the burning or irritation of chili peppers. Other specialized nerves give rise to the sensations of heat, cold, and texture. When we eat, the sensations from the five taste qualities, together with the sensations from the common chemical sense and the sensations of heat, cold, and texture, combine with a food's aroma to produce a perception of flavor. It is flavor that lets us know whether we are eating a pear or an apple.

Many people who think they have a taste disorder actually have a problem with smell. When we chew, aromas are released that activate our sense of smell by way of a special channel that connects the roof of the throat to the nose. If this channel is blocked, such as when our noses are stuffed up by a cold or flu, odors cannot reach sensory cells in the nose that are stimulated by smells. As a result, much of our enjoyment of flavor is lost. Without smell, foods tend to taste bland and are flavorless.



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What are the taste disorders?

The most common taste disorder is phantom taste perception—that is, a lingering, often unpleasant taste even though you have nothing in your mouth. We also can experience a reduced ability to taste sweet, sour, bitter, salty, and umami, a condition called hypogeusia. Some people cannot detect any tastes, which is called ageusia. True taste loss, however, is rare. Most often, people are experiencing a loss of smell as opposed to a loss of taste.

In other disorders of the chemical senses, an odor, a taste, or a flavor may be distorted. Dysgeusia is a condition in which a foul, salty, rancid, or metallic taste sensation will persist in the mouth. Dysgeusia is sometimes accompanied by burning mouth syndrome, a condition in which a person experiences a painful burning sensation in the mouth. Although it can affect anyone, burning mouth syndrome is most common in middle-aged and older women.

What causes taste disorders?

Some people are born with taste disorders, but most develop them after an injury or illness. Among the causes of taste problems are:

- Upper respiratory and middle ear infections
- Radiation therapy for cancers of the head and neck
- Exposure to certain chemicals, such as insecticides and some medications, including some common antibiotics and antihistamines
- Head injury
- Some surgeries to the ear, nose, and throat (e.g., third molar, or wisdom tooth, extraction and middle ear surgery)
- Poor oral hygiene and dental problems

How are taste disorders diagnosed?

Both taste and smell disorders are diagnosed by an otolaryngologist, a doctor of the ear, nose, throat, head, and neck. An otolaryngologist can determine the extent of your taste disorder by measuring the lowest concentration of a taste quality that you can detect or recognize. You also may be asked to compare the tastes of different substances or to note how the intensity of a taste grows when a substance's concentration is increased.

Scientists have developed taste testing in which the patient responds to different chemical concentrations. This may involve a simple “sip, spit, and rinse” test, or chemicals may be applied directly to specific areas of the tongue.

An accurate assessment of your taste loss will include, among other things, a physical examination of your ears, nose, and throat; a dental examination and assessment of oral hygiene; a review of your health history; and a taste test supervised by a health care professional.

Are taste disorders serious?

Taste disorders can weaken or remove an early warning system that most of us take for granted. Taste helps us detect spoiled food or liquids and, for some people, the presence of ingredients to which they are allergic.

Loss of taste can create serious health issues. A distorted sense of taste can be a risk factor for heart disease, diabetes, stroke, and other illnesses that require sticking to a specific diet. When taste is impaired, a person may change his or her eating habits. Some people may eat too little and lose weight, while others may eat too much and gain weight.

Loss of taste can cause us to eat too much sugar or salt to make our food taste better. This can be a problem for people with certain medical conditions, such as diabetes or high blood pressure. In severe cases, loss of taste can lead to depression.

Loss of taste and smell can also be a sign of certain degenerative diseases of the nervous system, such as Parkinson's disease or Alzheimer's disease. If you are experiencing a taste disorder, consult your physician.

Can taste disorders be treated?

Many types of taste disorders are curable. For those that are not, counseling is available to help people adjust to their problem.

Diagnosis by an otolaryngologist is important to identify and treat the underlying cause of your disorder. If a certain medication is the cause, stopping or changing your medicine may help eliminate the problem. (Do not stop taking your medications unless directed by your doctor, however.) Some people, notably those with respiratory infections or allergies, regain their sense of taste when these conditions are resolved. Often, the correction of a general medical problem also can correct the loss of taste. Occasionally, a person may recover his or her sense of taste spontaneously. Proper oral hygiene is important to regaining and maintaining a well-functioning sense of taste.

If you lose some or all of your sense of taste, there are things you can do to make your food taste better:

- Prepare foods with a variety of colors and textures.
- Use aromatic herbs and hot spices to add more flavor (however, avoid adding more sugar or salt to foods).

- If your diet permits, add small amounts of cheese, bacon bits, butter, olive oil, or toasted nuts on vegetables.
- Avoid combination dishes, such as casseroles, that can hide individual flavors and dilute taste.

What research is being done?

The National Institute on Deafness and Other Communication Disorders (NIDCD) supports basic and clinical investigations of taste and smell disorders at institutions across the nation. Some of these studies are conducted at chemosensory research centers, where scientists work together to uncover how our gustatory system works.

Some of the most recent research in this area focuses on identifying the key receptors expressed by our taste cells and understanding how they work. So far, researchers have identified the taste cells and receptors for detecting sour, sweet, bitter, and umami tastes. Researchers are also working to develop a better understanding of how sweet and bitter substances attach to their targeted receptors. The goal is to develop noncaloric artificial sweeteners and bitter blockers, substances that block the bitter taste of some foods or medicines.

A recent NIDCD-funded study has shown that small variations in our genetic code can raise or lower our sensitivity to sweet tastes, which might influence a person's desire for sweets. Scientists have also made progress in understanding how our sense of taste changes as we age. Older adults often decide what to eat based on how much they like or dislike certain tastes. Scientists are looking at how and why this happens in order to develop more effective ways to help older people cope better with taste problems.



NIDCD supports and conducts research and research training on the normal and disordered processes of hearing, balance, smell, taste, voice, speech, and language and provides health information, based upon scientific discovery, to the public.

Scientists are also working to find out why some medications and medical procedures can have a harmful effect on our senses of taste and smell. They hope to develop treatments to help restore the sense of taste to people who have lost it.

Scientists are gaining a better understanding of why the same receptor that helps our tongue detect sweet taste can also be found in the human gut. Recent research has shown that the sweet receptor helps the intestine to sense and absorb sugar and turn up the production of blood sugar-regulation hormones, including the hormone that regulates insulin release. Further research may help scientists develop drugs targeting the gut taste receptors to treat obesity and diabetes.

Finally, taste cells—as well as sensory cells that help us smell—are the only sensory cells in the human body that are regularly replaced throughout life. Researchers are exploring how and why this happens in order to find ways to replace other damaged sensory cells.

NIDCD-supported research in the chemosensory sciences include studies to:

- Promote the regeneration of sensory and nerve cells.
- Prevent the effects of aging.
- Develop new diagnostic tests.
- Understand associations among chemosensory disorders, altered food intake and diet, and major health risk factors (e.g., obesity and cardiovascular disease).
- Improve treatment methods and rehabilitation strategies.

Where can I find more information?

The NIDCD maintains a directory of organizations that can answer questions and provide printed or electronic information about hearing, balance, smell, taste, voice, speech, and language. This directory is available at <http://www.nidcd.nih.gov/directory>.

To find organizations with information specifically about taste disorders, click on “Smell and Taste” in the “Browse by Topic” list.

For more information, additional addresses and phone numbers, or a printed list of organizations, contact:

NIDCD Information Clearinghouse

1 Communication Avenue
Bethesda, MD 20892-3456
Toll-free Voice: (800) 241-1044
Toll-free TTY: (800) 241-1055
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NIDCD Fact Sheet: Taste Disorders
Publication No. 09-3231A
Updated July 2009

For more information, contact:
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