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## Artificial salivas

**Product names:** Salivart Synthetic Saliva; Saliva Substitute

**Manufacturers:** Salivart Synthetic Saliva—Gebauer Co., 9410 St. Catherine Ave., Cleveland, Ohio 44104, 1-800-321-9348, “www.gebauerco.com”; Saliva Substitute, Roxane Laboratories Inc., 1809 Wilson Road, Columbus, Ohio 43228, 1-800-848-0120, “www.roxane.com”

Xerostomia may be caused by a disruption of the neural input to the salivary glands or dysfunction of the salivary gland itself. When the neural input and salivary gland are intact, pilocarpine—an anticholinergic—can be used to stimulate salivation. However, when the salivary glands cannot be stimulated, saliva substitutes are a palliative measure that may alleviate xerostomia by moistening and lubricating the oral cavity.

Artificial salivas are formulated to mimic the chemical and physical characteristics of saliva. Although more than 99 percent of saliva is water, saliva also contains buffering agents and enzymes that play a crucial role in maintaining a healthy oral environment. Artificial salivas normally contain a mixture of ions, buffering agents, cellulose derivatives (to increase viscosity and lubricate) and flavoring agents (such as sorbitol). However, they do not contain the digestive and antibacterial enzymes and other proteins present in real saliva.

## Xerostomia

**S**aliva plays a significant role in oral health by maintaining a neutral oral pH, protecting oral tissue against invasion by microorganisms, remineralizing the dentition, facilitating swallowing and digestion by lubrication and through special enzymes, and acting as solvent for the taste stimuli. When salivary secretion is impaired, a number of oral signs and symptoms can develop. Xerostomia, more commonly called “dry mouth,” is a common subjective complaint of medical and dental patients that usually, but not always, is associated with salivary gland hypofunction (objective evidence of reduced saliva output).

Dry mouth is estimated to affect one of every 10 dental patients. Although ample information on this condition is available in print and on the Internet, few resources are

**Considerations for Acceptance:** Salivart and Saliva Substitute are approved by the U.S. Food and Drug Administration. There currently are no specific ADA Guidelines for saliva substitutes; therefore, the Council on Scientific Affairs evaluated these products for safety and efficacy according to the ADA Provisions for Acceptance. Although these products will not cure xerostomia, they can provide temporary relief of some symptoms.

**Accepted Indications and Dosing:** Saliva substitutes are indicated for the symptomatic relief of dry mouth and dry throat in patients with xerostomia. Salivart is delivered as an aerosol and Saliva Substitute is squirted into the mouth. There are no specific dosing guidelines; both can be used as often as needed. Saliva substitutes are quickly swallowed and, therefore, the moistening and lubricating action is of limited duration, necessitating repeated administration.

**Benefits and Considerations:** When used regularly, artificial salivas help moisten the oral mucosa, relieving the discomfort of dry mouth and facilitating speaking, chewing and swallowing. Long-term compliance may be a problem because of the perceived inconvenience of frequent use and the relatively high cost. Patients should be informed of the necessity of continual use of these products.

available for the evaluation and management of patients with chronic xerostomia and salivary gland hypofunction. Although xerostomia is not a disease, when associated with salivary gland hypofunction, it can produce various complications that could have an impact on the affected person’s quality of life. The following information about xerostomia and salivary gland hypofunction is provided to encourage the following:

- a better understanding among health care providers and pharmacotherapeutic manufacturers of the common causes and complications of this condition;
- more aggressive evaluation of potential patients at risk of experiencing this condition;

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■ development of guidelines on the prevention, detection and management of this condition.

### SIGNS AND SYMPTOMS

Patients with dry mouth may be asymptomatic (have no complaint) or complain of dry mouth or hoarse voice, and may experience trouble eating, speaking, swallowing or chewing. They also may report a frequent need to sip water while eating dry food or awakening at night with oral dryness. Difficulties in wearing oral prostheses and appreciating the taste of food, as well as sore and painful mouth, are other common complaints.

Though a patient may not complain of a dry mouth, the history or presence of such conditions as recurrent dental caries, oral yeast infections, inflamed soft tissue, chapped or cracked lips and tongue, and swollen salivary glands, in the absence of other local or systemic conditions, should raise the suspicion of reduced saliva secretion. “Yes” responses to the following questions have been associated with reduced unstimulated and/or stimulated saliva secretion, even in patients who have not expressed dry mouth complaints:

- Does the amount of saliva in your mouth seem to be too little?
- Do you have any difficulties swallowing?
- Does your mouth feel dry when eating a meal?
- Do you sip liquids to aid in swallowing dry food?

### COMMON CAUSES

In the past, head and neck radiation therapy was considered the most common cause of xerostomia and salivary gland hypofunction. However, in recent years, medications have emerged as the most common cause, especially in the geriatric patient population. More than 400 medications are known to cause dry mouth as a potential adverse effect. The following groups of medications have been associated with xerostomia and/or salivary gland hypofunction:

- cardiovascular medications ( $\alpha$ -blockers,  $\beta$ -blockers, diuretics, angiotensin-converting enzyme inhibitors, calcium channel blockers);
- antidepressants;
- sedatives;
- central analgesics;
- anti-Parkinson’s medications;
- antiallergy medications;
- antacids;
- others.

Chronic xerostomia and salivary gland hypofunction

**Editor’s note:** This report was prepared by the ADA Council on Scientific Affairs in response to ADA House of Delegates Resolution 87H-2000, which called for a study of issues surrounding xerostomia—including how to communicate more effectively about it with health

also can be linked to a variety of medical conditions, such as Sjögren’s syndrome, sarcoidosis, uncontrolled diabetes, depression, HIV infection and central nervous system disorders.

### COMPLICATIONS

The absence of saliva alters the oral environment and increases the risk of developing dental caries and fungal and periodontal diseases (see “Signs and Symptoms” listed above). Associated oral discomfort also may lead to dehydration and nutritional deficiency in elderly patients.

### EVALUATION AND MANAGEMENT

Because xerostomia and salivary gland hypofunction are common, potentially asymptomatic conditions that have many causes and complications, all patients should be evaluated routinely for these conditions. A comprehensive interview, or patient health history, and a head and neck clinical evaluation usually would identify patients who will benefit from further diagnostic evaluations (that is, salivary flow rate measurement, minor salivary gland biopsy, blood and microbial tests). A history of frequent carious lesions, recurrent yeast infections, bleeding gums and sore mouth in the absence of oral local factors, lack of a saliva pool and saliva upon palpation of major salivary glands, and an unusual pattern of carious lesions commonly indicate the need for further diagnostic evaluation.

Significant emphasis should be placed on preventive oral care in the management of patients with these conditions. Management of these conditions may include daily oral hygiene, frequent professional oral evaluation and care, hydration, lubrication, stimulation of the salivary glands, nutritional counseling and avoidance of such irritants as alcohol and tobacco. Medications available by prescription—namely, pilocarpine hydrochloride and cevimeline hydrochloride—also may be included as treatment.

For further information on xerostomia and salivary gland hypofunction, readers can visit the following Web sites:

- [“www.sjogrens.org/pdfs/sjo\\_oralpects.pdf”](http://www.sjogrens.org/pdfs/sjo_oralpects.pdf);
- [“www.cdha.org/articles/drymouth.htm”](http://www.cdha.org/articles/drymouth.htm);
- [“www.northwestdentists.com/xerostomia.htm”](http://www.northwestdentists.com/xerostomia.htm);
- [“www.nohic.nidcr.nih.gov/pubs/drymouth/dmouth.htm”](http://www.nohic.nidcr.nih.gov/pubs/drymouth/dmouth.htm);
- [“www.oralcancer.org/public.dir/xerostom.html”](http://www.oralcancer.org/public.dir/xerostom.html);
- [“www.nidcr.nih.gov/spectrum/nidcr2/2textsec5.htm”](http://www.nidcr.nih.gov/spectrum/nidcr2/2textsec5.htm);
- [“www.umanitoba.ca/outreach/wisdomtooth/drymouth.htm”](http://www.umanitoba.ca/outreach/wisdomtooth/drymouth.htm). ■

care providers, physicians, patients, pharmaceutical manufacturers, the insurance industry and ADA members. The report was approved by the 2001 House of Delegates Oct. 17.