

Halitosis, commonly referred to as bad breath, is an unpleasant odor emanating from the mouth. It is a common problem that leads to social anxiety and embarrassment. Medical causes of chronic bad breath include certain medications, chronic sinus infections, acid reflux, respiratory tract infections, diabetes, liver or kidney problems, and dry mouth. Depending on the underlying cause, the medical treatment may involve prescription medications, lifestyle changes, and possibly even surgery.

Today bad breath is a manageable diagnosis, yet its victims are linked to general social anxiety disorder (social phobia), an intense fear of interacting or talking with strangers. It is one of the most unattractive issues during social interactions, with the potential to cause considerable personal discomfort and social embarrassment [1]. A 2011 study regarding genuine halitosis patients concluded that anxiety exhibited prior to oral malodor treatment did not dissipate after treatment due to their general social anxiety disorder [2]. An additional study investigated the relationship between the degree of general social anxiety disorder and the amount of improvement of anxiety contingent on oral malodor in patients with halitosis. Results showed that 22.9% of genuine halitosis patients had a tendency for general social anxiety disorder [3]. Furthermore, anxiety about the oral malodor in genuine halitosis patients was only improved by treating the general social anxiety disorder in addition to treating the oral malodor. Some treatment regimens for social anxiety disorder include cognitive-behavioral therapy. Dentists in oral malodor clinics cooperate with staff from other departments and test for social anxiety disorder in addition to performing regular oral malodor treatment.

In contrast to the current society zeitgeist, Talmudic scholars recorded bad breath as a “major disability” citing Torah scripture [4]. Most concern falls within marriage and the laws of the priests (*kohanim*). Marriage, both a holy and a social bond, can be adversely affected by bad breath in either spouse. In the Talmud (Ketubot 72b, 77a) bad breath is considered a serious disability regarding spouses and priests. In a Jewish marriage, if the husband detects a serious disability in his wife that was not disclosed prior to the wedding, he can annul the marriage and summarily void the marriage contract. These disabilities include ungainly breasts, a thick voice, non-obvious lesions of the head and neck, sweat, and oral malodor (Ketubot 75a). The Rambam later added that both nasal and oral bad breath are considered equally valid grounds for divorce. Even more so, a widow is able to overlook *yibum* if halitosis runs in the family of her deceased husband (Maimonides, Hilchot Ishut 25:13). Furthermore, halitosis is also seen as a disability prohibiting *kohanim* with bad breath to work in the Temple [5]. Interestingly, the Rabbinic Authorities provide a solution for the *kohanim*, “to place a pepper in his mouth” (Ketubot 75a), suggesting this is a reversible condition.

There are many remedies the Talmud discusses to help manage and treat severe bad breath. The two with the most notoriety have antibacterial properties. The first is mastic gum, a hard gum resin from the *Pistacia lentiscus* tree. *Tosefta Shabbat* (8:7) states: “It is forbidden to chew mastic on *Shabbat*, yet it is permitted for the prevention of oral malodor.” This emphasizes the importance of maintaining good oral hygiene, and how its importance overrides the keeping of *Shabbat*. The second remedy is an oil-water mouthwash [5]. The story of Rabbi Yohanan and his readily bleeding gum offers insight. Rav Yohanan was advised to use a mixture of

leavening water (possibly the water left over after kneading dough), salt, and olive oil (Avodah Zara 28a). The mixture has emulsifying tendencies, and when the mouthwash was used it subsided the bad odors present in the oral cavity. In addition to these remedies, it was common to use ginger and other aromatic spices as breath fresheners (Shabbat 65a).

Furthermore, when tackling halitosis, it could be beneficial to keep a holistic approach in mind. Holistic medicine is a form of healing that considers the whole person, which includes a variety of therapies usually focused on nutrition and herbal remedies. Two herbal remedies to be explored are green tea and cinnamon oil. Green tea is an antioxidant-rich beverage made from the leaves of the *Camellia sinensis* plant. Studies suggested the main antioxidant in green tea, epigallocatechin-3-gallate (EGCG), may have many beneficial effects on health, including antibacterial properties. A 2013 study found that EGCG triggered cells in the gums to release an antimicrobial chemical that targeted *Porphyromonas gingivalis*, a bacterium that contributes to gum disease and halitosis [6]. A 2015 study also showed that green tea extract and EGCG reduced the growth of *Solobacterium moorei*, another bacterium that contributes to halitosis. Additionally, these treatments reduced the ability of *S. moorei* to produce chemicals that cause halitosis. Similar results were noted with cinnamon oil. A 2017 study showed that cinnamon oil had antibacterial properties against *S. moorei* and reduced levels of the volatile hydrogen sulfide [6]. The concern with using cinnamon oil was the misconception that it was abrasive to the gums; however, was shown to be unfounded. Additional research with human participants is necessary to determine the efficacy of green tea and cinnamon oil in reducing halitosis. Talmudic scripture (Shabbat 65a) suggests

that these home remedies were practiced in the past [7]. Herbal teas composed of fennel seeds, anise, cardamom, or cloves were encouraged to be consumed following big meals, especially those containing pungent flavors.

Ultimately, halitosis, once considered to be a disability, has become a very manageable condition. Cases of severe halitosis usually signal other medical problems, such as liver disease or poor kidney function. Talmudic scripture highlighted the issue of halitosis in marriage and in *cohanim* work in the Temple, highlighting how bad breath can heavily strain personal relations. The scripture has offered many natural home remedies in dealing with halitosis, using natural herbs and spices, mastic gum, and an oil-water mouthwash mixture to maintain personal oral health. Some of these ancient remedies were then explored today and have proven to have antibacterial properties. With the right lifestyle changes and treatment the patient with halitosis can overcome this adversity.

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[7] Shabbat 65a