Common Vocal Remedies: What Are They and Do They Really Work?, Part 2

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MARKETED BY KESTREL MEDICAL LTD. in Broadstone, UK as a formulation for singers, actors, and voice professionals, Vocal Zone Pastilles are a popular option among many celebrities for relieving dry or irritated throats from excessive singing, speaking, or smoking. This product also has a rich and interesting history. In 1907, an otolaryngologist named William Floyd produced a treatment he called “Vocalzone” as a voice remedy for the great Italian opera singer Enrico Caruso. His product gained such popularity that it is (supposedly) still being sold in its original formulation today.1

Ingredients in Vocal Zone Pastilles includes Levomenthol 1.07%, Peppermint oil 0.54%, and Myrrh Tincture 1.39%, as well as sucrose, glucose, Crystal Tex 85, vegetable oil, liquorice extract, beeswax, and purified water.2 Peppermint leaves yield a volatile oil that is composed primarily of menthol and menthone. Evidence-based medicine has demonstrated peppermint oil to be beneficial in preventing and relieving intestinal gas, indigestion, and irritable bowel syndrome-related intestinal spasms. This physiologic mechanism is due to smooth muscle relaxation in the GI tract, and thus peppermint oil is contraindicated in conditions such as hiatal hernias, severe gastroesophageal reflux, and gall bladder disorders.3 Further, peppermint oil may cause symptoms of heartburn.4 Additionally, peppermint oil has been shown to be effective topically for analgesia and muscle relaxation, and in mouthwash to relieve gum inflammation.5 Commission E approved peppermint oil for relief of the common cold, cough, bronchitis, and inflammation of the mouth and pharynx.6

Interestingly, an animal study has shown that peppermint oil has an anti-spasmodic effect on tracheal smooth muscle in rats. The study found that the mechanism likely involves two well studied chemical mediators that promote bronchial relaxation, nitric oxide, and prostaglandin E2, possibly explaining the popular use of peppermint oil in respiratory diseases.7 Use of peppermint oil should be avoided in children due to potential for asthma-like attacks and possible respiratory failure; however, the dosage used in Vocal Zone is likely too minimal for this to occur.

Myrrh’s use in analgesia and wound cleaning dates back more than 2,000 years, prior to the discovery of morphine.8 A number of studies have explored...
the anti-inflammatory and analgesic activities of myrrh; thus, there is support for using myrrh to treat various diseases associated with inflammatory pain, such as rheumatoid arthritis.\textsuperscript{10} Commission E has also approved myrrh for treatment of conditions involving inflammation of the mouth and pharynx. Unproven uses for myrrh include topical treatment of mild infections of the oral and pharyngeal mucosa and as an expectorant for cough. Myrrh is contraindicated during pregnancy, although there are no known hazardous side effects associated with therapeutic dosages.\textsuperscript{11} Those who choose to use this product should do so with caution, as it may mask the protective physiologic response of pain.

**VITA VOCAL THROAT AND VOICE ENHANCER**

Vita Vocal Health (New York, New York) markets their Throat and Voice Enhancer to singers, promising to “assist” in strengthening the voice, enhancing vocal clarity, soothing the throat, minimizing dryness, and preventing vocal fold inflammation. They also claim that it may help with laryngitis. Like many of the other products discussed in this review, the marketers use words like “assist” and “may help” to avoid making “guarantees” to their consumers, because there are no substantial clinical trials evaluating the efficacy of the product. Throat and Voice Enhancer is taken as two capsules, each 400mg of a proprietary blend of herbs and natural flavors.\textsuperscript{12} Many of the herbs in this product have been discussed already, such as osha root, Echinacea, slippery elm bark, licorice root, and marshmallow root. Additionally, this product contains vitamin B-12, a vitamin that is rarely deficient in an average healthy person because the body stores it for very long periods of time. The product label does not provide the consumer with the specific amount of vitamin B-12. Throat and Voice Enhancer also contains chamomile, eucalyptus, and wild cherry bark for flavoring and its desired soothing effect. However, eucalyptus can be a laryngeal irritant.

The first ingredient listed on the bottle in Throat and Voice Enhancer is American ginseng root. Many clinical trials have assessed the safety and efficacy of ginseng in preventing cold symptoms. Commission E approved its use for lack of stamina, fatigue, and decreased concentration.\textsuperscript{13} In a 227 person trial, Scaglione et al. demonstrated that 100mg of the ginseng extract G15 used daily decreased the incidence and duration of cold symptoms in influenza-vaccinated adults compared to adults who received the vaccine alone.\textsuperscript{14} It also increased the amount of antibodies, natural killer cells, and phagocytes in the blood, which are all involved in the immune system. Two similar studies were done in geriatric populations evaluating the extract CVT-E002.\textsuperscript{15} Influenza-vaccinated volunteers older than sixty-five years who took 400mg per day of CVT-E002 for four months had decreased incidence and duration of acute respiratory symptoms during November and December.\textsuperscript{16} Additionally, doses up to 600mg three times per day of ginseng extract were shown to be safe and well tolerated in children when used for a short period of time.\textsuperscript{17}

It is important to point out that these studies evaluating the efficacy of ginseng have used specific doses of specific ginseng extracts. The product in question, Throat and Voice Enhancer, contains a total of 400mg of all its ingredients. As far as the authors of this paper are aware, the ginseng included in Throat and Voice Enhancer is not a specific extract, nor is the dosage or mechanism of extraction known.

**SPROUT’S VOICE REMEDY**

Sprout’s Voice Remedy, manufactured by Kosher Vitamins in Brooklyn, NY, contains slippery elm bark, fennel seed, horseradish root, thyme herb, and celery seed in a proprietary herbal blend. It is advertised as an effective treatment for hoarseness, congestion, and inflammation. It is recommended for use three to four hours prior to performing or speaking. The product is administered by a dropper that dispels 25 mL in water once to twice per day, or as needed.\textsuperscript{18} To our knowledge, no clinical trials investigating the effectiveness of Sprout’s in comparison to other voice remedies or placebo have been published. We will therefore focus on uses that have been supported by Commission E.

Slippery elm bark, discussed as an ingredient in other remedies aforementioned, acts as a demulcent and an emollient that is soothing to the alimentary canal.\textsuperscript{19} Fennel seed promotes gastrointestinal motility and is antispasmodic. Two ingredients in fennel seed have been shown to suppress secretions in the respiratory tracts of frogs. Fennel extracts also have been shown to enhance...
mucociliary clearance, facilitating removal of mucus and preventing pathogen invasion into respiratory epithelium. Commission E approved fennel oil for treatment of cough and bronchitis. Its use is contraindicated in pregnant women and small children.20

Horseradish root has antimicrobial, hyperemic, and carcinostatic properties, and is approved by Commission E for cough and bronchitis. Unproven uses for horseradish root include treatment of respiratory tract inflammation and as supportive therapy for respiratory tract infections.21

Thyme is a bronchial antispasmodic, expectorant, and antibacterial agent. Commission E approved its use for cough and bronchitis. Though its effectiveness has not been proven, the herb was used initially for thinning upper respiratory tract secretions, asthma, laryngitis, and whooping cough. Externally, it has been used as a mouthwash to treat inflammation of the mouth and throat, although its effectiveness in doing so has not been proven.22

Use of celery seed as a cough treatment has been reported, but its effectiveness has not been validated.23

**HOME REMEDIES**

Many singers use recipes for voice remedies that combine several easy-to-obtain ingredients in the comfort of their own homes. One particular recipe, Singer’s Tea, contains one fresh ginger root, six ounces of apple juice concentrate, juice from one fresh lemon, one-third cup of honey, and one-quarter teaspoon of cayenne pepper. Vocalists may choose to drink Singer’s Tea during a rehearsal or recording session. The warm liquid is said to humidify, lubricate, and thin mucosal secretions.

Honey is more than just a sweet spreadable substance produced by bees. Its clinical effectiveness in promoting wound healing has been well established.24 Honey also has immunomodulatory, antioxidant, and antimicrobial capacities.25 Studies have shown that single dose treatment with honey was superior to over-the-counter cough medication for treatment of nocturnal childhood cough.26 Another study showed that treatment of persistent postinfectious cough with honey and caffeine was more effective than systemic steroid treatment.27 Interestingly, intraoperative administration and post-op consumption of honey after adenotonsillectomy and tonsillectomy in children led to improved healing and decreased use of pain killers.28 This finding may suggest that swallowing honey may have beneficial effects on inflammation and healing in the upper aerodigestive tract.

Cayenne pepper contains capsaicin, a substance that has vasodilatory, analgesic, and antimicrobial properties. Clinical trials have demonstrated its positive effects on pain modulation as well as its gastroprotective effects. Commission E approved capsaicin for muscular tension and rheumatism. Unproven uses include gargling to treat hoarseness and pharyngitis.29 Cayenne pepper may relieve symptoms of laryngitis by lessening the pain associated with inflammation and promoting healing by dilating surrounding blood vessels, which enhances diffusion of oxygen and nutrients.

Singer’s gargle is another home remedy that contains a half teaspoon of baking soda half teaspoon of salt, 1 tablespoon of honey, and 8 ounces of warm water. Instructions state to “gargle quietly and gently for two long, boring minutes. Do not rinse and use as often as necessary to help your dry, irritated throat.” Of note, gargling has been found to have little proven efficacy; and loud, forceful gargling may be phonotraumatic. Any beneficial effects that a gargle solution contains last only briefly after spitting out the solution. However, if the process doesn’t involve loud and aggressive vocalization, gargling is not likely to be harmful.

Baking soda is sodium bicarbonate, a basic substance that can be used as an antacid. It may buffer and soothe acidic tissues that are present during a cold or due to acid reflux. As an added bonus, baking soda has a teeth whitening effect. However, it is important to exercise caution when using baking soda. Misuse has been reported to cause significant electrolyte and acid-base abnormalities, abdominal pain, vomiting, drowsiness and lethargy.30

**DISCUSSION**

Herbal teas, sprays, lozenges, and capsules are extremely popular among singers and performers. Many of the active ingredients in these herbal remedies have been shown to have valuable properties in vitro, in animal studies, and in some human clinical trials. However, the actual amount, potency, and rheological characteristics of the active components in each product are affected by
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extraction conditions (temperature, time, pH, ratio of water to solid), extraction techniques, and genus type. Without well controlled clinical trials, it is difficult to assess whether these singing products objectively or subjectively improve the singing voice. At least, according to the current, limited amount of literature, it appears that none of the discussed remedies cause significant harm if used as recommended. Products with possible analgesic effects, such as Vocal Zone pastilles, should be used with caution in vocalists as they can mask pain, possibly leading to injury; and products that may irritate laryngeal mucosa, relax the lower esophageal sphincter, or increase ingested acidity require caution and further study.

While marketed by different companies under different names, the products discussed in this article share many of the same ingredients, many of which act in some way as a demulcent. Therefore, a relevant question is whether one form (spray, lozenge, pill, or tea) has an advantage over the others in delivering the active ingredients. Limb et al. explored this question using a technique called scintigraphy. In scintigraphy, a radioisotope, such as Technetium-99m, is ingested. The radioisotope emits radiation, which is captured by a camera to assess its location in the body. In the study, lozenges, tablets, spray, and gargle were labeled with Technetium-99m and administered to volunteers. Images were then obtained to localize the radioisotope distribution immediately after lozenge/tablet placement in the mouth, spray followed by swallow, or gargle followed by spit. Images also were obtained at time intervals up to two hours postadministration. Limb et al. found that a significantly larger percentage of the metered dose was deposited initially in the mouth using a lozenge or tablet. Only 5% of the spray and less of the other formulations was deposited initially in the throat. After 20 minutes, significantly more Technetium-99m from the lozenge remained in the mouth and throat than any other formulation. Over the two-hour span, the lozenge delivered the most Technetium-99m to the mouth and throat combined. However, the spray delivered more to the throat alone. Both the lozenge and spray showed low, but detectable, levels of Technetium-99m for up to 2 hours postadministration in the mouth and throat. The gargle was by far the least effective in delivering the radioisotope; its presence in the mouth and throat was lost soon after spitting out the solution. Based on this study, a lozenge or spray form of a demulcent would be more effective than a tablet or gargle. The effect of tea would likely be similar to that of a lozenge, but evidence to confirm that speculation is lacking.

The supraglottic larynx, pharynx, palate, oral cavity, nasal cavity, tongue, lips, and sinuses are all part of the conduction system for the voice. Therefore, appropriate moisture and decreased irritation in these regions may make singing more comfortable and improve the quality of the sound. Nasal breathing filters, warms, and humidifies air, and therefore should be used whenever possible. The lubricating remedies discussed in this paper may be beneficial in rapidly relieving mucosal dryness that occurs after being exposed to dry air on airplanes, smoke filled rooms, and artificial fog.

Just as dry mucosa can cause changes in voice quality, copious and viscous mucosal secretions also can cause detrimental changes in the voice. This effect can be caused by foods like milk and chocolate. Spicy foods can irritate the mouth and throat and increase symptoms of reflux laryngitis. Singers should avoid these foods if they experience any of these effects. Vocalists should also remain hydrated to ensure proper lubrication of the laryngeal mucosa. Diuretics, alcohol, caffeine, and fluid loss from vomiting and diarrhea can cause systemic dehydration, which can alter the moisture of the larynx and voice conduction system. None of the products discussed is a substitute for adequate hydration.

It is believed that proper oscillation of the vocal folds requires both adequate systemic hydration and adequate flux of fluid and electrolytes across the laryngeal mucosa to provide a thin, liquid layer of lubricant over the vocal folds. Numerous studies have been published evaluating the vocal effects of hypertonic, hypotonic, and isotonic steam delivered via a nebulizer to healthy, nonsingers. A nebulizer is a device used to deliver a mist to the larynx and lungs. It is a common method used to deliver asthma medication. These previous small studies showed that inhaled dry air increased the phonatory threshold pressure (PTP) and self-perceived phonatory effort (PPE). We have already discussed one study investigating Entertainer’s Secret Spray, and here we look at the results of two similar studies evaluating the effects in classically trained singers.

The first study assessed the PTP and PPE in thirty-four classically trained female sopranos. Participants inhaled
Dry air through the mouth for fifteen minutes, followed by nebulized isotonic saline, sterile water (hypotonic), or no treatment. Singers received a different therapy each week. The PTP and PPE were then recorded at time intervals up to two hours while singing in the upper passaggio. It was presumed that the upper passaggio is the range most susceptible to surface tissue dehydration. The results showed that PTP did not change significantly following laryngeal desiccation; however, the PPE did increase significantly. In the isotonic saline group, the PPE values were near baseline by five minutes posttreatment and did return to baseline by 110 minutes. In the sterile water group, the PPE did not return to baseline in the two-hour period. These results indicate that isotonic saline promotes immediate relief for perceived laryngeal dryness. It appears to act as a lubricant, and because it has the same tonicity, or concentration, of the tissue it does not affect the flow of electrolytes or water. Sterile water is hypotonic relative to the tissue; and therefore water is more likely to move into the tissue causing thickening and drying of the surface fluid. The absence of change in PTP suggests that singers, unlike nonsingers, may be able to compensate for the physiologic changes of laryngeal desiccation. This may have led to the significant increase in the perceived phonatory effort (PPE).37

The second important study by Tanner et al. evaluated the effects of nebulized isotonic saline in young, healthy male singers compared to nonsingers.38 In both groups, the PTP, a measure of the physiologic response to desiccation, remained unchanged following laryngeal desiccation. Additionally, both groups perceived an increase in vocal effort, mouth dryness, and throat dryness postdesiccation and a decrease postnebulization. However, the self-perceived effects were greater in nonsingers but had shorter duration, whereas the singers reported a smaller increase in vocal effort and dryness, but the effects lasted longer. This suggests that trained vocalists may possess an advantage over nonsingers that allows them to adapt to dry conditions. It is also possible that the expectation of drying effects influenced the rating of self-perceived measures. Finally, the gender difference in self-perceived measures is worth noting. Classically trained female sopranos reported twice the increase in vocal effort postdesiccation, even though the men received dry air for twice the amount of time. This suggests that males may be less susceptible to laryngeal dehydration. It has been postulated that a deeper position of the male larynx in the neck facilitates humidification and warming of the air.39 Nonetheless, both studies in singers provide evidence that isotonic saline inhalation is beneficial to singers.

All of the products discussed in this review have the potential to provide relief of symptoms. The authors of this paper do not recommend any specific product over another. If desired, performers should experiment with these products and choose the one that provides the desired effect. Above all, singers must listen to their bodies, heed warning signs, avoid masking symptoms, and seek the care and guidance of a laryngologist when vocal health is in question.

NOTES

2. Ibid.
9. Shulan Su, Jinao Duan, Ting Chen, Xiaochen Huang, Erxin Shang, Li Yu, Kaifeng Wei, Yue Zhu, Jianming Guo, Sheng Guo, Pei Liu, Dawei Oian, and Yuping Tang, “Frankincense and myrrh suppress inflammation via regulation of the metabolic profiling and the MAPK signaling pathway,” Scientific Reports 5, no. 13668 (September 2015); DOI:10.1038/srep13668.


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