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SPECIFICATION

TITLE

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ORAL ODOR CONTROL METHOD AND PRODUCT

BACKGROUND OF THE INVENTION

Field of the Invention

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The present invention relates generally to method and product to control malodors from a human mouth, and in particular to an oral care product and method for use by a human, wherein the oral care product includes an odor neutralizer.

Description of the Related Art

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Mouth odors, also referred to as halitosis or bad breath, is a common problem which has many possible causes and for which many solutions have been proposed. Products used to address bad breath include toothpastes, mouth washes and mouth rinses, tongue scrapers, chewing gum, breath mints, breath sprays, as well as home made solutions such as baking soda, hydrogen peroxide, leafy plants such as parsley, and other items and materials. Although solutions can lie in improved dental care and avoidance of certain foods, many

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mouth odors are merely masked by flavored products being offered on the market.

It would be a benefit if mouth odors, and in particular malodors or bad breath, were addressed by a product that neutralizes the odor rather than merely masking the odor.

SUMMARY OF THE INVENTION

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The present invention provides a method and product for addressing the problem of bad breath or mouth odors by neutralizing malodor molecules in the mouth and emitted from the mouth. An odor neutralizing agent is incorporated into a mouth care product so that as the person uses the mouth care product the odor neutralizing agent has an opportunity to eliminate or neutralize the malodor. The mouth care product may be a product kept in the mouth for a short period, such a mouth rinse or toothpaste, or a product that is

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kept in the mouth for a longer time, such as a lozenge or chewing gum. The user may use the

5 mouth care product in the normal way and, while the product is being used, the odor neutralizing agent captures malodor molecules in the mouth so as to reduce or eliminate the malodor.

The method in an alternate embodiment provides that the mouth care product incorporating the odor neutralizing agent may be used in a different or non-traditional way
10 *than is typical for the product, which is also encompassed within the present invention.*

Embodiments of the present invention also provide a product, such as a mouth care product, that incorporates an odor neutralizing agent. The product may be any of a variety of products such as products for oral or dental care including mouth rinse, mouthwash, and tooth paste, as well as products used more for odor control including
15 lozenges, breath mints, breath freshening wafers, chewing gum, and the like. The product may also be a nasal care product or even an ingestible product. The odor neutralizing agent is incorporated into the product in an effective amount so that, as the user uses the product, the neutralizing agent captures and thereby eliminates the bad odor causing capability of the malodor compounds.

20 Embodiments of the present invention also provide a method of manufacture for products used to reduce or eliminate mouth odors. In one such embodiment, concentrated flavoring agents are provided with a quantity of an odor neutralizing agent. The concentrated flavor material with the odor neutralizing agent therein is mixed into the materials during manufacture of the mouth care product so that the resulting product includes not only the
25 flavoring agent but also the odor neutralizing agent. The flavoring agent with the neutralizing agent may be provided in the usual quantities for flavoring agents during the manufacture of the product.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a flow chart of steps in an embodiment of the method according to
30 the principles of the present invention;

Figure 2 is a schematic illustration of a product according to the present invention; and

5 **Appendix sheets 1 and 2** show chemical diagrams of examples of compounds according to the principles of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, there is shown in **Figure 1** a method 10 for manufacture and use of a product for control of mouth odors. In a first step 12, a flavoring agent is provided in highly concentrated form. Alternately, the flavoring agent may be prepared in a lower concentration or diluted form. Any flavor is possible, although peppermint, spearmint, wintergreen, cinnamon, bubblegum, anise and fruit flavors are popular. More exotic or unusual flavors are also possible including chocolate, peanut butter, pine, tea, fennel, lavender, ginger, neem, or vanilla. The flavoring agent may be any known flavoring agent as used in mouth care products or in products used in the mouth. Instead of a flavoring agent, the present method may provide other materials or components which are used in the manufacture of mouth care products. For example, the method may provide that a base material, binder, thickener, preservative or other material or components used to manufacture oral care products is provided in the first step.

20 In step 14, an odor neutralizing compound is added to the flavoring agent or other material. The odor neutralizing compound of a preferred embodiment is the O.M. Complex oral compound, a proprietary product of Belle-Aire Fragrances, Inc. The O.M. Complex oral (a trademark of Belle-Aire Fragrances, Inc.) compound in one embodiment is mixed into the concentrated flavoring agent at an amount of 0.20-5.00% O.M. Complex oral compound by volume to the remainder of flavoring concentrate. Other concentrations are possible, depending on other factors, such as the concentration level of the flavoring agent.

In step 16, the concentrated flavoring agent which includes the odor O.M. Complex oral compound is used as a component in the manufacture of oral care products. For instance, the flavoring agent may be added at the usual time and in the usual percentage or quantity and in the usual way as flavoring agents in known oral care products. The concentrated flavoring agent is typically added in a small percentage to provide the dominant flavor for the product. In the present method, the flavoring agent with the odor O.M.

5 Complex oral compound is added to flavor the product, although other materials containing the odor O.M. Complex oral compound may be used in the manufacture of the oral care product instead. The product produced according to step 16 may include oral care products, which includes oral use products, such as mouthwash, mouth rinse, toothpaste, lozenges, breath mints, breath sprays, breath wafers, and chewing gum by adding the flavoring agent
10 with the O.M. Complex oral compound at about 0.20% to 5.00% per volume. The resulting level of O.M. Complex oral compound in the product is preferably in the range of 0.00020 to 0.01% per volume. This is just one example, and other levels of O.M. Complex oral compound in the product may be provided as well. For example, the O.M. Complex oral compound may range from 0.000001 to 0.000006 P.P.M. in the oral care product. Other
15 ranges are contemplated according to the principles of the present invention. The O.M. Complex oral compound may be added to or incorporated into an oral care product with or without flavoring agents or components. For example, it is within the scope of the present invention to provide the O.M. Complex oral compound in an oral care product manufactured with a natural flavoring agent that has not been added in highly concentrated form. For
20 products such as toothpicks, tooth brushes, dental floss, oral swabs, tongue scrapers or tongue cleaners and other non-liquidous products, the odor neutralizing compound may be provided as a coating on the product, or by impregnating a porous product body with the neutralizing compound, or otherwise carrying the neutralizing compound into the mouth.

The oral care product that includes the odor O.M. Complex oral compound is
25 provided to users. The oral care product may be toothpaste, mouthwash or rinse, chewing gum, breath mints, candies, lozenges, breath sprays, breath wafers, tooth picks, tooth brushes, tongue cleaners or scrapers, or other products. The products may be provided for the primary purpose of mouth odor control or for some other primary purpose, including tooth cleaning, fluoride treatment, food residue removal, plaque removal, tooth stain removal, etc. A
30 schematic representation of an oral care product is shown in **Figure 2**, wherein the product is indicated by reference number 22 and the odor encapsulating compound in the product is indicated as 24.

The user uses the oral care product 22 as shown at step 18 of **Figure 1**. The use may be according to the customary use of the product, such as rinsing with a mouth rinse,

5 chewing a chewing gum product, brushing the user's teeth with a toothpaste product, or dissolving a lozenge in the mouth. The oral care product 22 may be used for a longer or shorter period of time than customary, or used in a different way than customary, according to variations in the present method.

During and/or following use of the oral care product 22, the odor O.M.
10 Complex oral compound acts to neutralize the odor causing compounds, so that the user's bad breath is neutralized, as indicated at step 20 in **Figure 1**.

The present invention relates to an oral compositor for the control of oral malodors. Oral compositor refers to a complex application to the oral cavity to clean and deodorize the teeth and oral cavity surfaces. Oral malodor is caused by the activity of
15 microorganisms on dental plaque adhering to salivary elements to produce sulfur compounds. These sulfur compounds consist of V.S.C. (volatile sulfur compounds) such as hydrogen sulfide (H_2S), methyl mercaptane ($(CH_3)SH$), and dimethyl sulfide ($(CH_3)_2S$) and others. Previous methods of inhibiting the volatile sulfur compounds (V.S.C.) to reduce oral malodor have been antimicrobials such as cetyl pyridim chloride and triclosan. These antimicrobials
20 can cause staining of the teeth & absorption on the soft tissue in the mouth. An oral composite (O.M. Complex oral) containing natural and related aromatics with zinc complexes act in a synergistic way, so that mouth malodor is eliminated. Cysteine and methionine are sulfur containing amino acids that serve as substrates for bacteria producing volatile sulfur compounds in the mouth. It is believed that the O.M. Complex oral with its
25 affinity for volatile sulfur compounds (V.S.C.) such as H_2S , $(CH_3)SH$, and $(CH_3)_2S$ inhibits the generation of V.S.C. precursors. O.M. Complex oral reacts with thiol groups of volatile sulfur compounds (V.S.C.) therefore neutralizing their effect by producing non-volatile components.

The present invention relates to an oral composition for controlling mouth
30 malodor consisting of an oral composition consisting essentially of an orally acceptable vehicle (in one example, a flavor) containing a O.M. Complex of about 0.0025% to 5.00%. The composition is as follows ionones, alpha, beta, and gamma (see Appendix sheet 1) containing a carbonyl group. The term ionone includes isomeric forms and forms of ionones

5 such as irone (see Appendix sheet 2). Aldehydes such as cyclamen aldehyde (see Appendix sheet 1) at levels of 0.02% to 10.00% and naturals such as oil of cardamom, orris, and violet at levels of 0.002% to 0.10% may be included. The natural and related aromatics with the addition of zinc complexes useful in the present method are oil of cardamom, oil of violet leaves, orris concrete, ionone, irone, cyclamen aldehyde, zinc acetate, zinc citrate (see
10 Appendix sheet 2), zinc lactate (see Appendix sheet 2), and zinc gluconate (see Appendix sheet 2).

The compounds known as O.M. Complex oral has the ability to neutralize volatile sulfur compound (V.S.C.) in the mouth where oral malodor is present at levels 200 -- 300 PPB and even as high as 350 -- 400 PPB. These levels are considered noticeable by an
15 observer standing several feet away from the patient or other person. Flavoring agents may be added to O.M. Complex oral compound in the product. Suitable flavoring agents include oil peppermint, oil spearmint, oil clove, oil wintergreen, and oil sassafras. Sweetening agents which can be used, including sweetening agents such as include aspartame, saccharin, and dextrose. Flavoring and sweetening agents may be used in the oral care product at levels of
20 0.002% - 3.0% by weight.

The combination of ionone, irone, and cyclamen aldehyde with the addition of zinc salts splits and naturals such as oil of cardamom, violet leaves, and orris absolute in a preferred embodiment has a synergistic effect by complexing and eliminating oral malodor for long periods of time depending on the individual.

25 A method of controlling mouth odor or bad breath, using an oral compound is provided. The oral compound may contain natural and related aromatics with the addition of zinc complexes. This composition may be used in conjunction with a flavoring agent at an appropriate level in the oral care product. The oral care product provides a breath neutralizing function, and may be in the form of mouth wash, toothpaste, powder tablet, pill,
30 dental cream or chewing gum. The O.M. Complex oral neutralizer is effective against hydrogen sulfide, methyl mercaptan and dimethyl sulfide, as well as potentially other volatile sulfur compounds (V.S.C.)

5 The O.M. Complex oral component of the product operates to provide
molecular nucleophilic substitution of odor causing chemicals, particularly those that include
a sulfur component. For instance, the product with the O.M. Complex oral component
neutralizes materials known to cause mouth odors, such as hydrogen sulfide, dimethyl
sulfide, other sulfur compounds, methyl mercaptan and other captals, thiazine, cadaverine,
10 putrescine, skatole, isovaleric acid, as well as others. The mouth odors may arise from a
combination of one of these compounds or from two or more of the compounds. These odor
causing compounds arise in the mouth and below the gum line as a result of anaerobic
conditions and are produced by anaerobic bacteria and/or food residue. Malodors may also
arise in the digestive tract. Odor causing compounds may also originate in the nasal or sinus
15 cavities, throat, or other areas of the person. An oral use product as provided herein is
capable of reducing or eliminating any such odors that are expelled by mouth.

 The product containing the O.M. Complex oral compound is used by a patient
or other person, such as by using mouth wash, tooth paste, chewing gum, an oral swab,
mouth sprays or other products containing the O.M. Complex oral compound, causing the
20 O.M. Complex oral compound in the product to come into contact with the odor causing
compounds in the mouth so that substitution reactions occurs between the O.M. Complex oral
compound and the odor causing compounds. The contact may be by direct physical contact
of the oral care product with mouth surfaces on which the odor causing compounds are
disposed, by contact with the odor causing compounds in liquid suspension or otherwise
25 carried by liquids in the mouth, or by contact with airborne compounds. The odor
neutralizing effect may be accelerated by agitation of the oral care product in the mouth by
the user, such as by swishing the oral care product around the inside of the mouth or by
brushing or swabbing the product in the mouth. Odors are neutralized as well by still or
relatively still contact between the compounds, such as may occur when a residue of the oral
30 care product remains in the mouth. At least some of the oral care product containing the
O.M. Complex oral compound may remain in the mouth for a time as a coating or residue so
that the neutralizing effect on the odor causing compounds occurs over an extended time after
use of the oral care product.

5 It is also contemplated to provide the care product with the neutralizing compound as a nasal spray, nasal swab, nasal flush or other nasal cavity care product, or to provide the product as an ingestible product, for instance in the form of a pill or capsule, which acts within the digestive tract.

 Contact between the oral care product and the odor causing compounds results
10 in a reaction that chemically changes the character of the odor causing compound so that it no longer has the offensive odor. Alternately, the odor causing compound is captured by the O.M. Complex oral compound. The user of the oral care product and those nearby are unable to smell the odor causing compounds as a result of the compounds being neutralized, or are they may be able to detect them but at greatly reduced levels. Any bad breath of the user is
15 eliminated or greatly reduced, to the benefit of the user in social situations.

 Many breath freshener products address problems of breath odor by bactericidal action or bacteriastatic action. The bacteria may reside in areas below the gum line, between teeth or other areas not reached by the bactericidal agent so that the bactericide is ineffective at killing the bacteria or removing the odor, and further even if the bacteria are
20 killed their odor causing by-products may remain. The present product differs from such products by neutralizing the odor caused by the bacterial by-products, for example. The odor neutralization is through natural substitution of at least a portion of one or more of the compounds that cause the offending odor, thereby providing a neutralizability action for odor control. Another way of describing the action of the present product is aromasticity.

25 The present odor O.M. Complex oral compound of some embodiments do not contain bactericidal agents, whereas other embodiments of the O.M. Complex oral compound may contain one or more bactericidal agents to both kill the bacteria that form the odor causing compounds and with the action of the O.M. Complex oral compound to neutralize their odor causing compounds. The flavoring agent with which the O.M. Complex oral
30 compound is mixed in the oral care product, such as mint or other flavors, may serve to freshen the breath as well.

5 Products incorporating the O.M. Complex oral component at the levels noted herein have proven safe, and the O.M. Complex Oral component has been food grade approved, even if ingested.

Thus, there is shown and described an odor reducing product, a method for its manufacture and a method for its use.

10 Although other modifications and changes may be suggested by those skilled in the art, it is the intention of the inventors to embody within the patent warranted hereon all changes and modifications as reasonably and properly come within the scope of their contribution to the art.

5 1 Claim:

1. A method of making an oral care product, comprising the steps of:
providing a concentrated flavoring agent having a flavor to be used in an oral care product;
adding an odor neutralizing agent to the concentrated flavoring agent to provide a mixture of
the flavoring agent with the odor neutralizing agent; and
10 adding the mixture to ingredients of an oral care product during manufacture of the oral care
product to produce the oral care product.
2. A method as claimed in claim 1, wherein the oral care product is one product
selected from the group consisting of: mouth rinse, mouthwash, tooth paste, lozenges, breath
15 mints, breath freshening wafers, oral swab, and chewing gum.
3. A method as claimed in claim 1, wherein said odor neutralizing agent is O.M.
Complex oral compound.
- 20 4. A method as claimed in 1, wherein said odor neutralizing agent is mixed into said
concentrated flavoring agent in an amount of 0.20 to 5.00 percent by volume of the odor
neutralizing agent.
5. A method as claimed in claim 1, wherein said odor neutralizing agent has a
25 concentration in the final oral care product of 0.00020 to 0.01 percent per volume.
6. A method as claimed in claim 1, wherein said odor neutralizing agent has a
concentration in the oral care product of 0.000001 to 0.000006 parts per million.
- 30 7. A method as claimed in claim 1, wherein said flavoring agent is an agent selected
from the group consisting of: peppermint, spearmint, wintergreen, cinnamon, bubblegum,
anise, fruit flavors, chocolate, peanut butter, pine, tea, fennel, lavender, ginger, neem, and
vanilla.

5 8. An oral or nasal care product, comprising:

a base oral or nasal care product; and

an odor neutralizing compound incorporated with said base oral or nasal care product.

9. An oral or nasal care product as claimed in claim 8, wherein said odor neutralizing
10 compound is mixed into said base oral or nasal care product.

10. An oral or nasal care product as claimed in claim 9, wherein said oral or nasal
care product is a product selected from the group consisting of: mouth rinse, mouthwash,
tooth paste, lozenges, breath mints, breath freshening wafers, chewing gum, nasal spray,
15 nasal swab, nasal flush.

11. An oral or nasal care product as claimed in claim 8, wherein said odor
neutralizing compound is coated onto said base oral or nasal care product or impregnated into
said base oral or nasal care product.

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12. An oral or nasal care product as claimed in claim 11, wherein said oral or nasal
care product is a product selected from the group consisting of: toothpicks, a tooth brush,
dental floss, oral swab, tongue scraper, and tongue cleaner.

25 13. An oral or nasal care product as claimed in claim 8, wherein said odor
neutralizing compound comprises: an O.M. Complex of about 0.0025 to 5.00 percent; an
ionone alpha, ionone beta, or ionone gamma containing a carbonyl group; an aldehyde at 0.02
to 10.00 percent; and a natural at 0.002 to 0.10 percent.

30 14. An oral or nasal care product as claimed in claim 13, wherein the natural is one of
oil of cardamom, oil of violet leaves, orris concrete, ionone, irone, cyclamen, zinc acetate,
zinc citrate, zinc lactate, and zinc gluconate.

15. An oral or nasal care product as claimed in claim 8, further comprising:

5 a flavoring agent and a sweetening agent.

16. An oral or nasal care product as claimed in claim 15, wherein said flavoring agent is one of oil peppermint, oil spearmint, oil clove, oil wintergreen, and oil sassafras.

10 17. An oral or nasal care product as claimed in claim 15, wherein said sweetening agent is one of aspartame, saccharin, and dextrose.

18. An oral or nasal care product as claimed in claim 15, wherein said flavoring agent and said sweetening agent are in the oral care product at a level of 0.002 percent to 3.0
15 percent by weight.

19. An oral or nasal care product as claimed in claim 8, further comprising:
ionone, irone, cyclamen aldehyde, zinc salts splits and a natural, wherein said natural is one
of oil of cardamon, violet leaves, and orris absolute.

20 20. An oral or nasal care product as claimed in claim 8, further comprising: a bactericidal agent.

21. A method of neutralizing malodors in a persons mouth, comprising the steps of:
25 using an oral care product including an odor neutralizing agent in a manner typical for that type of oral care product; and
reacting thiol groups of volatile sulfur compounds with the odor neutralizing agent during use of the oral care product.

30 22. An oral care product made by a process comprising the steps of:
providing a concentrated flavoring agent having a flavor to be used in an oral care product;
adding an odor neutralizing agent to the concentrated flavoring agent to provide a mixture of
the flavoring agent with the odor neutralizing agent; and

- 5 adding the mixture to ingredients of an oral care product during manufacture of the oral care product to produce the oral care product.

23. A method of making an oral care product, comprising the steps of:
providing a concentrated flavoring agent having a flavor to be used in an oral care product;
10 adding an odor neutralizing agent to the concentrated flavoring agent to provide a mixture of the flavoring agent with the odor neutralizing agent; and
adding the mixture to ingredients of an oral care product during manufacture of the oral care product to produce the oral care product.

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