Title: PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS AND EQUIPMENT FOR TONGUE CLEANING
“PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS AND EQUIPMENT FOR TONGUE CLEANING”

Field of the invention:

The present invention relates to the field of oral hygiene products, particularly the ones helping treatment and control of bad breath. Through its action it is possible to reduce or decrease the new formation of tongue coating and reduce the concentration and formation of volatile sulfur compounds.

Background of the invention:

Bad breath (whose medical term is halitosis) affects more than 30% of the Brazilian population and research data in another countries denote similar world indexes.

The most frequent cause of bad breath is found in oral cavity and it is called tongue coating, present in more than 90% the cases.

Tongue coating is a bacterial plaque, whitish or yellowish, formed on posterior part of the tongue. It is composed of epithelial cells peeled off the oral mucosa, salivary proteins and food protein remains, which will serve as food substrate to present bacteria (anaerobic proteolytic bacteria). As the bacterial metabolism ends, compounds of bad smell are produced, called Volatile Sulfur Compounds (VSCs). Volatile Sulfur Compounds (VSCs) are gases derived from sulfur: sulfur hydride (SH₂), methyl mercaptane (CH₃SH), and dimethyl sulfide [(CH₃)₂ S]. Once such compounds reach a certain concentration, they provide breath with a characteristic smell of sulfur or rotten egg, and it is nothing but bad breath itself.

Tongue coating is basically formed when we face a decreasing of salivary flow or an epithelial desquamation above physiological limits or even both situations. There are several causes for increasing cell desquamation,
among them desiccation provoked by oral respiration or snoring, frequent ingestion of alcoholic drink or even the use of mouth washing solutions containing alcohol, use of orthodontic appliances and the habit of biting lips and cheeks, among others. Decreasing saliva mainly occurs due to stress and use of medications that diminish the saliva production as a side effect, besides low ingestion of liquids, besides other less frequent causes.

Products used for preventing and treating bad breath, for instance, products for mouth rising, gargling or sprays to improve breath, usually contain alcohol in their formulation, what dehydrates and desiccates oral mucosa, increasing cell desquamation and consequently increasing the formation of tongue coating, since proteolytic bacteria shall decompose these desquamated cells, originating volatile sulfur compounds (VSCs) in such process. Besides, many types of toothpaste contain the detergent sodium lauryl sulfate or similar, which also might desquamate oral mucosa. Thus, a product provided for treating and/or control bad breath, can not contain alcohol or sodium lauryl sulfate or similar in its formulation.

Another important factor is that, among bacteria present in tongue coating, there are bacteria that may cause systemic diseases, such as gastritis and pneumonia, as well as may cause tooth cavities and periodontal disease, which also causes a number of systemic diseases. Therefore, removal and control of tongue coating and the control of its formation are important tools for preventing tooth cavities, periodontal disease, and systemic diseases.

Object of the invention:

It is object of the present invention, therefore, to facilitate the

"release" of tongue coating.

It is also object of the invention to facilitate the removal of
tongue coating.

Yet another object of the invention is to decrease new formations of tongue coating.
Yet another object of the invention is to reduce the concentration and formation of volatile sulfur compounds.

Yet another object of the invention is to prevent tooth cavities, periodontal disease and systemic diseases.

Yet another object of the invention is to reduce the accumulation of bacterial plaque and to prevent gingivitis.

**Summary of the invention:**

These and other objects of the invention may be achieved through a composition, in a gel/cream or spray, developed to facilitate the "release" and posterior removal of tongue coating, decrease of new formations and reduction of concentration and formation of volatile sulfur compounds, until now novel in the art.

Among these, gel/cream and spray are comprised of components common for both, basically comprising: a) Active ingredient; b) PH adjusters; c) Flavorizer; d) Bactericide; e) Colorant; f) Edulcorant; g) Solvent / Vehicle, and specific components for gel/cream: h) thickener ; and i) physical abrasive and, for the spray: h) preservative; and i) solubilizer.

The active ingredient Group, regarding tongue coating, is selected to have as main action to oxygenate existing microscopic spaces between lingual papillae through the use of tongue cleaner with toothbrush or through toothbrush, facilitating the "release" of tongue coating and posterior removal will be performed by using a tongue cleaner. Besides, through its residual action, the active ingredient also contributes to decrease new formations.

The pH adjustment group is selected to enable the determination of product pH and also works as hydrogen peroxide stabilizer, which is part of the composition.

The flavorizer group is selected to have as main action to provide a pleasant flavor to the product and consequently to user's breath of the product.
The bactericide group is selected to enable to reduce the accumulation of bacterial plaques and to prevent gingivitis.

The colorant group is selected to enable to provide product with color.

The edulcorant group is selected to enable to sweeten the product, making it more pleasant to taste.

The Solvent / Vehicle group is selected to work as base for all ingredients present in formulation.

The thickener group comprises of substances selected to be added to products to provide them with a jelly or creamy consistence.

The preservative group is selected among substances added to personal hygiene products, cosmetics and perfumes, having as primary purpose to preserve them from damage and/or deterioration caused by microorganisms during manufacture and storage, as well as to protect consumer from inadvertent contamination during use.

The group of physical abrasives is comprised of selected substances added to products aiming to increase the abrasion and consequently enable a larger cleaning action. Its use in formulation of gel/cream is optional, when a more abrasive product is wanted.

The solubilizer group is selected to facilitate the mixture of flavorizer with solvent / vehicle.

Thus, the preferred composition for the gel/cream contains, essentially: Hydrogen peroxide, Citric acid, Flavorizer, Demineralized water, Cetylpyridinium chloride, Colorant, Sodium saccharine, Sorbitol and Poloxamer.

Preferred composition of spray essentially contains: Hydrogen peroxide, Citric acid, Flavorizer, Demineralized water, Cetylpyridinium chloride, Colorant, Sodium saccharine, Sorbitol, Polisorbate 20 (Tween 20), Sodium benzoate and Methyl paraben.

The form of use is by applying product (gel/cream or spray)
directly on toothbrush or tongue cleaner with toothbrush.

The products and forms of use are able to achieve above objectives and overcome the deficiencies and limitations of usual similar products.

**Detailed description of the invention:**

The formulations of the present invention contain at least 09 different types of components, including, but not limited to, types of products with strong oxidant action, due to oxygen liberation; types of ingredients with flavorizing action; and types of ingredients with bactericide action.

In order to obtain ideal appearance and flavor, edulcorant components are also provided; solubilizers and colorants. Some edulcorants also may have a thickening action.

To enable the facility of use and stability, pH adjusters and preservatives are provided.

Theses components are contained in a vehicle of aqueous base so that the active agents may be may be conduced to oral cavity.

To provide product with a jelly or creamy consistence, a type of ingredient with thickening action is provided.

To increase the cleaning power, a type of ingredient with abrasive action is provided.

The group of ingredients having strong oxidant action due to oxygen liberation includes, but it is not limited to, Hydrogen peroxide, sodium perborate monohydrate and chlorine dioxide (sodium chlorite/sodium chlorate). Preferably, the ingredient having strong oxidant action to be used is hydrogen peroxide.

The group of ingredients having strong oxidant action is present in an amount from about 0.05 % of total volume to about 3.0 % of the volume, preferably from 0.1 % of the volume to about 2 % of the volume, preferably from 0.5 % of the volume to 1.0 % of the volume, preferably 0.7 % of
the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients enabling the facility of use and stability of the product includes, but it is not limited to, pH adjusters and preservatives.

The group of pH adjusters includes, but it is not limited to, boric acid and citric acid. Preferably, pH adjusted used is citric acid.

The group of ingredients with pH adjusting action is present in an amount from about 0.01 % of total volume to about 1.0 % of the volume, preferably from 0.05 % of the volume to about 0.5 % of the volume, preferably from 0.1 % of the volume to 0.25 % of the volume, preferably 0.15 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients with preservative action includes, but it is not limited to, sodium benzoate, Nipagin or methyl paraben, Benzoic acid, Formaldehyde, Thymol and Nipazol or isopropyl paraben. Preferably, preservatives used are sodium benzoate and methyl paraben.

The group of ingredients with preservative action, more specifically methyl paraben, is present in an amount from about 0.01 % of total volume to about 0.5 % of the volume, preferably from 0.02 % of the volume to about 0.25% of the volume, preferably from 0.03 % of the volume to 0.1 % of the volume, preferably 0.05 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients with preservative action, more specifically sodium benzoate, is present in an amount from about 0.01 % of total volume to about 1.0 % of the volume, preferably from 0.05 % of the volume to about 0.5 % of the volume, preferably from 0.1 % of the volume to 0.25 % of the volume, preferably 0.15 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients with bactericide action includes, but it is not limited to, cetylpyridinium chloride, Delmopinol, benzalkonium chloride,
Sodium Bicarbonate, chlorhexidine gluconate, chlorhexidine digluconate, Chlorine dioxide (sodium chlorite/sodium chlorate), Triclosan, Poly Hexamethylene Biguanide Chlorhydrate, Sanguinaria Canadensis, Propolis, Aloe Vera, Sage (Salvia officinalis), Lemon (Citrus limon), Pine (Pinus sylvestris), Echinacea (Echinacea purpurea and angustifolia), Rathany (Krameria trianda) and Cheeseweed Mallow (Malva parviflora L.). Preferably, bactericide ingredient used is cetlypyridinium chloride.

The group of ingredients having bactericide action is present in an amount from about 0.01 % of total volume to about 0.5 % of the volume, preferably from 0.02 % of the volume to about 0.25% of the volume, preferably from 0.03 % of the volume to 0.1 % of the volume, preferably 0.05 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients with flavorizant action includes, but it is not limited to all flavorizers available in market for oral hygiene, including zinc citrate, zinc chloride, methyl salicylate, Eucalyptus oil, Spearmint oil and peppermint oil. Preferably, different ingredients with flavorizant action are used to enable a gamma of flavor options.

The group of ingredients having flavorizant action is present in an amount from about 0.01 % of total volume to about 1.0 % of the volume, preferably from 0.05 % of the volume to about 0.5% of the volume, preferably from 0.075 % of the volume to 0.3 % of the volume, preferably 0.125 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients aiming to obtain ideal appearance and flavor includes, but it is not limited to, components with edulcorant action, solubilizer and colorant.

The group of ingredients with edulcorant action includes, but it is not limited to, sodium saccharine, sorbitol, xylitol, aspartame, sodium cyclamate and stevia. Preferably, ingredients with edulcorant action used are sodium saccharine and sorbitol.
The group of ingredients with edulcorant action, more specifically sodium saccharine, is present in an amount from about 0.01 % of total volume to about 1 % of the volume, preferably from 0.04 % of the volume to about 0.5 % of the volume, preferably from 0.08 % of the volume to 0.25 % of the volume, preferably 0.125 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients with edulcorant action, more specifically sorbitol, to be used in this percent only in tongue cleaning sprays, is present in an amount from about 0.5 % of total volume to about 20 % of the volume, preferably from 1 % of the volume to about 15% of the volume, preferably from 3 % of the volume to 10 % of the volume, preferably 5 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients with edulcorant action, more specifically sorbitol, to be used in this percent only in tongue cleaning gel/cream, is present in an amount from about 2.5 % of total volume to about 75 % of the volume, preferably from 7.5 % of the volume to about 50 % of the volume, preferably from 12.5 % of the volume to 25 % of the volume, preferably 15 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients with solubilizing action includes, but it is not limited to, Polisorbate 20 (Tween 20), Propylene glycol, Polyoxyl 40 and a solubilizer that mixes propylene glycol, polyethylene glycol and water. Preferably, solubilizing ingredient used is Polisorbate 20.

The group of ingredients with solubilizing action is present in an amount from about 0.05 % of total volume to about 2 % the volume, preferably from 0.1% the volume to about 1.5% the volume, preferably from 0.25 % the volume to 1.0 % the volume, preferably 0.5 % the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients with colorant action includes, but it is not limited to all colorants, for food or oral hygiene products, available in market.
Preferably, different ingredients with colorant action are used to provide product with a gamma of color options.

The group of ingredients with colorant action is present in an amount from about 0.0001 % of total volume to about 1 % of the volume, preferably from 0.0005 % of the volume to about 0.1 % of the volume, preferably from 0.001 % of the volume to about 0.01 % of the volume, preferably 0.002 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients to enable active agents to be conducted to oral cavity in a vehicle/solvent of aqueous base includes, but it is not limited to: a demineralized water, distilled water, deionized water and mineral water.

Preferably, the ingredient vehicle/solvent of aqueous base used is demineralized water.

The group of thickening ingredients, enabling to provide product with a jelly or creamy consistence includes, but it is not limited to, Carbopol, sodium carboxy methyl cellulose, xanthan gum, hydrated silica and poloxamer. Preferably, thickening ingredient used is Poloxamer.

The group of ingredients with thickening action is present in an amount from about 0.1 % of total volume to about 60 % of the volume, preferably from 3 % of the volume to about 45 % of the volume, preferably from 9 % of the volume to 30 % of the volume, preferably 18 % of the volume of demanded ingredient, preferably of the entire formulation.

The group of ingredients enabling to provide product with an abrasive action includes, but it is not limited to: silica, silicon dioxide, Dicalcic phosphate, Calcium pyrophosphate, Zirconium silicate, sodium bicarbonate and calcium carbonate. Preferably, physical abrasive ingredient used is silica.

The group of ingredients with abrasive action is present in an amount from about 0.1 % of total volume to about 12 % of the volume, preferably from 0.5 % of the volume to about 8 % of the volume, preferably from 1 % of the
volume to 4 % of the volume, preferably 2 % of the volume of demanded ingredient, preferably of the entire formulation.

The invention shall be more clearly understood with the following examples, which are planned merely to exemplify, no to limit the invention.

**EXAMPLES of gel/cream formulation:**

**Example 1**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dosage</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>0.15%</td>
<td>Stabilizer</td>
</tr>
<tr>
<td>Demineralized water</td>
<td>q.s.p.</td>
<td>Vehicle/Solvent</td>
</tr>
<tr>
<td>Flavorizer</td>
<td>0.125 %</td>
<td>Flavor</td>
</tr>
<tr>
<td>Cetylpyridinium chloride</td>
<td>0.05 %</td>
<td>Bactericide</td>
</tr>
<tr>
<td>Colorant</td>
<td>0.002</td>
<td>Colorant</td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>0.7 %</td>
<td>Active</td>
</tr>
<tr>
<td>Sodium saccharine</td>
<td>0.125 %</td>
<td>Edulcorant</td>
</tr>
<tr>
<td>Sorbitol</td>
<td>70.00 %</td>
<td>Edulcorant</td>
</tr>
<tr>
<td>Sodium Carboxy methyl cellulose</td>
<td>0.30 %</td>
<td>Thickener</td>
</tr>
<tr>
<td>Hydrated silica</td>
<td>14.00 %</td>
<td>Thickener</td>
</tr>
<tr>
<td>Syloid 63 (silica)</td>
<td>2.00 %</td>
<td>Physical Abrasive</td>
</tr>
</tbody>
</table>

**Example 2**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dosage</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>0.15%</td>
<td>Stabilizer</td>
</tr>
<tr>
<td>Demineralized water</td>
<td>q.s.p.</td>
<td>Vehicle/Solvent</td>
</tr>
<tr>
<td>Flavorizer</td>
<td>0.125 %</td>
<td>Flavor</td>
</tr>
<tr>
<td>Cetylpyridinium chloride</td>
<td>0.05 %</td>
<td>Bactericide</td>
</tr>
<tr>
<td>Colorant</td>
<td>0.002</td>
<td>Colorant</td>
</tr>
<tr>
<td>Component</td>
<td>Dosage</td>
<td>Function</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>----------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>0.7 %</td>
<td>Active</td>
</tr>
<tr>
<td>Poloxamer</td>
<td>18.0 %</td>
<td>Thickener</td>
</tr>
<tr>
<td>Sodium saccharine</td>
<td>0.125 %</td>
<td>Edulcorant</td>
</tr>
<tr>
<td>Sorbitol</td>
<td>15.00 %</td>
<td>Edulcorant</td>
</tr>
</tbody>
</table>

**Example 3**

<table>
<thead>
<tr>
<th>Component</th>
<th>Dosage</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demineralized water</td>
<td>q.s.p.</td>
<td>Vehicle/Solvent</td>
</tr>
<tr>
<td>Flavorizer</td>
<td>0.125 %</td>
<td>Flavor</td>
</tr>
<tr>
<td>Colorant</td>
<td>0.002</td>
<td>Colorant</td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>0.7 %</td>
<td>Active</td>
</tr>
<tr>
<td>Carbopol</td>
<td>1.50 %</td>
<td>Thickener</td>
</tr>
<tr>
<td>Sodium saccharine</td>
<td>0.125 %</td>
<td>Edulcorant</td>
</tr>
<tr>
<td>Sorbitol</td>
<td>40.00 %</td>
<td>Edulcorant</td>
</tr>
<tr>
<td>Sodium carboxy methyl cellulose</td>
<td>0.30 %</td>
<td>Thickener</td>
</tr>
<tr>
<td>Cetylpyridinium chloride</td>
<td>0.05 %</td>
<td>Bactericide</td>
</tr>
<tr>
<td>Citric acid</td>
<td>0.15 %</td>
<td>Stabilizer</td>
</tr>
</tbody>
</table>

**EXAMPLE of spray formulation:**

<table>
<thead>
<tr>
<th>Components</th>
<th>Dosage</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citric acid</td>
<td>0.15 %</td>
<td>PH adjuster</td>
</tr>
<tr>
<td>Hydrogen peroxide</td>
<td>0.7 %</td>
<td>Active</td>
</tr>
<tr>
<td>Flavorizer</td>
<td>0.125 %</td>
<td>Flavorizer</td>
</tr>
<tr>
<td>Sodium benzoate</td>
<td>0.15 %</td>
<td>Preservative</td>
</tr>
<tr>
<td>Cetylpyridinium chloride</td>
<td>0.05 %</td>
<td>Bactericide</td>
</tr>
<tr>
<td>Colorant</td>
<td>0.002</td>
<td>Colorant</td>
</tr>
<tr>
<td>Methyl paraben</td>
<td>0.05 %</td>
<td>Preservative</td>
</tr>
<tr>
<td>Ingredient</td>
<td>Amount</td>
<td>Purpose</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Polisorbate 20 (Tween 20)</td>
<td>0.5 %</td>
<td>Solubilizer</td>
</tr>
<tr>
<td>Sodium saccharine</td>
<td>0.125 %</td>
<td>Edulcorant</td>
</tr>
<tr>
<td>Sorbitol</td>
<td>5 %</td>
<td>Edulcorant</td>
</tr>
<tr>
<td>Demineralized water</td>
<td>q.s.p</td>
<td>Solvent / Vehicle</td>
</tr>
</tbody>
</table>

Therefore, the preferred composition for gel/cream comprises: Hydrogen peroxide, Citric acid, Flavor, Demineralized water, Cetylpyridinium chloride, Colorant, Sodium saccharine, Sorbitol and Poloxamer, at any quantitative formulation as above described.

The preferred composition for spray contains Hydrogen peroxide, Citric acid, Flavor, Demineralized water, Cetylpyridinium chloride, Colorant, Sodium saccharine, Sorbitol, Polisorbate 20 (Tween 20), Sodium benzoate and Methyl paraben, at any quantitative formulation as above described.

Optionally, instead of the product to clean tongue and to prevent and treat halitosis, in gel/cream or spray, be comprised of an ingredient from each group, as examples above, it may comprise more than one ingredient from each group.

Therefore, in an embodiment, a composition of the product may have the group of active components formed, for instance, by hydrogen peroxide and sodium perborate associated and/or the group of antimicrobials being comprised of association of cetylpyridinium chloride and chlorhexidine and/or others.

In other words, the product may be comprised of one ingredient from each group, as above described, or more than one ingredient from one of the groups or more than one ingredient from more than one of the groups or more than one ingredient from all groups, used in association and in appropriate quantities for desired preventive or treatment action.

The use is performed by applying the product (gel/cream or
spray) directly on toothbrush or tongue cleaner with brush. Then, tongue cleaning is performed according to the technique below described, specifically developed for its use:

1) Make circular or come-and-go moves with the brush on upper portion of the tongue, to “release” tongue coating and release the active principles of the product and consequently potentize cleaning effect; and

2) Remove the already “released” content by scraping with tongue cleaner, with soft moves from the bottom to the tip of the tongue.

   Important: At the bottom of the tongue there are structures similar to small “warts” (called circumvallate papillae) in most cases visible. Care must be taken not to scrape over with tongue cleaner and hurt them.

The equipment to perform the treatment according to present invention is comprised, therefore:

The equipment to perform the treatment according to present invention is comprised, therefore:

1) of a device to “release” tongue coating, comprising an usual toothbrush (comprised of a set of tufts with bristles; a head, containing the tufts with bristles implanted; and a stick extending from said head) employed to scrape the tongue; and an amount of present product to clean tongue and to prevent and treat halitosis, in gel/cream or spray, applied over the bristles; and

2) of a device for removing released tongue coating, comprising a tongue cleaner (comprising of at least one edge for scraping tongue; a structure comprising the edge; and a stick extending from structure).

Optionally, instead of comprising a device to release tongue coating (brush + product); and a device for removing released tongue coating (tongue scraper); said equipment may be comprised of one single device to accomplish both functions, comprising a tongue scraper provided with a brush (comprising an edge to scrape the tongue; bristles in opposition to the edge for brushing tongue; structure containing said edge and brush; and a stick extending
from said structure) and an amount of said product applied over the bristles of the scraper.
Claims

1) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", characterized by a gel/cream or spray comprising common components for both presentation possibilities, comprised of at least one ingredient from at least one of the following component groups:

a) Active ingredient; b) PH adjusters; c) Flavorizer; d) Bactericide; e) Colorant; f) Edulcorant; and g) Solvent / Vehicle; and components specific for gel/cream comprised of: h) Thickeners; and i) Physical abrasive or components specific for spray comprised of: h) Preservative; and i) Solubilizer, characterized by the fact that:

a) Active ingredient is selected from a group with strong oxidant action, due to oxygen liberation, comprising Hydrogen peroxide, Sodium Perborate Monohydrate and Chlorine Dioxide (Sodium Chlorite/Sodium Chlorate);

b) PH adjusters are selected from the group of pH adjusters comprising Boric Acid and Citric Acid;

c) Flavorizer is selected from the group comprising all flavorizers for oral hygiene products, available in market, including Zinc Citrate, Zinc Chloride, Tutti Frutti, Menthol, Methyl Salicylate, Eucalyptus Oil, Spearmint Oil and Peppermint Oil;

d) Bactericide is selected from the group of bactericides comprising cetylpyridinium chloride, benzalkonium chloride, Delmopinol, Sodium Bicarbonate, chlorhexidine gluconate; chlorhexidine digluconate, Chlorine dioxide (sodium chlorite/sodium chlorate), Triclosan, Poly Hexamethylene Biguanide Chlorhydrate, Sanguinaria Canadensis, Propolis, Aloe Vera, Sage (Salvia officinalis), Lemon (Citrus limon), Pine (Pinus sylvestris), Echinacea (Echinacea purpurea and angustifolia), Rathany (Krameria trianda) and Cheeseweed Mallow (Malva parviflora L.);

e) Colorant is selected from the group of colorants, for food or
oral hygiene products, available in market;

f) Edulcorant is selected from the group of Edulcorants comprising: Sodium Saccharine, Sorbitol, Xylitol, Aspartame, Sodium Cyclamate and Stevia;

g) Solvent / Vehicle is selected from the group of solvents / vehicles comprising demineralized water, distilled water, deionized water and mineral water;

h) Thickener in gel/cream formulation is selected from the group of Thickeners, comprising: Carbopol, Sodium carboxy methyl cellulose (SCMC), xanthan gum, hydrated silica and poloxamer;

i) Preservative in spray formulation is selected from the group of preservatives, comprising: sodium benzoate, Nipagin or methyl paraben, Formaldehyde, Thymol and Nipazol or isopropyl paraben; and

j) Physical abrasive in gel/cream formulation is selected from the group physical abrasives, comprising: Silica, Silicon dioxide, Dicalcic phosphate, Calcium pyrophosphate, Zirconium silicate, Sodium Bicarbonate and Calcium Carbonate;

k) Solubilizer in spray formulation is selected from the group of Solubilizers, comprising: Polisorbate 20 (Tweeen 20), Propylene glycol, Polyoxyl 40 and a Solubilizer mixing Propylene glycol, Polyethylene glycol and Water.

2) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that h) the Preservative selected from the group comprising Sodium Benzoate, Nipagin or Methyl paraben, Benzoic Acid, Formaldehyde, Thymol and Nipazol or Isopropyl paraben may be comprised in gel/cream formulation.

3) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients a) having strong oxidant
action is present in an amount from about 0.05 % of total volume to about 3.0 % of the volume.

4) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 4, characterized by the fact that the group of ingredients a) having strong oxidant action is present preferably from 0.1% of the volume to about 2.0% of the volume or from 0.5% of the volume to 1.0% of the volume.

5) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 3 or 4, characterized by the fact that the group of ingredients a) having strong oxidant action is present preferably in an amount of 0.7% the volume of demanded ingredient, preferably of the entire formulation.

6) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients b) with pH adjusting action is present in an amount from about 0.01% of total volume to about 1.0% of the volume.

7) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 6, characterized by the fact that the group of ingredients b) with pH adjusting action is present preferably from 0.05% of volume to about 0.5% of the volume or from 0.1% of the volume to 0.25% of the volume.

8) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 6 or 7 characterized by the fact that the group of ingredients b) with pH adjusting action, is present preferably in an amount of 0.15% of the volume of demanded ingredient, preferably of the entire formulation.

9) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1,
characterized by the fact that the group of ingredients c) Flavorizer is present in an amount from about 0.01 % of total volume to about 1.0 % of the volume.

10) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 9, characterized by the fact that the group of ingredients c) Flavorizer is present in an amount preferably from 0.05 % of the volume to about 0.5% of the volume or from 0.075 % of the volume to 0.3 % of the volume.

11) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 9 or 10, characterized by the fact that the group of ingredients c) Flavorizer is present in an amount preferably of 0.125 % of the volume of demanded ingredient, preferably of the entire formulation.

12) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1, characterized by the fact that the group of ingredients d) Bactericide is present in an amount from about 0.01 % of total volume to about 0.5 % of the volume.

13) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 12, characterized by the fact that the group of ingredients d) Bactericide is present in an amount preferably from 0.02 % of volume to about 0.25% of the volume or from 0.03 % of the volume to 0.1 % of the volume.

14) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 12 or 13, characterized by the fact that the group of ingredients d) Bactericide is present in an amount of preferably 0.05 % of the volume of demanded ingredient, preferably of the entire formulation.

15) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients e) Colorant is present in an
amount from about 0.0001 % of total volume to about 1 % of the volume.

16) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 15, characterized by the fact that the group of ingredients e) Colorant is present in an amount preferably from 0.0005 % of the volume to about 0.1 % of the volume or from 0.001 % of the volume to about 0.01 % of the volume.

17) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 15 or 16, characterized by the fact that the group of ingredients e) Colorant is present in an amount preferably of 0.002 % of volume of demanded ingredient, preferably of the entire formulation.

18) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients f) Edulcorant, more specifically Sodium Saccharine, is present in an amount of about 0.01 % of total volume to about 1 % of the volume.

19) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 18, characterized by the fact that Sodium Saccharine is present in an amount preferably from 0.04 % of the volume to about 0.5 % of the volume, or from 0.08 % of the volume to 0.25 % of the volume.

20) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 18 or 19, characterized by the fact that Sodium Saccharine is present in an amount of preferably 0.125 % of the volume of demanded ingredient, preferably of the entire formulation.

21) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients with f) Edulcorant action,
more specifically sorbitol, used in this percentage only for spray for TONGUE CLEANING, is present in an amount from about 0.5% of total volume to about 20% of the volume.

22) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 21, characterized by the fact that Sorbitol is present in an amount preferably from 1% of the volume to about 15% of the volume or from 3% of the volume to 10% of the volume.

23) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 21 or 22, characterized by the fact that Sorbitol is present in an amount of preferably 5% of the volume of demanded ingredient, preferably of the entire formulation.

24) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients with f) Edulcorant action, more specifically Sorbitol, used in this percentage only for gel/cream for TONGUE CLEANING, is present in an amount from about 2.5% of total volume to about 75% of the volume.

25) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 24, characterized by the fact that Sorbitol is present in an amount preferably from 7.5% of the volume to about 50% of the volume or from 12.5% of the volume to 25% of the volume.

26) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 24 or 25, characterized by the fact that Sorbitol is present in an amount of preferably 15% of the volume of demanded ingredient, preferably of the entire formulation.

27) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1,
characterized by the fact that it foresees a group of ingredients g) from the group of solvents / vehicles, to enable active agents to be conducted to oral cavity in an vehicle / solvent of aqueous base includes preferably demineralized water.

28) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients h) Thickener is present in an amount from about 0.1 % of total volume to about 60 % of the volume.

29) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 28, characterized by the fact that the group of ingredients h) Thickener is present in an amount preferably from 3 % of the volume to about 45 % of the volume or from 9 % of the volume to 30 % of the volume.

30) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 28 or 29, characterized by the fact that the group of ingredients h) Thickener is present in an amount of preferably 18 % of the volume of demanded ingredient, preferably of the entire formulation.

31) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients i) Physical Abrasive is present in an amount from about 0.1 % of total volume to about 12 % of the volume.

32) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 31, characterized by the fact that the group of ingredients i) Physical Abrasive, is present in an amount of preferably from 0.5 % of the volume to about 8 % of the volume, or from 1 % of the volume to 4 % of the volume.

33) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 31
or 32, characterized by the fact that the group of ingredients i) Physical Abrasive is present in an amount of preferably from 2 % of the volume of demanded ingredient, preferably of the entire formulation.

34) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients h) Preservative, more specifically Methyl paraben, is present in an amount from about 0.01 % of total volume to about 0.5 % of the volume.

35) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 34, characterized by the fact that Methyl paraben is present in an amount preferably from 0.02 % of the volume to about 0.25% of the volume or from 0.03 % of the volume to 0.1 % of the volume.

36) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 34 or 35, characterized by the fact that Methyl paraben, is present in an amount preferably of 0.05 % the volume of demanded ingredient, preferably of the entire formulation.

37) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claim 1, characterized by the fact that the group of ingredients with h) preservative action, more specifically sodium benzoate, is present in an amount from about 0.01 % of total volume to about 1.0 % of the volume.

38) "PRODUCTS FOR TONGUE CLEANING AND FOR PREVENTING AND TREATING HALITOSIS", in accordance with claims 1 or 37, characterized by the fact that sodium benzoate is present in an amount preferably from 0.05 % of the volume to about 0.5 % of the volume or from 0.1 % of the volume to 0.25 % of the volume.

39) "PRODUCTS FOR TONGUE CLEANING AND FOR
PREVENTING AND TREATING HALITOSIS“, in accordance with claims 1 or 37
or 38, characterized by the fact that sodium benzoate is present in an amount of
preferably 0.15 % of the volume of demanded ingredient, preferably of the entire
formulation.

40) “PRODUCTS FOR TONGUE CLEANING AND FOR
PREVENTING AND TREATING HALITOSIS“, in accordance with claim 1,
characterized by the fact that the group of ingredients with i) Solubilizing action is
present in an amount from about 0.05 % of total volume to about 2 % of the
volume.

41) “PRODUCTS FOR TONGUE CLEANING AND FOR
PREVENTING AND TREATING HALITOSIS“, in accordance with claims 1 or 40,
characterized by the fact that the group of ingredients with i) Solubilizing action is
present in an amount preferably from 0.1% of the volume to about 1.5% of the
volume or from 0.25 % of the volume to 1.0 % of the volume.

42) “PRODUCTS FOR TONGUE CLEANING AND FOR
PREVENTING AND TREATING HALITOSIS“, in accordance with claims 1 or 40
or 41, characterized by the fact that the group of ingredients with i) Solubilizing
action is present in an amount of preferably 0.5 % of the volume of demanded
ingredient, preferably of the entire formulation.

43) “PRODUCTS FOR TONGUE CLEANING AND FOR
PREVENTING AND TREATING HALITOSIS“, in accordance with claim 1,
characterized by the fact that, in a preferred formulation, gel/cream contains:
Hydrogen peroxide, Citric acid, Flavor, Demineralized water, Cetylpyridinium
chloride, Colorant, Sodium saccharine, Sorbitol and Poloxamer, at any ratio.

44) “PRODUCTS FOR TONGUE CLEANING AND FOR
PREVENTING AND TREATING HALITOSIS“, in accordance with claim 1,
characterized by the fact that, in a preferred formulation, the spray contains
Hydrogen peroxide, Citric acid, Flavor, Demineralized water, Cetylpyridinium
chloride, Colorant, Sodium saccharine, Sorbitol, Polisorbate 20 (Tween 20),
Sodium benzoate and Methyl paraben, at any ratio.

45) “EQUIPMENT FOR TONGUE CLEANING” used in conjunction with the products according to claims 1 to 54, characterized by the fact it essentially comprises:

1) a device to “release” tongue coating, comprising an usual toothbrush employed to scrape the tongue; and an amount of the product to clean the tongue and to prevent and treat halitosis, in gel/cream or spray, applied over the bristles; and

2) a device for removing the released tongue coating, comprising a tongue scraper.

46) “EQUIPMENT FOR TONGUE CLEANING”, in accordance with claim 55, characterized by the fact it optionally comprises a single device to accomplish both functions, to release and to remove the tongue coating, comprising a tongue scraper provided with a brush; and an amount of said product applied over the bristles of the tongue cleaning.
PATENT COOPERATION TREATY

PCT

DECLARATION OF NON-ESTABLISHMENT OF INTERNATIONAL SEARCH REPORT
(PCT Article 17(2)(a), Rules 13ter.1(c) and 39)

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Applicant

CONCEICAO, MAURICIO DUARTE DA
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This International Searching Authority hereby declares, according to Article 17(2)(a), that no international search report will be established on the international application for the reasons indicated below.

1. ☐ The subject matter of the international application relates to:
   a. ☐ scientific theories.
   b. ☐ mathematical theories.
   c. ☐ plant varieties.
   d. ☐ animal varieties.
   e. ☐ essentially biological processes for the production of plants and animals, other than microbiological processes and the products of such processes.
   f. ☐ schemes, rules or methods of doing business.
   g. ☐ schemes, rules or methods of performing purely mental acts.
   h. ☐ schemes, rules or methods of playing games.
   i. ☐ methods for treatment of the human body by surgery or therapy.
   j. ☐ methods for treatment of the animal body by surgery or therapy.
   k. ☐ diagnostic methods practised on the human or animal body.
   l. ☐ mere presentations of information.
   m. ☐ computer programs for which this International Searching Authority is not equipped to search prior art.

2. ☒ The failure of the following parts of the international application to comply with prescribed requirements prevents a meaningful search from being carried out:
   ☒ the description  ☒ the claims  ☐ the drawings

3. ☐ The failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions prevents a meaningful search from being carried out:
   ☐ the written form has not been furnished or does not comply with the standard.
   ☐ the computer readable form has not been furnished or does not comply with the standard.

4. ☐ The failure of the tables related to the nucleotide and/or amino acid sequence listing to comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions prevents a meaningful search from being carried out:
   ☐ the written form has not been furnished.
   ☐ the computer readable form has not been furnished or does not comply with the technical requirements.

5. Further comments:

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