Title: FRAGRANCE OR FLAVOR FORMULATION

Abstract: The invention concerns a homogeneous aqueous fragrance or flavor formulation comprising a fragrance or flavor composition, a surfactant and water, which is alcohol-free and stable, a vessel equipped with a valve for spraying, comprising said fragrance or flavor formulation, methods for producing said fragrance or flavor formulation and said vessel, and the use of the fragrance or flavor formulations for the manufacture of a perfume, a deodorant, a cosmetic preparation, an aromatherapeutic, a spagyric essence, a wound, water or room disinfectant, an insecticide, an insect or marten repellent, a food flavoring, and the like.
FRAGRANCE OR FLAVOR FORMULATION

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Field of the Invention

The inventions concerns a stable, aqueous, ethanol-free fragrance or flavor formulation, a vessel equipped with a valve for spraying said formulation, and a method of producing said formulation and vessel. Said formulation and vessel are used for the manufacture of a perfume, deodorant, cosmetic, aromatherapeutic, spagyric essence, wound, water or room disinfectant, insecticide, insect or marten repellent, food seasoning and the like.

State of the Art

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Various fragrance and flavor formulations, and vessels for spraying such formulations, are known and widely used in the art of cosmetics, deodorants, room aromatizing, aromatherapy, insect or marten repellents, or food flavoring or seasoning, and the like. These formulations contain lipophilic compounds, such as essential oils or other lipophilic, water insoluble fragrant or flavor ingredients.

Aqueous mixtures of lipophilic fragrance or flavor compositions are unstable and separate into the oily and the aqueous layer. In order to avoid separation into two layers water soluble solvents and/or surface active compounds ("surfactants") as solubilisers or emulsifiers are added. Most commonly as solvent or solubiliser is a high percentage of a lower alcohol, in particular ethanol, or also isopropanol or glycerine, which are usually used in combination with a surfactant.

Some room deodorising or disinfecting formulations contain enzymes which help to oxidise and/or split bad smelling compounds. Such enzymes are expensive and quite often not very stable.

Single phase, homogeneous aqueous formulations in particular need an alcohol, in particular ethanol, or another solubiliser, e.g. acetone, in order to maintain a clear solution or at least a homogeneous emulsion of the lipophilic fragrance or flavor composition comprised by the formulation. Alcohol or acetone containing fragrance formulations impose considerable risks during their production, storage, transportation and use as they are easily inflammable, in particular if sprayed in form of an aerosol and if in contact with a hot material, e.g. a hot cocking-plate, a hot engine, e.g. a hot automobile motor, smoulder cigarette or burning candle. Similarly other organic solvents, in particular if they have low boiling points, are likewise easily inflammable, especially if finely dispersed in an aerosol. Most fragrance and flavor compositions, such as essential oils, have a high vapour pressure and are by themselves inflammable.

A disadvantage of the most commonly used ethanol in fragrance formulations for animal or human use is that it may irritate sensitive skin and cause a painful reaction. The use of ethanol in the aerosol furthermore has the other disadvantage in that it may anaesthetise the olfactory nerves. The loss of fragrance intensity may only be counteracted by a higher concentration of the fragrant ingredients. This comprises economic consequences. Alcohol also increases the addictive potential, which is to be avoided in particular in hospitals, schools, kindergartens and in food flavoring.
In order to lower the alcohol content of fragrance or flavor formulations addition of one or more surfactants is common in the art. Such surfactants are mainly selected from those also used and acceptable in pharmaceutical and cosmetical formulations and include for example those of the polyethyleneglykol type.

An alcohol-free aerosol formulation is described in US 5,508,023. The formulation comprises less than 5% by weight of micronized drug, less than 5% by weight of at least one polar surfactant, and 90% by weight of 1,1,1,2-tetrafluoroethane or 1,1,1,2,3,3,3-heptafluoropropane. The fluoroethane or -propane is used as solvent and propellant. This formulation is quite expensive, ecologically unsatisfactory and does not contain water. In WO 94/07461 are disclosed non-sticky, non-ethanolic fragrance formulations containing conventional odoriferous material at a level of about 2%, preferably 5% to about 30%, which is solubilised by a combination of (a) a solubiliser and (b) a cosolubiliser in water. USP 5,736,505 discloses the use of glycereth-7-triacetate for the production of a non-alcoholic transparent fragrant composition comprising a hydrophobic perfume base, a non-ionic surfactant and water. WO 96/07395 discloses a clear, thickened, fragrant topical skin care composition utilising a polymeric gelling agent. WO 96/03963 discloses an aqueous, perfumed cosmetic composition which is essentially free of short-chain, mono-hydric alcohol comprising (a) a first non-ionic surfactant of the formula R₁-O(CH₂CH₃CH₂)m-(OCH₂CH₂)n-OH, wherein R₁ is an alkyl group of from about 10 to about 22 carbon atoms and m and n represent weight-averages in the range from about 2 to about 80, and (b) an auxiliary nonionic surfactant comprising one or more polyethoxylated nonionic surfactants of hydrophilic-lipophilic balance from about 10 to about 16.

The prior art of fragrance formulations has not yet found a simple solution for avoiding alcohol in stable aqueous formulations. In contrast, there exists still the conviction that alcohol can only be avoided in combination with more than one other ingredient. Ethanol-free deodorants are known which are not stable but need to be shaken before use. Stable, aqueous, ethanol-free, non-sticky, easily sprayable fragrance or flavor formulations, such as aerosol formulations, comprising lipophilic fragrance or flavor combinations in form of homogeneous solutions or emulsions and free of alcohol have not become known.
Objective of the Invention

It is an objective of the invention to provide a new fragrance or flavor formulation which lacks the disadvantages of the formulations hitherto known. It needs to meet a number of criteria. The new fragrance formulation should be alcohol-free, in particular ethanol-free, enzyme-free, physically and chemically stable, i.e. homogeneous and not separating into two or more layers under normal, higher or lower temperatures. It should be easily sprayable. The aerosol produced by this formulation upon spraying should not be inflammable, should be non-toxic, non-sticky and cosmetically and pharmaceutically acceptable to the skin and sensitive organs, should not have addictive properties and should need a lower amount of the expensive fragrant or flavor ingredients. The flavor formulation should be orally acceptable for being used in food flavoring.

It is also an object of the invention to provide a disinfective combination of essential oils having a synergistic disinfective effect compared to the single essential oils, having simultaneously a pleasant smell, and the use thereof for the preparation of a stable aqueous alcohol-free fragrance formulation.

It is an object of the present invention to solve the above problems. Provided are new fragrance and flavor formulations which lack the disadvantages of prior art formulations, which are surprisingly and unexpectedly extremely stable at room temperature, and even at lower and higher temperatures, and which are not inflammable. This goal is achieved by the present invention described in more detail in the following.

Detailed Description of the Invention

The invention concerns a stable aqueous fragrance or flavor formulation, characterised in that it comprises a fragrance or flavor composition, water and a surfactant, said formulation being alcohol-free.
The terms fragrance and flavor overlap in certain respects. Some ingredients of fragrance formulations are also present in flavor formulations. For example, the essential oils of fruits, such as lemons, oranges, or of spices, such as rosemary, marjoram, and the like, widely used in food flavoring, are also present or used in natural or synthetic fragrances. Their water and alcohol solubilities are about similar and for the purpose of this invention comparable.

The fragrance or flavor composition comprised by the present formulation is any fragrance or flavor composition new or known in the art, such as a fragrant perfume, an aromatic-therapeutic, an air hygienic agent, an insect or marten repellent, a food flavoring agent and the like. Such compositions are composed in particular of natural or also of synthetic fragrant or flavor compounds. They are usually of lipophilic nature. The term comprises essential oils, fragrant or aromatic smelling alcohols, esters, ethers, aldehydes, and/or acetals common in the art of perfume or food flavoring compositions or spagyric compositions.

Of particular importance are new combinations of natural essential oils with a synergistic disinfectant effect compared to the single essential oils.

The fragrant ingredient may be a naturally occurring essential oil, such as rose oil, bergamot oil, jasmine oil, peppermint oil, rosemary, camomile, lavender, marjoram, and the like oil. An animal fragrant, is for example musk, castoreum, amber or zibet. Spagyric essences are also known in the art. They are made by fermenting certain herbs, which were collected while they were flowering, in the presence of water and yeast, steam distilling off the active ingredients, and concentrating the distillate to the spagyric basic essence. The remaining mash is calcinated, and the basic essence and the calcinated mash are combined to give the final spagyric essence.

Synthetic fragrant ingredients are for example synthetic essential oils, such as composed of single compounds, such as linalol, cineol, terpineol, nerol, citronelal, benzaldehyde, cinnamon aldehyde, vanillin, methylacetophenone, and the like. Comprised are also mixtures of such ingredients.
The fragrance or flavor formulation may have, in addition to the desired pleasant smell, disinfectant activities, such as desirable in room sprays for hospitals, kitchens and toiletties, in water or also in mouth or nose sprays. The disinfectant effect may be directed against any microorganisms, such as virus, bacteria or yeasts.

Disinfectant fragrance and flavor formulation comprise in particular a synergistic mixture of disinfectant essential oils, in particular of natural sources, such as of eucalyptus (Eucalyptus globulus or Eucalyptus citriadora), pine needles (picea excelsa), Ho-leaves (Cinnamomum camphora hosch), peppermint (Mentha piperita), neem tree (Azadirachta excelsa), bay leaves (Laurus nobilis), litsea (Litsea cubeba), citronella (Cymbopogon nardus), elemi (Canarium luzonicum), petitgrain citronniers lemon (Citrus limonum), grapefruit (Citrus paradisi), fir tree (Abies alba pectinata), lavender (Lavandula officinalis), bergamotte (Citrus aurantium bergamia), and rosemary (Rosmarinus officinalis), and the like.

The fragrance formulation may have a therapeutic effect as known in aromatherapy. Well known are stimulating, antidepressive or narcotic effects of certain fragrance compositions. In this case it comprises one or more essential oils, in particular of natural origin and having the desired therapeutic effect. A therapeutic effect may also be provided by spagyric essences, which are mostly also of fragrant nature. Such fragrance formulations may be applied in form of room, mouth or nose sprays.

The fragrance formulation may also have an insect or marten repellent effect or be useful in plant protection.

The flavor formulation of the invention is orally acceptable, easily sprayable and can be dosed simply. It can be used for flavoring any food. Examples of food flavors are extracts of herbs, such as thyme, oregano, marjoram, salvia, sage, rosemary, garlic, lovage, horseradish, coffee or tea aroma, or any fruit aroma, such as lemon, orange or grapefruit oil, apple, pear or raspberry aroma, and the like. During the cooking process the flavor may be destroyed, whereupon the present flavor formulation is applied for refreshing or
improving the taste. The food, e.g. a cooked, broiled, baked, fried or grilled food, also salads or after dinner dishes, may be sprayed shortly before serving.

The fragrant or flavor composition is present in amounts of less than about 20%, preferably of less than about 15% by weight or volume. In general, a sufficient or even excellent fragrant or flavor smell is surprisingly obtained with a relatively low amount, e.g. about 0.01 to about 3% of the fragrant or flavor composition. This amount is lower than in common fragrance or flavor formulations, however provides a similar or even stronger fragrance or flavor intensity.

The surfactant used in the present fragrance formulation is one known in the art and is cosmetically and/or pharmaceutically acceptable. Preferably it is selected from the group consisting of one or more polyoxyethylene sorbitan fatty acid esters, mono-polyoxyethylene alkyl ethers and mono-polyoxyethylene alkanoic acid esters.

Polyoxyethylene sorbitan fatty acid esters are for example selected from the group of water-soluble or -dispersible Tweens, such as polyoxyethylene sorbitan mono-lauroate (Tween 20), polyoxyethylene sorbitan mono-stearate (Tween 60) or polyoxyethylene sorbitan mono-oblate (Tween 80).

A preferred group of surfactants is represented by the general formula

\[ R-O-CH_2(CH_2OCH_2)_n CH_2OH \quad I, \]

wherein R is an alkyl group of the partial formula \( CH_3(CH_2)_m^- \) or an acyl group of the partial formula \( CH_3(CH_2)_{m-1}CO^- \), wherein m is of from 9 to 19 and n is from 1 to 99.

If R is an alkyl group n is preferably 1 to 24. If R is an acyl group n is preferably 29 to 99. The index m is preferably 9, 11, 13, 15, 17, or 19. The index n is preferably 1, 3, 9, 17, 19, 21, 29, 39, 39, 49 or 99. Higher values of n may be only proximate or average values.
Preferred are commercially available ethers of the formula I, e. g. known under the proprietary names AKYPOROX™ RLM 22, RLM 40, RLM 80, CO 400, Brij™ 30, 35, 52, 56, 58, 72, 76, 78, 92, or 96, CETOMACROGOL™ 1000, EMULGIN™ 700 or 1000, or esters of the formula I, e. g. MYRJ 45, 49, 51, 52, 52 C, 53, or 59.

Particularly preferred surfactants of the formula I are tetrapolyoxyethylene monododecyl (lauryl) ether, tetrapolyoxyethylene monotetradecyl (myristyl) ether and mixtures thereof, such as present in the ether from tetrapolyoxyethylene and coconut alcohol, e. g. AKYPOROX™ RLM 40.

The surfactant is present in the fragrance or flavor formulation in an amount sufficient to provide a stable, homogeneous, monophasic aqueous solution or emulsion. The amount depends mainly on the amount and lipophilic nature of the fragrance or flavor composition in the formulation. In general the ratio of fragrance or flavor composition to surfactant is from about 1:0.01 to about 1:5 either by weight or by volume. Whenever in the present description ratios or percentages are given they are either by weight or by volume if not specifically defined.

If for example the amount of fragrance or flavor composition is about 1%, the amount of surfactant is about 0.5%. In general, less than from about 3% to about 10% of surfactant is sufficient to provide a homogeneous stable formulation.

The water in the aerosol formulation may be normal tap water, or distilled or deionised water, preferably with a pH of about 7. It may be necessary to adjust the entire aerosol formulation to a pH around 7.

Such fragrance or flavor formulation comprises e. g. 3% of fragrant or flavor composition, 3% of surfactant and 94% of water, or 1% of fragrant or flavor composition, 0.5% of surfactant and 98.5% of water. It may also comprise, e. g. about 3%, of an emulsifying mixture, consisting of about 75% of castor oil, about 12.5% of glycerin, 12.5% of propylene glycol.
The present fragrance or flavor formulations lack any large amounts of easily inflammable ingredients, such as ethyl alcohol, isopropanol, acetone, ethers, lower carbon hydrogens and the like, which are usually present in common aerosol sprays.

Although most of the fragrance or flavor compositions, in particular the essential oils, are easily inflammable by themselves, they are surprisingly not inflammable in the present aqueous formulations. This may be so in view of the low concentration and the presence of comparative large amounts of water.

Advantageously the present fragrance formulation is enzyme-free, thus limiting the risk of allergic reactions and enzymatic destruction of the organic ingredients in the formulation.

The invention concerns further a fragrance or flavor formulation, as described hereinbefore inserted together with a propellant in a spray vessel equipped with a valve.

The present fragrance formulation is preferably sprayable by forcing through a tiny outlet under applying sufficient pressure. For that purpose the formulation devices able to perform this task are well known in the art and comprise closed vessels which can be set under pressure by a propellant and to which a valve with a fine outlet is attached which upon operating releases a pre-selectable amount of the composition in form of an aerosol.

The invention concerns further a vessel equipped with a dosage valve, characterised in that it comprises a stable aqueous fragrance or flavor formulation as described hereinbefore and a propellant.

The valve is not metered or preferably a metered dose provider, standardised to eject by each push a specific amount, e.g. from 0.1 to 0.5 cm³ of the fragrance formulation. If desired the vessel is equipped with a valve, which is standardised to eject in a pre-selected time a standardised amount of aerosol.
The propellant is not inflammable and is selected from one common in the art, e.g. from
the group consisting of a fluorinated hydrocarbon, such as 1,1,1,2,3,3,3-heptafluoropropane
(227) or in particular 1,1,1,2-tetrafluoroethane (134a), or air, nitrogen, or nitrous oxide.

The vessel is made of a non-corrosive metal, such as tin, a metal being protected against
corrosion by a hard and insoluble organic polymer, or is made of glass or a hard and
insoluble polymer.

The invention concerns further a method for producing a fragrance or flavor formulation
according to the invention, characterised in homogeneously mixing the fragrant or flavor
composition, the surfactant and the water. Homogeneously mixing is achieved by
vigorously shaking, stirring, vibrating or sonicating the mixture with a common mixing
device at a temperature of between about between 10° C and 50° C, e.g. at room
temperature.

The mixing time depends mainly on the amount of the ingredients. Small amounts, e.g. to
provide about 10 to about 500 ml of fragrance formulation, are homogeneously mixed
within about one minute or less.

Preferably the fragrance and flavor composition and the surfactant are at first
homogeneously mixed to give a more or less sticky fluid, whereupon the water is added, e.g.
slowly or by drops.

The invention is further directed to the use of the stable, aqueous, alcohol free fragrance or
flavor formulation for the manufacture of a perfume, a deodorant, such as a room
deodorant, an arm spray (deos), a cosmetic preparation, an aromatherapeutic, a spagyric
essence, a wound, water or room disinfectant, insecticide, insect or marten repellent, and
the like. These products are in form of solutions or emulsions, for example filled in cans,
bottles, roller bottles, or in particular filled in spray vessels, for use as sprays, such as room
sprays, arm, mouth or nose sprays, and form easily aerosols.

The aqueous ethanol free fragrance formulations of the invention can further be used to
aromatise paper, such as news papers, printing papers, or other natural or synthetic carriers,
such as fleeces, fiber glass, clothing, shoes, and the like. The aqueous ethanol free flavor formulation can be used to aromatise and improve the smell of kitchens, restaurants, and food stuff.

The following examples serve to further characterise the invention, however, should not be construed as a limitation thereof. In the examples only naturally essential oils were used.

**Example 1. General Procedure**

General composition of a sprayable formulation:

- 1.0% by volume of fragrance or flavor composition
- 0.5% by volume of surfactant
- 98.5% by volume of water

At room temperature (about 23°C) the fragrance or flavor composition and the surfactant are homogeneously mixed by shaking or stirring. About 1 to 2% of the water is added and again stirred to give a homogeneous sticky fluid. The rest of the water is added and stirring continued until a homogeneous solution or emulsion is obtained.

The solution or emulsion may be filled into a bottle with a normal or safety stopper cap. Alternatively, if an aerosol is intended, the bottle may be equipped with a standardized metered valve allowing aerosol release of 0.1 cm³ upon one push. The propellant is for example air.

The solution or emulsion may also be filled into a pressure bottle equipped with a valve which may be standardized and metered. The propellant, one common in the art, usually 1,1,1,2,-tetrafluoroethane, is added and the bottle sealed. The valve may be metered in that it allows an aerosol release of 0.086 cm³ upon each push.

The bottles may have a capacity of about 5 to 500 cm³.
Example 2. A fragrance formulation for a room deodorant

A mixture of 3 ml of a fragrance composition consisting of the following essential oils

5
3 ml of cedar wood,
3 ml of petit grain bigarade,
3 ml of petit grain mandarinnier,
2 ml of lavender,
7 ml of blood orange, and
10
1 ml of elemi,

3 ml of the surfactant AKYPOROX™ RLM 22 or RLM 40, and 94 ml of water (tap water, distilled or deionised) are emulsified at about 25 °C according to Example 1 until a complete emulsion is obtained.

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The emulsion is filled into a pressure bottle equipped with a standardized valve allowing aerosol release of 0.086 cm³ upon one push.

The emulsion is stable within a temperature range of at least -5° C to 50° C over a time of at least 12 months.

Example 3. A fragrance formulation for a room deodorant

A mixture of 10 ml of a fragrance composition consisting of the following essential oils

25
1 ml of carrot seeds
5 ml of grape fruit
3 ml of litsea
4 ml of lemongrass
30
1 ml of lavender
1 ml of mountain pine
6 ml of lemon
1 ml of elemi, and 2 ml of mandarin yellow,

5 ml of the surfactant AKYPOROX™ RLM 22 or RLM 40 and 85 ml of water (tap water, distilled or deionised) are emulsified at about 25 °C in analogy to Example 1 until a complete emulsion is obtained.

The emulsion is filled into a pressure can equipped with a standardised valve allowing aerosol release of 0.086 cm³ upon one push.

The emulsion is stable within a temperature range of at least -5 °C to 50 °C over a time of at least 12 months.

**Example 4. A fragrance formulation with synergistic disinfectant properties**

**General Procedure:**

A mixture of

100 ml of fragrance or flavor composition

50 ml of AKYPOROX™ RLM40

20 ml of “Geruchweg” (an odor neutralising agent) von Perry-Cut

30 ml of an emulsifying mixture consisting of

30 ml of castor oil

5 ml of glycerin

5 ml of propylene glycol, and

800 ml of water

is emulsified as follows: At room temperature (about 23 °C) the fragrance or flavor composition and the surfactant are homogeneously mixed by shaking or stirring. About 1 to 2% of the water is added and again stirred to give a homogeneous sticky fluid. The rest of the water is added and stirring continued until a homogeneous solution or emulsion is obtained.

The solution or emulsion may be filled into a bottle with a normal or safety stopper cap. Alternatively, if an aerosol is intended, the bottle may be equipped with a standardised
metered valve allowing aerosol release of 0.1 cm³ upon one push. The propellant is for example air.

The solution or emulsion may also be filled into a pressure bottle equipped with a valve which may be standardised and metered. The propellant, one common in the art, usually 1,1,1,2-tetrafluoroethane, is added and the bottle sealed. The valve may be metered in that it allows an aerosol release of 0.086 cm³ upon each push.

The bottles may have a capacity of about 5 to 500 cm³.

Example 5. A fragrance formulation with synergistic disinfectant properties

The disinfecting fragrance composition is composed of
25 ml of eucalyptus oil (Eucalyptus globulus),
25 ml of peppermint oil (Mentha piperita)
30 ml of pine needle oil (Picca excelsa),
10 ml of eucalyptus oil (Eucalyptus citriodora),
10 ml of Ho-leaf oil (Cinnamomum camphora hosch), and
0.5 ml of neem-tree oil (Azadirachta excelsa).

The emulsion is produced according to the general procedure of Example 4. It may be filled into a pressure can equipped with a standardised valve allowing aerosol release of 0.086 cm³ upon one push.

The emulsion is stable within a temperature range of at least -5°C to 50°C over a time of at least 12 months.

Example 6. A fragrance formulation with synergistic disinfectant properties

The disinfecting fragrance composition is composed of
25 ml of eucalyptus oil (Eucalyptus globulus),
25 ml of peppermint oil (Mentha piperita),
30 ml of pine needle oil (Picca excelsa),
10 ml of eucalyptus oil (Eucalyptus citriadora), and
10 ml of Ho-leaf oil (Cinnamomum camphora hosch).

This mixture (90 ml) is admixed to 10 ml of a mixture consisting of

50 ml of bay leave oil (Laurus nobilis) and
50 ml of Ho-leaf oil (Cinnamomum camphora hosch)

to give the fragrance formulation with synergistic disinfectant properties, wherefrom the
emulsion is produced according to the general procedure of Example 4. It may be filled
into a pressure can equipped with a standardised valve allowing aerosol release of 0.086
\text{cm}^3 \text{upon one push.}

Example 7. A fragrance formulation with synergistic disinfectant properties

The fragrance composition is produced as follows:

Forty ml of a composition (a) composed of
50 ml of litsea oil (Litsea cubeba)
10 ml of citronella oil (Cymbopogon nardus),
10 ml of elemi oil (Canarium luzonicum),
10 ml of lemon oil (Citrus limonum), and
20 ml of grapefruit (citrus paradisi),

are admixed to 30 ml of a composition (b) composed of
40 ml of lemon oil (Citrus limonum),
40 ml of fir tree oil (Abies alba pectinata),
10 ml of pine needle oil (Picca excelsa), and
10 ml of lavender oil (Lavandula officinalis),

30 ml of a composition (c) composed of
60 ml of lemon oil (Citrus limonum),
30 ml of peppermint oil (Mentha piperita),
50 ml of bergamotte oil (Citrus arantium bergamia),
10 ml of Ho-leaf oil (Cinnamomum camphora hosch), and
30 ml of pine needle oil (Picca excelsa),

5 (d)
10 ml of rosemary oil (Rosmarinus officinalis), and
(e) 0.5 ml of neem-tree oil (Azadirachta excelsa),

10 to give the fragrance formulation with synergistic disinfectant properties, wherefrom the
emulsion may be produced according to the general procedure of Example 4. The emulsion
may be used as such or in form of a room spray and be filled into a pressure can equipped
with a standardised valve allowing aerosol release of 0.086 cm³ upon one push.

15 Example 8. A clear, ethanol-free flavor formulation containing 12 % of a perfume
composition

The emulsifying mixture consists of
5 ml of AKYPOROX™ RLM40,

20 5 ml of castor oil,
2 ml of glycerine, and
2 ml of coco-nut oil.

The coco-nut oil is warmed up until it is fluid, the other ingredients are added and
thoroughly mixed.

One part of a fragrance or flavor composition, e. g. of any of the previous Examples or
“Lenny Jose” of Givaudan AG, ; and 2 parts of the above emulsifying mixture are mixed.
Seven parts of water are added and the mixture is shaken to give a clear and ethanol-free
perfume composition
Example 9. A fragrance formulation with synergistic disinfectant properties for toilets

The fragrance composition consists of

5 ml of litsea oil (Litsea cubeba),
10 ml of citronella oil (Cymbopogon nardus),
10 ml of elemi oil (Canarium luzonicum), and
20 ml of grapefruit oil (Citrus paradisi).

The essential oils are admixed and may be used such for disinfecting toilets and lavatories.

Bactericidal Test Results

In the laboratory two 10 x 10 cm disinfected glass plates are sprayed with cultures of bacteria predominantly present in public toilets (general appearing germs, coliform germs, E. coli). On one of the plates is sprayed with a spray dose of Example 9 from a distance of 20 cm an aerosol stream for about 0.5 seconds. After 5 minutes the assembling by swap test was performed. One plate not treated with the spray was used as a reference in the bacteriological test.

The test conditions were as follows:

For general germ counts:

25 breeding temperature: $22^\circ$C
breeding time: 48 hours
nutritive medium: TTC-Agar
evaluation: microscopic counting

For coliform germs:

breeding temperature: $37^\circ$C
breeding time: 24 hours
Nutritive medium: VRB-Agar
Evaluation: microscopic counting

For E. coli germs:

Breeding temperature: 37°C
Breeding time: 24 hours
Nutritive medium: VRB-Agar
Evaluation: counting under a UV light source

The test results are shown in the following table:

<table>
<thead>
<tr>
<th>Type of Germs</th>
<th>Reference Probe without Spray</th>
<th>Probe with spray of Example 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>General germs</td>
<td>350</td>
<td>32</td>
</tr>
<tr>
<td>Coliform germs</td>
<td>positive</td>
<td>negative</td>
</tr>
<tr>
<td>E. coli</td>
<td>positive</td>
<td>negative</td>
</tr>
</tbody>
</table>

**Summary:** The probe with the general germs indicated a reduction of >90% of the number of germs. Coliform germs and E. coli bacteria could not be detected in the sprayed probe. These results indicate that the product of Example 9 has a bactericidal activity which is not caused by bactericidal, fungicidal or other synthetic preserving compounds. The bactericidal activity is based on the natural essential oils.

Similar results are obtained by tests with Examples 5, 6, and 7.

The invention has been described in terms of its best mode and embodiments. Nevertheless those skilled in the art will recognise that the invention can be practiced with equivalent modifications within the spirit and scope of the appended claims.
Claims

1. An aqueous fragrance or flavor formulation, characterised in that it comprises a fragrance or flavor composition, water and a surfactant, said formulation being alcohol-free and stable.

2. The fragrance formulation according to claim 1, wherein the fragrance composition is a fragrant perfume, optionally with an aromatherapeutic or an air hygienic activity, or a mixture thereof.

3. The flavor formulation according to claim 1, wherein the flavor composition is a food flavoring agent.

4. The fragrance or flavor formulation according to claim 1, wherein the fragrance or flavor composition comprises preferable a natural fragrant or flavor.

5. The fragrance formulation according to claim 1, wherein the fragrance composition comprises a naturally occurring essential oil, such as rose oil, bergamot oil, jasmine oil, peppermint oil, rosemary, camomile, lavender, marjoram, and the like oil, an animal fragrant, such as musk, castoreum, aber or zibet.

6. The fragrance or flavor formulation according to claim 1, wherein the fragrance or flavor composition is a new combination of natural essential oils with a synergistic disinfectant effect compared to the single essential oils.

7. The fragrance or flavor formulation according to claim 1, wherein the fragrance or flavor composition comprises a new synergistic disinfectant mixtures composed of natural essential oils selected from eucalyptus (Eucalyptus globulus or Eucalyptus citriadora), pine needles (pinca excelsa), Ho-leaves (Cinnamomum camphora hoesch), peppermint (Mentha piperita), neem tree (Azadirachta excelsa), bay leaves (Laurus nobilis), litsea (Litsea cubeba), citronella (Cymbopogon nardus), elemi (Canarium luzonicum), petitgrain citronniers lemon (Citrus limonum), grapefruit (citrus paradisi), fir tree (Abies alba
pectinata), lavender (Lavandula officinalis), bergamotte (Citrus aurantium bergamia), and rosemary (Rosmarinus officinalis), and the like.

8. The fragrance or flavor formulation according to claim 1, wherein the fragrance or flavor composition is a new combination of natural essential oils with a therapeutic effect as known in aromatherapy.

9. The fragrance or flavor formulation according to claim 1, wherein the fragrance or flavor composition has an insect or marten repellent effect, or is useful in plant protection.

10. The flavor formulation according to claim 1, which is orally acceptable, easily sprayable and can be dosed simply.

11. The flavor formulation according to claim 1, wherein the flavor composition is a food flavor comprising extracts of herbs, such as thyme, oregano, marjoram, salvia, sage, rosemary, garlic, lovage, horseradish, coffee or tee aroma, or any fruit aroma, such as lemon, orange or grapefruit oil, apple, pear or raspberry aroma, and the like.

12. The fragrant or flavor formulation according to claim 1, wherein the fragrant or flavor composition is present in amounts of less than about 20%, preferably of less than about 15% by weight or volume.

13. The fragrance or flavor formulation according to claim 1, wherein the fragrant or flavor composition is present in amounts of about 0.01 to about 3% by weight or volume.

14. The fragrance formulation according to anyone of claims 1 to 14, wherein the surfactant is selected from the group consisting of one or more polyoxymethylene alkyl ethers, polyoxymethylene alkanoic acid esters and polyoxymethylene sorbitan fatty acid esters.

15. The fragrance or flavor formulation according to claim 1, wherein the surfactant is represented by the general formula

\[ R-O-\text{CH}_2(\text{CH}_2\text{OCH}_2)_n \text{CH}_2\text{OH} \quad I, \]
wherein R is an alkyl group of the partial formula CH$_3$(CH$_2$)$_m$- or an acyl group of the partial formula CH$_3$(CH$_2$)$_{m-1}$CO-, wherein m is of from 9 to 19, and n is from 1 to 99.

16. The fragrance or flavor formulation according to claim 15, wherein n is preferably 1 to 24 if R is an alkyl group, or n is preferably 29 to 99 if R is an acyl group,

17. The fragrance or flavor formulation according to claim 15, wherein m is 9, 11, 13, 15, 17, or 19, and n is 1, 3, 9, 17, 19, 21, 29, 39, 39, 49 or 99.

18. The fragrance or flavor formulation according to claim 15, wherein the surfactant is mono-tetrapolyoxyethylene dodecyl (lauryl) ether, mono-tetrapolyoxyethylene tetradecyl (myristyl) ether or a mixture thereof, such as present in the mono-ether of tetrapolyoxyethylene and coconut alcohol.

19. The fragrance or flavor formulation according to claim 1, wherein the ratio of fragrance composition to surfactant is from about 1:0.01 to about 1:5, and in particular about 1:0.5.

20. The fragrance or flavor formulation according to claim 1, wherein the surfactant is present in the amount of about 1.5 % by weight or volume.

21. The fragrance or flavor formulation according to claim 1, wherein the surfactant is the mono ether of tetrapolyoxyethylene and coconut alcohol and is present in the amount of about 0.5 to about 3% by weight or volume.

22. The fragrance or flavor formulation according to claim 1, which comprises 1 % by weight or volume of fragrance composition, 0.5 % by weight or volume of surfactant and 98.5 % by weight or volume of water.

23. The fragrance or flavor formulation according to claim 1, inserted together with a propellant in an aerosol vessel equipped with a valve.
24. A vessel equipped with a valve, comprising a fragrance or flavor formulation according to claim 1.

25. A vessel according to claim 24, wherein the propellant is not inflammable and is selected from the group consisting of a fluorinated hydrocarbon, such as 1,1,2,3,3,3-heptafluoroheptan or 1,1,2,2-tetrafluoroethane.

26. A vessel according to claim 24, wherein the propellant is air, nitrogen, or nitrous oxide.

26. A vessel according to claim 24, wherein the valve is standardised to eject from 0.1 to 0.5 cm³ of the fragrance or flavor formulation in form of an aerosol.

27. A vessel according to claim 24, wherein the valve is standardised to eject in a preselected time a standardised amount of the fragrance or flavor formulation in form of an aerosol.

28. A vessel according to claim 24, which is made of a non-corrosive metal, such as tin, a metal being protected against corrosion by a protecting hard and insoluble organic polymer, or is made from glass or a hard and insoluble polymer.

29. A method for producing a fragrance or flavor formulation according to claim 1, characterised in mixing the fragrance or flavor composition with the surfactant, then adding the water and homogenising the mixture by shaking or with the aid of a common mixing device in a conventional manner.

30. Use of the fragrance or flavor formulation according to claim 1 for the manufacture of a perfume, a deodorant, such as a room deodorant, an arm spray (deos), a cosmetic preparation, an aromatherapeutic, a spagyric essence, a wound, water or room disinfectant, an insecticide, insect or marten repellent, and to aromatise paper, such as news papers, printing papers, or other natural or synthetic carriers, such as fleeces, fiber glass, clothing, shoes, and the like, and to aromatise and improve the smell of kitchens, restaurants, and food stuff.
### INTERNATIONAL SEARCH REPORT

**A. CLASSIFICATION OF SUBJECT MATTER**

| IPC  | A61K4/46 | A23L1/221 |

According to International Patent Classification (IPC) or to both national classification and IPC.

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

| IPC  | A61K | B65H | A23L |

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<thead>
<tr>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>
| WO 94 07461 A (GIVAUDAN-ROUPE INT. S.A.)  
14 April 1994 (1994-04-14)  
page 1, line 1 - line 7  
page 1, line 17 - line 30  
page 2, line 27 - line 31  
page 3, line 15 - page 6  
examples 1, 2 | 1, 2, 4, 5, 12-14, 19, 20, 29, 30 |

X  
US 5 736 505 A (ROBERT P. MANZO ET AL.)  
7 April 1998 (1998-04-07)  
the whole document | 1, 2, 4, 5, 12-14, 19, 20, 29, 30 |

Further documents are listed in the continuation of box C.  
Patent family members are listed in annex.

**Date of the actual completion of the international search**

4 April 2001

**Date of mailing of the international search report**

11/04/2001

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Authorized officer  
Alvarez Alvarez, C
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<th>Category</th>
<th>Citation of document, with indication where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
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<tr>
<td>X</td>
<td>WO 96 07395 A (THE PROCTER &amp; GAMBLE COMPANY) 14 March 1996 (1996-03-14)</td>
<td>1,2,4,5,12-14,19,20,29,30</td>
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<td>page 12, line 1 - page 17, line 2</td>
<td></td>
</tr>
<tr>
<td>X</td>
<td>WO 99 27793 A (BARRIER BIOTECH LIMITED ET AL.) 10 June 1999 (1999-06-10)</td>
<td>1,3,4,6-8,12,29,30</td>
</tr>
<tr>
<td></td>
<td>page 1, line 11 - line 21</td>
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</tr>
<tr>
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<td>examples 1,4</td>
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<tr>
<td>X</td>
<td>WO 96 03963 A (THE PROCTER &amp; GAMBLE COMPANY) 15 February 1996 (1996-02-15)</td>
<td>1,2,4,5,12,13,19,20,29,30</td>
</tr>
<tr>
<td></td>
<td>the whole document</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>WO 96 28980 A (THE PROCTER &amp; GAMBLE COMPANY) 26 September 1996 (1996-09-26)</td>
<td>1,3,4,10-14,19,29,30</td>
</tr>
<tr>
<td></td>
<td>claims 1.5-10</td>
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<td>page 5, line 14 - page 7, line 4</td>
<td>23-28</td>
</tr>
<tr>
<td>Y</td>
<td>WO 97 29790 A (M. JEAN) 21 August 1997 (1997-08-21)</td>
<td>23-26,28</td>
</tr>
<tr>
<td></td>
<td>claim 1</td>
<td></td>
</tr>
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<td>page 7, line 11 - line 16</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td>US 3 968 905 A (P. G. PELTON) 13 July 1976 (1976-07-13)</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>abstract</td>
<td></td>
</tr>
<tr>
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<td>Publication date</td>
<td>Patent family member(s)</td>
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<tr>
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<td>-------------------------</td>
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<tr>
<td>WO 9407461 A</td>
<td>14-04-1994</td>
<td>NONE</td>
</tr>
<tr>
<td>US 5736505 A</td>
<td>07-04-1998</td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BR 9508896 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 1049378 A</td>
</tr>
<tr>
<td>WO 9603963 A</td>
<td>15-02-1996</td>
<td>AU 3096695 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AU 4928296 A</td>
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<tr>
<td></td>
<td></td>
<td>BR 9607697 A</td>
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<tr>
<td></td>
<td></td>
<td>CA 2213666 A</td>
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<td></td>
<td>EP 0814669 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 11502120 T</td>
</tr>
<tr>
<td>WO 9729790 A</td>
<td>21-08-1997</td>
<td>FR 2744992 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 0888136 A</td>
</tr>
<tr>
<td>WO 9608425 A</td>
<td>21-03-1996</td>
<td>AU 3551795 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CA 2199736 A</td>
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<tr>
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<td>JP 52020415 A</td>
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<td>JP 54041730 B</td>
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