

Specification

Title of Invention:

AROMA COMPOSITION

5 Technical Field

[0001]

The present invention relates to a compound and an aroma composition useful as a blended aroma raw material and the like.

Background Art

10 [0002]

Recently, preferences of consumers have been diversified, and a flavor-aroma differentiated from the others has been demanded in aromas for use in foods, beverages, and the like. However, there is also a case where it is difficult to meet such a demand with combinations of conventional aroma raw materials, and thus, a novel aroma material
15 has been strongly demanded. For example, among compounds to be used as aroma materials, a large number of compounds containing sulfur atoms have been found as compounds having high contributions in trace amounts, and considered as important compounds.

20 Summary of Invention

[0003]

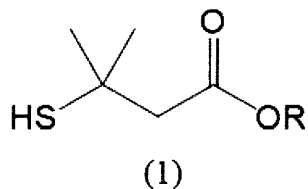
An object of the present invention is to provide an aroma composition containing a compound having an aroma that is useful as a blended aroma raw material and the like, and a product containing the aroma composition.

25 As a result of conducting earnest studies to achieve the aforementioned object, the present inventors have found that an aroma-flavor of an aroma composition can be enhanced by using 3-mercapto-3-methylbutanoic acid and an ester thereof which have not been used as an aroma component, and completed the present invention.

[0004]

30 Specifically, the present invention relates to the following [1] to [5].

[1] An aroma composition comprising 3-mercapto-3-methylbutanoic acid represented by the following formula (1) or an ester thereof:



wherein R represents a hydrogen atom, a methyl group, and an ethyl group.

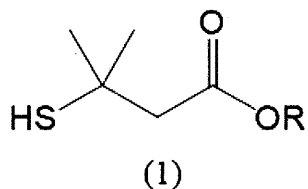
5 [2] The aroma composition according to the [1], for a food or beverage.

[3] A food or beverage, an oral composition, a tobacco product, or a consumer product, comprising the aroma composition according to the [1] or [2].

[4] A method for producing a food or beverage, an oral composition, a tobacco product, or a consumer product, comprising adding the aroma composition according to the [1] or

10 [2].

[5] A method for imparting an aroma flavor, using 3-mercapto-3-methylbutanoic acid represented by formula (1) or an ester thereof as an active ingredient:



[0005]

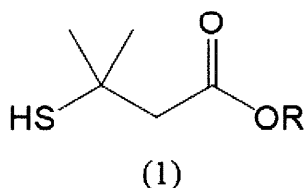
15 The present invention can provide an aroma composition containing a compound having an aroma that is useful as a blended aroma raw material and the like.

Description of Embodiments

[0006]

20 Hereinafter, the present invention will be described in detail.

In the present invention, three compounds represented by formula (1) are sometimes collectively referred to as a compound (1):

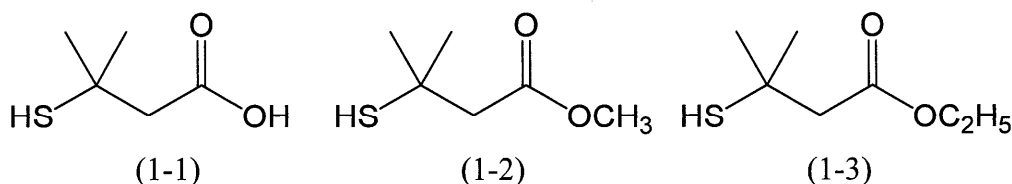


wherein R represents a hydrogen atom, a methyl group, and an ethyl group.

The compounds of the formula (1) include 3-mercapto-3-methylbutanoic acid represented by the following formula (1-1) where R is a hydrogen atom, methyl 3-mercapto-3-methylbutanoate represented by the following formula (1-2), and ethyl 3-mercapto-3-methylbutanoate represented by the following formula (1-3).

[0007]

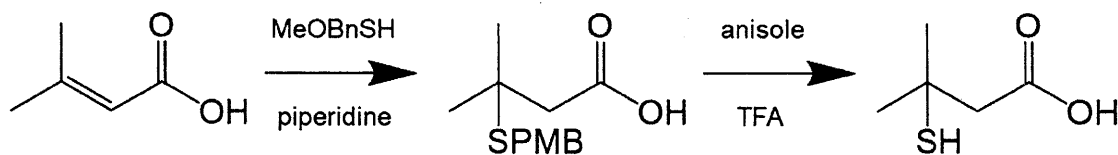
The compound of the formula (1-1) takes on a roast aroma accompanied by fruitiness like tropical fruit, and the compound of the formula (1-2) and the compound of the formula (1-3) also take on similar aromas.



[0008]

The compound (1-1) of the present invention can be obtained by the following steps, for example.

3,3-Dimethylacrylic acid and p-methoxybenzyl thiol (MeOBnSH) are heated at reflux to be reacted in a piperidine solvent to obtain a thiobenzyl adduct (3-((4-methoxybenzyl)thio)-3-methylbutanoic acid). Subsequently, anisole is reacted and debenzylated in a trifluoroacetic acid (TFA) solvent, so that 3-mercapto-3-methylbutanoic acid (1-1) is obtained.



[0009]

The compound (1-1) obtained in this way can be purified by distillation, various types of chromatography, and the like.

The compound (1-2) and the compound (1-3) are commercially available, and commercial products can also be used in the present invention.

5 The aroma composition containing the compound (1) of the present invention and the compound (1) have an excellent aroma, and can be used as an aroma-imparting component for foods or beverages, oral compositions, tobacco products, and the like solely or in combination with another component.

[0010]

10 The aroma composition and the compound (1) of the present invention can be blended in a trace amount as they are in a food or beverage to impart or enhance an aroma flavor, but can also be mixed with another component to impart or enhance an aroma flavor in a food or beverage. The other aroma components that can be mixed include various synthetic aromas, natural aromas, natural essential oils, plant extracts, and
15 the like, and include, for example, natural essential oils, natural aromas, synthetic aromas, and the like described in "Patent Office Report, Collection of Well-Known Prior Arts (Perfume), Part II, Food Flavor, P 88-131, published on Jan. 14, 2000".

 The concentration of the compound (1) in the aroma composition of the present invention cannot be generalized because it varies depending on another aroma component
20 to be mixed, but may be normally in a concentration range of 0.0001 to 100000 ppm, preferably 0.001 to 10000 ppm, and more preferably 0.01 to 1000 ppm, based on the weight of the aroma composition.

[0011]

 In addition, in the case of adding the compound (1) to a food or beverage in order
25 to enhance an aroma flavor, the concentration of the compound (1) may be in a concentration range of 0.0001 to 100000 ppb, preferably 0.001 to 10000 ppb, and more preferably 0.01 to 1000 ppb, relative to the weight of the food or beverage.

[0012]

 The aroma composition of the present invention containing the compound (1)
30 can contain, for example, a solvent such as water or ethanol; and a fixative such as

ethylene glycol, propylene glycol, dipropylene glycol, glycerin, hexyl glycol, benzyl benzoate, triethyl citrate, diethyl phthalate, Hercolyn, triacetin, a medium-chain fatty acid triglyceride, or a medium-chain fatty acid diglyceride, which are normally used as necessary.

5 [0013]

It is possible to enhance or impart an aroma-flavor of a food or beverage by adding the aroma composition containing the compound (1) and the compound (1) itself, and so on.

Specific examples of a food or beverage to which the aroma composition and the compound (1) of the present invention can be added include, for example, beverages such as carbonated beverages, soft beverages, fruit juice beverages, fruit liquors, milk beverages, lactic acid bacteria beverages, nutritional supplement beverages, soy milks, tea beverages, and coffees; desserts such as ice creams, ice milks, lacto-ices, ice desserts, yogurts, puddings, jellies, and dairy desserts; confectioneries such as caramels, candies, 10 tablet confectioneries, crackers, biscuits, cookies, pies, chocolates, snacks, chewing gums, manju (steamed buns filled with sweet bean paste), and yokan (sweet bean jellies); soups such as Japanese-style soups, Western-style soups, and Chinese-style soups; breads; jams; flavor seasonings; various instant beverages; various instant foods, and the like. 15

The amount of the aroma composition to be added to a food or beverage varies 20 depending on the type or form of the product, but may be normally in a concentration range of 0.0001 to 5% and preferably 0.001 to 5%, based on the weight of the food or beverage.

[0014]

The oral compositions to which an aroma-flavor can be imparted by the aroma 25 composition and the compound (1) of the present invention include, for example, dentifrices, oral cleaners, mouthwashes, troches, chewing gums, and the like. The amount of the aroma composition to be added to an oral composition varies depending on the type or form of the product, but can be normally preferably 0.01 to 5% by mass, and more preferably 0.1 to 3% by mass, relative to the total mass of the oral composition.

30 [0015]

The tobacco products to which an aroma flavor can be imparted by the aroma composition and the compound (1) of the present invention include cigarettes, electronic cigarettes, and the like. The amount of the aroma composition to be added to a tobacco product varies depending on the type or form of the product, but can be, for example,
5 preferably 0.00001 to 90% by mass, and more preferably 0.0001 to 50% by mass, relative to the total mass of a portion of tobacco leaves.

[0016]

Specific examples of consumer products include fragrance products such as perfumes, eau de parfums, eau de toilettes, and eau de colognes;

10 basic cosmetics such as facial cleansing creams, cleansing creams, emulsions, skin lotions, and serums;

finishing cosmetics such as lipsticks, lip creams, eye liners, mascaras, eye shadows, eyebrow pencils, eye packs, nail enamels, and enamel removers;

hair cosmetics such as pomades, brilliantine, hair set lotions, hair sticks, hair
15 solids, hair oils, hair treatments, hair creams, hair tonics, hair liquids, hair sprays, bandoline, revitalizing hair tonics, and hair dyes;

suntan cosmetics such as suntan products and sun-screen products;

medicated cosmetics such as antiperspirants, after-shaving lotions and gels, permanent wave agents, medicated soaps, medicated shampoos, and medicated skin
20 cosmetic preparations;

hair care products such as shampoos, rinses, rinse-in-shampoos, conditioners, treatments, and hair packs;

soaps such as cosmetic soaps, bath soaps, perfume soaps, transparent soaps, and synthetic soaps;

25 body washers such as body soaps, body shampoos, hand soaps, and face creams;

bath agents such as bathing agents (bath salts, bath tablets, bath liquids, and the like), foam baths (bubble baths and the like), bath oils (bath perfumes, bath capsules, and the like), milk-baths, bath jellies, and bath cubes;

detergents such as heavy detergents for clothing, light detergents for clothing,
30 liquid detergents, laundry soaps, compact detergents, and powder soaps;

soft finishing agents such as softeners and furniture cares;

cleaners such as cleansers, house cleaners, toilet cleaners, bath cleaners, glass cleaners, mildew removers, and cleaners for drainpipes;

5 kitchen detergents such as kitchen soaps, kitchen synthetic soaps, and tableware detergents;

bleaches such as oxidation-type bleaches (chlorine-based bleaches, oxygen-based bleaches, and the like), reduction-type bleaches (sulfur-based bleaches and the like), and optical bleaches;

aerosol agents such as spray-type aerosol agents and powder aerosol agents;

10 deodorants or aromatics such as solid-type deodorants or aromatics, gel-type deodorants or aromatics, and liquid-type deodorants or aromatics (aqueous and oily), daily necessities and household goods such as tissue papers and toilet papers, quasi-drugs such as liquid bath additives, mouthwashes, and repellents (mist spray-type repellents and aqueous liquid-type repellents), pharmaceuticals such as medicated cosmetics and
15 medicated lotions, and the like.

[0017]

The amount of the aroma composition and the compound (1) of the present invention to be added to a consumer product may be in a concentration range of 0.0001 to 100000 ppb, preferably 0.001 to 10000 ppb, and more preferably 0.01 to 1000 ppb,
20 relative to the weight of the consumer product.

[0018]

In addition, all the compounds (1-1), (1-2), and (1-3) are useful as an aroma component, and any of the compounds and a mixture of any of the compounds can be used in the aroma composition of the present invention.

25 Examples

[0019]

Hereinafter, the present invention will be described in further detail by using Examples, but the present invention is not limited to these Examples.

[0020]

30 [Measurement Devices]

Analysis devices used in Examples are as follows.

An NMR measurement apparatus: 400/54 Premium Shielded NMR (manufactured by Agilent Technologies Inc.)

5 A gas chromatograph mass spectrometer: GCMS-QP 2010 (manufactured by Shimadzu Corporation)

A gas chromatograph-time-of-flight mass spectrometer: 8890 GC System (GC)+JMS-T2000GC AccuTOFtm GC-Alpha (mass spectrometer) (manufactured by JEOL Ltd.)

A high-performance liquid chromatograph

10 A pump: LC-20A (manufactured by Shimadzu Corporation)

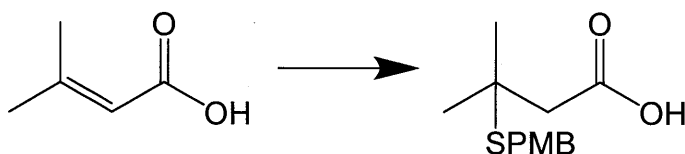
A detector: SPD-M20A (manufactured by GL Sciences Inc.)

A separation column: YMC-TriartC18 ExRS (manufactured by YMC Co., Ltd.)

[0021]

15 (Example 1) Synthesis of Compound (1-1)

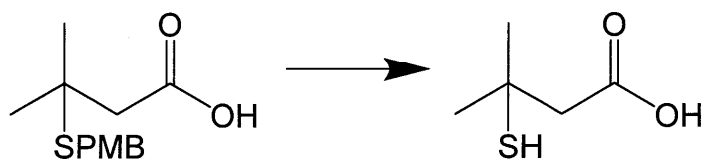
(1) Synthesis of 3-((4-Methoxybenzyl)Thio)-3-Methylbutanoic Acid



20 To 3,3-dimethylacrylic acid (10.01 g, 0.10 mol), 25 ml of piperidine was added and dissolved, and p-methoxybenzyl thiol (15.42 g, 0.10 mol) was added and heated at reflux to be reacted for 10 hours. The GC analysis confirmed that the conversion was 95.5%. Then, 1 mol/L of hydrochloric acid was added to obtain an acidic property of pH 2, followed by extracting with ethyl acetate. A solid obtained by collecting a solvent under reduced pressure was recrystallized from hexane to obtain 17.01 g of 3-((4-methoxybenzyl)thio)-3-methylbutanoic acid (yield: 66.9%, GC purity: 99.2%).

25 [0022]

(2) Synthesis of 3-Mercapto-3-Methylbutanoic Acid



Trifluoroacetic acid (61.3 g) was added to the compound (9.24 g, 0.036 mol) obtained in the above-described (1) and dissolved under ice cooling, and anisole (5.92 g, 0.054 mol) was added, followed by reaction for 12 hours at room temperature. The GC analysis confirmed that the conversion was 100%. Trifluoroacetic acid was collected under reduced pressure, and a crude product thus obtained was distilled and purified to obtain 3.12 g of 3-mercapto-3-methylbutanoic acid (1-1) (yield: 63.9%, GC purity: 100%).

<3-Mercapto-3-Methylbutanoic Acid>

¹H NMR (400 MHz, CDCl₃) δ:

2.71 (s, 3H), 2.35 (s, 2H), 2.05 (s, 1H), 1.53 (s, 6H)

¹³C NMR (100 MHz, CDCl₃) δ:

176.98, 50.20, 41.23, 32.48

HRMS (+): calcd C₆H₁₂O₂S ([M]⁺) 134.0396; found, 134.0395

In addition, methyl 3-mercaptothio-3-methylbutanoate and ethyl 3-mercapto-3-methylbutanoate can be obtained by using methyl 3,3-dimethylacrylate and ethyl 3,3-dimethylacrylate in place of 3,3-dimethylacrylic acid, and conducting the same reaction as in Example 1.

[0023]

Note that methyl 3-mercapto-3-methylbutanoate can be purchased from Enamine Ltd. (URL: <https://enaminestore.com/catalog/EN300-3191463>) and the like, and ethyl 3-mercapto-3-methylbutanoate can be purchased from LGC Limited (URL: <https://www.lgcstandards.com/US/en/p/TRC-M253975>) and the like.

[0024]

Spectrum data of these are as follows.

<Methyl 3-Mercapto-3-Methylbutanoate>

¹H NMR (400 MHz, CDCl₃) δ:

3.69 (s, 3H), 2.65 (s, 2H), 2.33 (s, 1H), 1.51 (s, 6H)

¹³C NMR (100 MHz, CDCl₃) δ:

171.18, 51.43, 50.18, 41.55, 32.53

HRMS (+): calcd C₆H₁₂O₂S ([M]⁺) 148.0553; found, 148.0552

<Ethyl 3-Mercapto-3-Methylbutanoate>

¹H NMR (400 MHz, CDCl₃) δ:

5 4.16 (q, 2H), 2.63 (s, 2H), 2.33 (s, 1H), 1.50 (s, 6H)

¹³C NMR (100 MHz, CDCl₃) δ:

170.72, 60.32, 50.42, 41.60, 32.55, 14.23

HRMS (+): calcd C₇H₁₄O₂S ([M]⁺) 162.0709; found, 162.0709

[0025]

10 (Example 2) Production of Coffee Aroma Composition

A coffee aroma composition (1) was prepared in accordance with a formulation described below by using methyl 3-mercapto-3-methylbutanoate (the compound (1-2)). As comparison, a coffee aroma composition (2) was prepared in accordance with a formulation described below.

15 [Table 1]

(Components)	Aroma composition (1) (parts by weight)	Aroma composition (2) (parts by weight)
Compound (1-2)	0.001	-
2-Methylpropanal	2.0	2.0
2-Methylbutanal	4.0	4.0
2-Methylpyrazine	10.0	10.0
Furfuryl mercaptan	5.0	5.0
5-Methylfurfural	20.0	20.0
Cyclotene	60.0	60.0
Guaiacol	8.0	8.0
Ethanol	Balance	Balance
Total	1000.0	1000.0

[0026]

The coffee aroma compositions (1) and (2) prepared in accordance with the

above-described formulations were each added to water in an amount of 0.1%, and a sensory test was conducted by six expert panelists. All the expert panelists pointed out that the aroma composition (1) was far more excellent than the aroma composition (2) because natural roasted sensation like fresh coffee was imparted to the aroma composition (1). The same results were obtained also in the case where 3-mercapto-3-methylbutanoic acid (the compound (1-1)) and ethyl 3-mercapto-3-methylbutanoate (the compound (1-3)) obtained in Example 1 were used.

[0027]

(Example 3) Production of Green Tea Aroma Composition

A green tea aroma composition (3) was prepared in accordance with a formulation described below by using the compound (1-2). As a comparison, a green tea aroma composition (4) was prepared in accordance with a formulation described below.

[Table 2]

(Components)	Aroma composition (3) (parts by weight)	Aroma composition (4) (parts by weight)
Compound (1-2)	0.00005	-
α -Ionone	0.1	0.1
cis-3-Hexenyl hexanoate	5.0	5.0
Methyl jasmonate	3.0	3.0
Hexanal	0.3	0.3
Hexanol	2.0	2.0
cis-3-Hexenol	1.0	1.0
α -Terpineol	10.0	10.0
Linalool	1.0	1.0
Nerol	2.0	2.0
Phenylacetaldehyde	2.0	2.0
cis-Jasmone	8.0	8.0
β -Ionone	1.0	1.0

Indole	0.6	0.6
Dimethyl sulfide	5.0	5.0
Ethanol	Balance	Balance
Total	1000.0	1000.0

[0028]

The green tea aroma compositions (3) and (4) prepared in accordance with the above-described formulations were each added to water in an amount of 0.1%, and a sensory test was conducted by six expert panelists. All the expert panelists pointed out that the aroma composition (3) was far more excellent than the aroma composition (4) because greenness of tea leaves and umami sensation were imparted to the aroma composition (3). The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0029]

10 (Example 4) Production of Black Tea Aroma Composition

A black tea aroma composition (5) was prepared in accordance with a formulation described below by using the compound (1-2). As a comparison, a black tea aroma composition (6) was prepared in accordance with a formulation described below.

15 [Table 3]

(Components)	Aroma composition (5) (parts by weight)	Aroma composition (6) (parts by weight)
Compound (1-2)	0.00005	-
2-Phenylethyl alcohol	1.0	1.0
Geraniol	1.0	1.0
Linalool oxide	0.5	0.5
Hexanal	0.05	0.05
Phenylacetaldehyde	0.1	0.1
cis-3-Hexenol	1.0	1.0
β -Ionone	0.001	0.001

Linalool	1.0	1.0
Damascenone	0.03	0.03
Isoeugenol	0.001	0.001
Ethanol	Balance	Balance
Total	1000.0	1000.0

[0030]

The black tea aroma compositions (5) and (6) prepared in accordance with the above-described formulations were each added to water in an amount of 0.1%, and a sensory test was conducted by six expert panelists. All the expert panelists pointed out that the aroma composition (5) was far more excellent than the aroma composition (6) because an expansive sweet aroma was imparted to the aroma composition (5). The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0031]

10 (Example 5) Production of Grapefruit Aroma Composition

A grapefruit aroma composition (7) was prepared in accordance with a formulation described below by using the compound (1-2). As a comparison, a grapefruit aroma composition (8) was prepared in accordance with a formulation described below.

15 [Table 4]

(Components)	Aroma composition (7) (parts by weight)	Aroma composition (8) (parts by weight)
Compound (1-2)	0.0001	-
Grapefruit oil (cold-pressed)	50.0	50.0
Ethanol	balance	balance
Total	1000.0	1000.0

[0032]

The grapefruit aroma compositions (7) and (8) prepared in accordance with the

above-described formulations were each added to water in an amount of 0.1%, and a sensory test was conducted by eight expert panelists. All the expert panelists pointed out that the aroma composition (7) was far more excellent than the aroma composition (8) because natural, juicy fruit juice sensation was imparted to the aroma composition (7).

- 5 The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0033]

(Example 6) Production of Grapefruit Aroma Composition

- 10 A grapefruit aroma composition (9) was prepared in accordance with a formulation described below by using the compound (1-2). As a comparison, a grapefruit aroma composition (10) was prepared in accordance with a formulation described below.

[Table 5]

(Components)	Aroma composition (9) (parts by weight)	Aroma composition (10) (parts by weight)
Compound (1-2)	0.0001	-
Nootkatone	2.0	2.0
Octanal	0.3	0.3
Decanal	0.2	0.2
Dodecanal	0.1	0.1
Linalool	0.8	0.8
cis-3-Hexenol	0.5	0.5
Ethanol	Balance	Balance
Total	1000.0	1000.0

[0034]

- 15 The grapefruit aroma compositions (9) and (10) prepared in accordance with the above-described formulations were each added to water in an amount of 0.1%, and a sensory test was conducted by eight expert panelists. All the expert panelists pointed out that the aroma composition (9) was far more excellent than the aroma composition (10) because natural, juicy fruit juice sensation was imparted to the aroma composition

(9). The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0035]

(Example 7) Production of Grape Aroma Composition

5 A grape aroma composition (11) was prepared in accordance with a formulation described below by using the compound (1-2). As a comparison, a grape aroma composition (12) was prepared in accordance with a formulation described below.

[Table 6]

(Components)	Aroma composition (11) (parts by weight)	Aroma composition (12) (parts by weight)
Compound (1-2)	0.001	-
Ethyl acetate	30.0	30.0
Ethyl butyrate	20.0	20.0
cis-3-Hexenol	8.0	8.0
Methyl anthranilate	15.0	15.0
Ethyl maltol	20.0	20.0
Propionic acid	15.0	15.0
Hexanoic acid	1.5	1.5
trans-2-Hexenal	2.0	2.0
Propyl acetate	25.0	25.0
Ethyl propionate	30.0	30.0
Linalool	0.3	0.3
Cinnamic alcohol	0.3	0.3
Damascenone	0.002	0.002
Ethanol	Balance	Balance
Total	1000.0	1000.0

[0036]

10 The grape aroma compositions (11) and (12) prepared in accordance with the above-described formulations were each added to water in an amount of 0.1%, and a

sensory test was conducted by eight expert panelists. All the expert panelists pointed out that the aroma composition (11) was far more excellent than the aroma composition (12) because full-bodied, natural pulpy sensation was imparted to the aroma composition (11). The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0037]

(Example 8) Production of Passion Fruit Aroma Composition

A passion fruit aroma composition (13) was prepared in accordance with a formulation described below by using the compound (1-2). As a comparison, a passion fruit aroma composition (14) was prepared in accordance with a formulation described below.

[Table 7]

(Components)	Aroma composition (13) (parts by weight)	Aroma composition (14) (parts by weight)
Compound (1-2)	0.001	-
Ethyl acetate	11.0	11.0
cis-3-Hexenol	3.0	3.0
Hexanol	5.0	5.0
Benzaldehyde	2.0	2.0
Ethyl hexanoate	19.0	19.0
cis-3-Hexenyl acetate	2.0	2.0
Linalool	70.0	70.0
Linalool oxide	4.0	4.0
Hexyl butyrate	25.0	25.0
Hexyl hexanoate	15.0	15.0
α -Terpineol	5.0	5.0
Citral	15.0	15.0
cis-3-Hexenyl butyrate	4.0	4.0
cis-3-Hexenyl hexanoate	5.0	5.0

β -Ionone	6.0	6.0
Ethanol	Balance	Balance
Total	1000.0	1000.0

[0038]

The passion fruit aroma compositions (13) and (14) prepared in accordance with the above-described formulations were each added to water in an amount of 0.1%, and a sensory test was conducted by eight expert panelists. All the expert panelists pointed out that the aroma composition (13) was far more excellent than the aroma composition (14) because natural, ripened fruit juice sensation was imparted to the aroma composition (13). The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0039]

10 (Example 9) Addition to Commercially Available Coffee Beverage

To a commercially available coffee beverage, 10 ppb of the compound (1-2) was added, and a sensory test was conducted by six expert panelists. All the expert panelists pointed out that fresh, natural roasted sensation and savory roasting flavor were imparted by adding the compound (1-2), so that a far more excellent aroma was achieved. The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0040]

(Example 10) Addition to Commercially Available Green Tea Beverage

To a commercially available green tea beverage, 5 ppb of the compound (1-2) was added, and a sensory test was conducted by six expert panelists. All the expert panelists pointed out that greenness of tea leaves and umami sensation were imparted by adding the compound (1-2), so that a far more excellent aroma was achieved. The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0041]

(Example 11) Addition to Commercially Available Black Tea Beverage

To a commercially available black tea beverage, 5 ppb of the compound (1-2)

was added, and a sensory test was conducted by six expert panelists. All the expert panelists pointed out that an expansive sweet aroma and astringency sensation were imparted by adding the compound (1-2), so that a far more excellent aroma was achieved. The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0042]

(Example 12) Addition to Commercially Available Grapefruit Juice Beverage

To a commercially available grapefruit juice beverage, 1 ppb of the compound (1-2) was added, and a sensory test was conducted by eight expert panelists. All the expert panelists pointed out that realistic fruit juice sensation, juiciness, and freshness were imparted by adding the compound (1-2), so that a far more excellent aroma was achieved. The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

[0043]

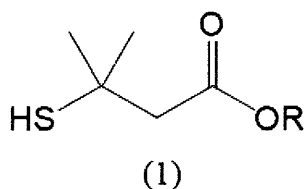
(Example 13) Addition to Commercially Available Grape Juice Beverage

To a commercially available grape juice beverage, 10 ppb of the compound (1-2) was added, and a sensory test was conducted by eight expert panelists. All the expert panelists pointed out that full-bodied, natural pulpy sensation was imparted by adding the compound (1-2), so that a far more excellent aroma was achieved. The same results were obtained also in the case where the compound (1-1) and the compound (1-3) were used.

Claims

[Claim 1]

An aroma composition comprising 3-mercapto-3-methylbutanoic acid represented by the following formula (1) or an ester thereof:



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wherein R represents a hydrogen atom, a methyl group, and an ethyl group.

[Claim 2]

The aroma composition according to claim 1, for a food or beverage.

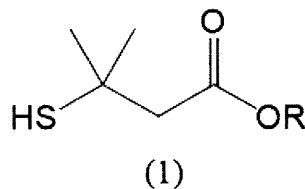
[Claim 3]

10 A food or beverage, an oral composition, a tobacco product, or a consumer product, comprising the aroma composition according to claim 1 or 2.

[Claim 4]

A method for producing a food or beverage, an oral composition, a tobacco product, or a consumer product, comprising adding the aroma composition according to
15 claim 1 or 2.

[Claim 5] A method for imparting an aroma flavor, using 3-mercapto-3-methylbutanoic acid represented by formula (1) or an ester thereof as an active ingredient:



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