

[DESCRIPTION]

[TITLE OF INVENTION]

SMOKING AGENT AND SMOKING DEVICE

5

[Technical Field]

[0001]

The present invention relates to a smoking agent and a smoking device.

Priority is claimed on Japanese Patent Application No. 2012-122922, filed May
10 30, 2012, the content of which is incorporated herein by reference.

[Background Art]

[0002]

Smoking agents and fumigants (collectively referred to as smoking agents) are
15 those containing various combustion agents, blowing agents or the like, or a heat
generating base which is a mixture of these, and a drug or the like for pest control which
serves as an active ingredient as main components. Smoking agents are excellent
formulations capable of controlling pests or the like by combusting or decomposing the
heat generating base during smoking treatment and ejecting and diffusing the drug into
20 the air in a short period of time by the action of the gases and smoke particles generated
at this time, and have been widely used conventionally.

Since smoking agents generate a large amount of smoke and gas at the time of
smoking treatment, in a space to be the target of smoking treatment (hereinafter, referred
to as a target space in some cases), the odor derived from the drug or heat generating
25 base remains.

[0003]

Conventionally, various proposals have been made in order to reduce the odor derived from the smoking agent.

For example, a smoking agent composition including a drug containing silver
5 and an organic blowing agent has been proposed (for example, see Patent Document 1).
According to the invention of Patent Document 1, an attempt has been made to reduce the odor derived from drugs by using a drug containing silver in place of an organic drug.

In addition, for example, a smoking agent composition including 1 to 20% by weight of a combustion agent and 30 to 70% by weight of a decomposition accelerator
10 has been proposed (for example, see Patent Document 2). According to the invention of Patent Document 2, an attempt has been made to reduce the odor by reducing the content of the combustion agent and suppressing rapid smoke generation.

[Citation List]

15 [Patent Documents]

[0004]

[Patent Document 1] Japanese Unexamined Patent Application, First Publication
No. 2011-12051

[Patent Document 2] Japanese Unexamined Patent Application, First Publication
20 No. Hei 11-246306

[Summary of Invention]

[Technical Problem]

[0005]

25 Incidentally, in order to mask the odor during smoking treatment or the odor of

smoking agent itself, or to increase the feeling of taking action and the palatability after smoking treatment, a perfume is incorporated in the smoking agent in some cases.

However, there is a problem in that the perfume incorporated in the smoking agent gradually volatilizes or decomposes to weaken the aroma over time, and the
5 desired improvement in the masking effect and palatability cannot be achieved sufficiently. In addition, when the incorporated amount of perfume is simply increased, there is a problem in that the percentage of drug that can diffuse to the target space (smoke conversion rate) decreases, and the effect of the drug becomes insufficient.

Accordingly, the present invention is intended to provide a smoking agent that
10 can exert the effect of the drug sufficiently and can favorably suppress the degradation of the aroma of perfume over time.

[Solution to Problem]

[0006]

15 As a result of extensive studies, the inventors of the present invention have found that by using a drug containing silver and incorporating a certain amount of surfactant and a certain amount of water, the effect of the drug can be sufficiently exhibited and the degradation of the aroma over time can be suppressed satisfactorily, which has led to the completion of the present invention.

20 [0007]

The present invention includes the following aspects.

[0008]

[1] A smoking agent characterized by including a component (A): a drug
containing silver; a component (B): an organic blowing agent; a component (C): 3 to
25 12% by mass of a surfactant; a component (D): a perfume; and a component (E): 0.1 to

5% by mass of water.

[0009]

[2] The smoking agent according to [1], wherein the aforementioned component (A) is at least one type selected from the group consisting of a silver simple substance, an inorganic silver salt, such as silver oxide and silver nitrate, and an inorganic drug in which these were supported on a carrier.

[0010]

[3] The smoking agent according to [1] or [2], wherein the aforementioned component (B) is at least one type selected from the group consisting of azodicarbonamide, p,p'-oxybis(benzenesulfonyl hydrazide), N,N'-dinitrosopentamethylenetetramine and azobisisobutyronitrile.

[0011]

[4] The smoking agent according to any one of [1] to [3], wherein the aforementioned component (C) is a nonionic surfactant.

15 [0012]

[5] The smoking agent according to any one of [1] to [4], wherein the aforementioned component (D) is a perfume composition containing at least one type of perfume component selected from the group consisting of γ -undecalactone, γ -decalactone, Iso E Super, acetyl cedrene, ambroxan, damascone, hexyl cinnamic aldehyde and coumarin.

[0013]

[6] The smoking agent according to any one of [1] to [5], wherein a concentration of silver with respect to the total mass of the smoking agent is from 0.001 to 0.5% by mass.

25 [0014]

[7] The smoking agent according to any one of [1] to [6], wherein a concentration of silver contained in the aforementioned component (A) with respect to the total mass of the component (A) is from 0.01 to 10% by mass.

[0015]

5 [8] The smoking agent according to any one of [1] to [7], wherein a content of the aforementioned component (B) with respect to the total mass of the smoking agent is from 50 to 80% by mass.

[0016]

10 [9] The smoking agent according to any one of [1] to [8], wherein a content of the aforementioned component (C) with respect to the total mass of the smoking agent is from 3 to 12% by mass.

[0017]

[10] The smoking agent according to any one of [1] to [9], wherein a mass ratio represented by a formula: [mass of the aforementioned component (D)] / [mass of the
15 aforementioned component (C)] is from 5 to 100.

[0018]

[11] The smoking agent according to any one of [1] to [10], wherein a mass ratio represented by a formula: [mass of the aforementioned component (C)] / [mass of the
aforementioned component (E)] is from 1 to 80.

20 [0019]

[12] A smoking device characterized by including an accommodation container in which the smoking agent described in [1] is accommodated and a heating means for heating the aforementioned smoking agent.

25 [Advantageous Effects of Invention]

[0020]

According to the smoking agent of the present invention, the effect of the drug can be sufficiently exhibited and also the degradation of the aroma of perfume over time can be suppressed satisfactorily.

5

[Brief Description of Drawings]

[0021]

FIG. 1 is a cross-sectional view of a smoking device according to an embodiment of the present invention.

10

[Description of Embodiments]

[0022]

(Smoking agent)

A smoking agent according to a first aspect of the present invention is one including a component (A): a drug containing silver; a component (B): an organic blowing agent; a component (C): a surfactant; a component (D): a perfume; and a component (E): water.

[0023]

<Component (A): Drug containing silver>

20

A component (A) of the present invention is a drug containing silver. By using the component (A), the effects of microbial control, such as bactericidal-, antibacterial-, mildewproofing- and antifungal actions, deodorizing effects, insecticidal effects and the like can be exhibited. In addition, as compared to the conventional organic agents that are widely used in smoking agents, such as 3-iodo-2-propynyl butylcarbamate (IPBC) and 2-isopropyl-5-methylphenol (IPMP), the component (A) has less odor. For this

25

reason, the odor derived from the smoking agent during and after the smoking treatment can be reduced.

[0024]

The component (A) is selected appropriately depending on the purpose of the smoking agent. As the component (A), for example, drugs containing silver and acting as bactericides, antibacterial agents, mildewproofing agents, antifungal agents, deodorants, insecticidal agents, or the like can be mentioned, and among them, drugs containing silver that are bactericides, antibacterial agents, mildewproofing agents, antifungal agents or deodorants can be favorably used.

10 [0025]

As the component (A), for example, those containing, as an active ingredient, a silver compound which has antibacterial-, bactericidal-, mildewproofing-, antifungal- and deodorizing actions including: a silver simple substance; silver oxide; an inorganic silver salt, such as silver chloride, silver nitrate, silver sulfate, silver carbonate and silver sulfonate; and an organic silver salt, such as silver formate and silver acetate; can be mentioned.

[0026]

In addition, as the component (A), those (hereinafter, referred to as a complex in some cases) in which the active ingredient described above is supported by a material, such as zeolite, silica gel, low molecular glass, calcium phosphate, silicates and titanium oxide (hereinafter, referred to as a carrier in some cases) may also be used. Examples of the complex include zeolite-based antimicrobial agents, silica gel-based antimicrobial agents, titanium oxide-based antimicrobial agents and silicate-based antimicrobial agents that are carrying silver compounds, such as a silver simple substance, silver oxide, an inorganic silver salt and an organic silver salt.

Among these, as the component (A), from the viewpoint of further reducing the odor derived from the component (A), an inorganic silver salt, such as a silver simple substance, silver oxide and silver nitrate, or an inorganic agent in which these are supported on a carrier are preferred; a zeolite-based inorganic antimicrobial agent
5 carrying a silver compound, a silica/alumina-based inorganic antimicrobial agent carrying a silver compound, and a silicate-based inorganic antimicrobial agent carrying a silver compound are more preferred; a zeolite-based antimicrobial agent carrying a silver compound is even more preferred; and a zeolite-based antimicrobial agent carrying an inorganic silver salt, such as a silver simple substance, silver oxide and silver nitrate, are
10 particularly preferred. By using an inorganic agent, the odor derived from the component (A) during and after the smoking treatment can be further reduced.

One type of these components (A) may be used alone, or two or more types thereof may be used in combination.

[0027]

15 The form of the component (A) is not particularly limited and can be determined in consideration of the size of the target space or the like. The finer the particles of the component (A) are, the higher the smoke conversion rate will be, and the effect of the component (A) can be exhibited sufficiently and is also spread to a wide area. On the other hand, it becomes difficult for the particles of the component (A) to fall down after
20 the spreading if they are too small, and time is required until the onset of the effect of the component (A) in the lower part of the target space.

For example, the volume average particle size of the component (A) is preferably from 0.01 to 1,000 μm , more preferably from 0.5 to 100 μm , and even more preferably from 1 to 5 μm . In the smoking agent of the present invention, even the
25 component (A) having such a relatively large particle size can be converted to smoke and

spread. Here, the expression “smoke conversion” means that the component (A) is made into a state where it can be diffused into the target space.

It should be noted that the volume average particle size refers to a value determined by a laser diffraction/scattering particle size distribution analyzer (LA910, 5 manufactured by Horiba Ltd.) and can be measured as follows. The component (A) is dispersed in distilled water so that the solid content thereof is 1% by mass to prepare a sample. The sample is charged into a laser diffraction/scattering particle size distribution analyzer dispersed inside the apparatus with ultrasonic waves, and then the particle size distribution is measured by irradiating laser light. A diameter at which the 10 cumulative volume frequency is 50% (volume) is taken as the average particle size.

[0028]

The content of the component (A) in the smoking agent is determined in accordance with the type and active ingredient concentration of the component (A) and the function required to the smoking agent. For example, the content of the component 15 (A) in the smoking agent is preferably an amount such that the silver concentration in the smoking agent with respect to the total mass of the smoking agent is from 0.001 to 0.5% by mass, more preferably from 0.05 to 0.1% by mass, and even more preferably from 0.05 to 0.5% by mass. If it is less than the lower limit described above, there is a possibility that the effect of the component (A) is reduced, whereas even if it is greater 20 than the upper limit described above, there is a possibility that the effect of the component (A) is saturated and further improvements in the effect may not be achieved.

It should be noted that in the present specification, when two or more types of components are used in combination, the content and concentration of each component means the total amount thereof.

25 The silver concentration in the component (A) with respect to the total mass of

the component (A) is preferably from 0.01 to 10% by mass, and more preferably from 0.05 to 5% by mass.

[0029]

<Component (B): Organic blowing agent>

- 5 A component (B) is an organic blowing agent. As the component (B), those that are thermally decomposed by heating and generate a large amount of heat as well as carbon dioxide gas, nitrogen gas and the like (hereinafter, collectively referred to as the blowing gas) are used, and examples thereof include azodicarbonamide, p,p'-oxybis(benzenesulfonyl hydrazide), N,N'-dinitrosopentamethylenetetramine and
- 10 azobisisobutyronitrile. Among these, from the viewpoints of the decomposition temperature, the amount of blowing gas generated, and the like, azodicarbonamide is preferred. These components (B) foam and melt with the component (A) and the component (C) by heating, and the component (A) and the component (C) can be converted to smoke by the action of the pyrolysis gas of the component (B).
- 15 One type of these components (B) may be used alone, or two or more types thereof may be used in combination.

[0030]

- The content of the component (B) in the smoking agent can be determined in consideration of the type of the component (B), the particle size of the component (A),
- 20 and the like, and, for example, with respect to the total mass of the smoking agent, is preferably from 50 to 80% by mass, more preferably from 60 to 75% by mass, and even more preferably from 65 to 75% by mass. If it is less than the lower limit described above, the component (A) may not be converted to smoke efficiently, whereas if it is greater than the upper limit described above, there is a tendency that the amount of
- 25 scattered decomposition product of the component (B) increases to contaminate the target

space.

[0031]

<Component (C): Surfactant>

5 A component (C) is a surfactant. By including both the component (C) and component (E), the smoking agent can suppress deterioration of the aroma of the component (D) over time and can also improve the aroma during and after the smoking treatment.

10 As the component (C), the anionic surfactants, cationic surfactants, nonionic surfactants, and the like that are usually used for detergent applications and emulsification applications of food can be mentioned.

[0032]

Examples of the anionic surfactants include alkyl benzene sulfonates, polyoxyethylene alkyl ether sulfates, α -olefin sulfonates and higher alcohol sulfates. One type of these anionic surfactants may be used alone, or two or more types thereof
15 may be used in combination.

[0033]

Examples of the cationic surfactants include alkyltrimethylammonium salts, alkyldimethylbenzylammonium salts and alkylamine salts. One type of these cationic surfactants may be used alone, or two or more types thereof may be used in combination.

20 [0034]

Examples of the nonionic surfactants include nonionic surfactants that are usually used for detergents, such as polyoxyethylene alkyl ethers, polyoxyethylene polyoxypropylene alkyl ethers and alkanolamides, or fatty acid esters of polyhydric alcohols and the alkylene oxide adducts thereof that are used as emulsifiers for food
25 applications, such as sorbitan fatty acid esters, glycerol fatty acid esters, polyglycerol

fatty acid esters, sucrose fatty acid esters, propylene glycol fatty acid esters, glycerol alkyl ethers, polyoxyethylene sorbitan fatty acid esters, polyoxyethylene glycerol fatty acid esters and polyoxyethylene propylene glycol fatty acid esters, and among these, fatty acid esters of polyhydric alcohols and the alkylene oxide adducts thereof are preferred.

5 Fatty acid esters of polyhydric alcohols are compounds in which polyhydric alcohols and fatty acids are linked by ester bonds. One type of these nonionic surfactants may be used alone, or two or more types thereof may be used in combination.

[0035]

The hydrocarbon group of the fatty acid in the fatty acid ester of polyhydric
10 alcohol or the alkylene oxide adduct thereof may be any of an alkyl group, an alkenyl group and an alkynyl group.

The number of carbon atoms of the fatty acid in the fatty acid esters of polyhydric alcohols or the alkylene oxide adducts thereof is preferably from 4 to 22, and more preferably from 8 to 18. If it is within the above-mentioned range, the
15 deterioration of the aroma of the component (D) over time can be suppressed more favorably.

As the polyhydric alcohol in the fatty acid esters of polyhydric alcohols or the alkylene oxide adducts thereof, sorbitan, glycerol and sucrose are preferred, and among them, sorbitan and glycerin are preferred.

20 The number of carbon atoms of the alkylene oxide in the alkylene oxide adducts of fatty acid esters of polyhydric alcohols is preferably from 2 to 4, more preferably from 2 to 3, and even more preferably 2 (that is, ethylene oxide). If it is within the above-mentioned range, the deterioration of the aroma of the component (D) over time can be suppressed more favorably.

25 The average number of moles of alkylene oxide added in the alkylene oxide

adducts of fatty acid esters of polyhydric alcohols is preferably from 1 to 30 moles, and more preferably from 1 to 20 moles. If it is within the above-mentioned range, the deterioration of the aroma of the component (D) over time can be suppressed more favorably.

5 The alkylene oxide adducts of fatty acid esters of polyhydric alcohols may be those in which one type of alkylene oxide is added, or may be those in which two or more types of alkylene oxides are added.

[0036]

As the fatty acid esters of polyhydric alcohols or the alkylene oxide adducts
10 thereof, sorbitan fatty acid esters, glycerol fatty acid esters and the ethylene oxide adducts thereof are preferred.

As the sorbitan fatty acid esters, for example, monooleates, such as sorbitan monooleate, and monolaurates, such as sorbitan monolaurate, are preferred.

As the ethylene oxide adducts of sorbitan fatty acid esters (that is,
15 polyoxyethylene sorbitan fatty acid esters), polyoxyethylene sorbitan monooleate is preferred.

As the glycerol fatty acid esters, for example, glyceryl monocaprylate is preferred.

[0037]

20 The component (C) is preferably a liquid at 25°C (that is, the melting point thereof is 25°C or less). If the melting point is 25°C or less, the miscibility with the component (D) increases, the uniformity of the component (D) in the smoking agent can be achieved, and the deterioration of the aroma of the component (D) over time can be suppressed more favorably.

25 In addition, if the melting point is 25°C or less, it can be easily attached with the

component (A) onto the ceiling, wall, floor and the like that forms the target space, thereby easily exhibiting the effects of the component (A) over a long period of time. The lower limit of the melting point of the component (C) is not particularly limited, although it is preferably, for example, at least -25°C and more preferably at least -15°C.

- 5 If it is less than the lower limit described above, the component (C) may be easily adhered onto the ceiling, wall, floor and the like that forms the target space, but may be difficult to reside.

[0038]

- Among the components (C) described above, when considering that the target
10 space is a living space or the like, as well as further suppression of the deterioration of the aroma of the component (D) over time, nonionic surfactants are preferred. In particular, as the component (C), fatty acid esters of polyhydric alcohols or the alkylene oxide adducts thereof are preferred, and the sorbitan fatty acid esters, polyoxyethylene sorbitan fatty acid esters, glycerol fatty acid esters and the ethylene oxide adducts thereof
15 that have a melting point of 25°C or less are more preferred.

One type of the above components (C) may be used alone, or two or more types thereof may be used in combination.

[0039]

- The content of the component (C) in the smoking agent with respect to the total
20 mass of the smoking agent is from 3 to 12% by mass, preferably from 3 to 10% by mass, and more preferably from 5 to 8% by mass. If it is less than the lower limit described above, the amount of the component (C) is too small to sufficiently suppress the degradation of the aroma of the component (D) over time, whereas if it is greater than the upper limit described above, the smoke conversion rate of the component (A) becomes
25 insufficient.

[0040]

In the smoking agent, a mass ratio represented by the formula: [mass of silver in the component (A)] / [mass of the component (C)] (hereinafter, referred to as the A/C ratio in some cases) can be determined in consideration of the type of the component (C) and the like, and is preferably, for example, from 0.0001 to 0.2, and more preferably from 0.005 to 0.02. If the A/C ratio is less than the lower limit described above, there is a possibility that the component (A) is less likely to be converted to smoke to thereby reduce the effects of the component (A), whereas if the A/C ratio is greater than the upper limit described above, there is a possibility that the amount of the component (C) is too small to sufficiently suppress the degradation of the aroma of the component (D) over time.

[0041]

In the smoking agent, a mass ratio represented by the formula: [mass of the component (B)] / [mass of the component (C)] (hereinafter, referred to as the B/C ratio in some cases) is preferably from 5 to 27, and more preferably from 8 to 15. If the B/C ratio is less than the lower limit described above, there is a possibility that the smoke conversion rate of the component (A) becomes insufficient to thereby reduce the effects of the component (A), whereas if the B/C ratio is greater than the upper limit described above, there is a possibility that the amount of the component (C) is too small to sufficiently suppress the degradation of the aroma of the component (D) over time.

[0042]

<Component (D): Perfume>

A component (D) is a perfume. By including the component (D), it is possible to mask the odor during and after the smoking treatment or the odor of smoking agent itself, or to provide the target space during and after the smoking treatment with any

aroma.

As the component (D), perfume components and perfume compositions obtained by dispersing perfume components in a solvent can be mentioned. The lists of perfume components are described in various literatures, such as “Perfume and Flavor Chemicals”, Vol. I and II, Steffen Arctander, Allured Pub. Co. (1994), “Synthetic perfumes - Chemistry and product knowledge”, by Motoichi Indo, The Chemical Daily Co., Ltd. (1996), “Perfume and Flavor Materials of Natural Origin”, Steffen Arctander, Allured Pub. Co. (1994), “Encyclopedia of fragrance”, edited by Japan Perfumery & Flavoring Association, Asakura Publishing Co., Ltd. (1989) and “Perfumery Material Performance V.3.3”, Boelens Aroma Chemical Information Service (1996), and “Flower oils and Floral Compounds In Perfumery”, Danute Lajaujis Anonis, Allured Pub. Co. (1993). Specific examples of the perfume components include ambroxan, anisaldehyde, acetyl cedrene, benzyl alcohol, citral, coumarin, cyclamen aldehyde, damascone α , galaxolide, γ -decalactone, γ -undecalactone, Habanolide, Hedione, heliotropine, hexyl acetate, hexyl cinnamic acid, hexyl salicylate, Iso E Super, Ligustral, lilial, limonene, methyl ionone gamma, phenylethyl alcohol and rosephenone, and examples of the solvent include dipropylene glycol.

Among the perfume components, γ -undecalactone, γ -decalactone, Iso E Super, acetyl cedrene, ambroxan, damascone, hexyl cinnamic aldehyde and coumarin are excellent in terms of the effect of masking the odor during the smoking treatment and the perfume retention after the smoking treatment, and thus are preferred. As the perfume composition obtained by dispersing a perfume component in a solvent, those containing γ -undecalactone, γ -decalactone, Iso E Super, acetyl cedrene, ambroxan, damascone, hexyl cinnamic aldehyde and coumarin as a perfume component and containing dipropylene glycol as a solvent are preferred.

[0043]

The content of the component (D) in the smoking agent determined appropriately in consideration of the type of the component (D) and the like, and, for example, with respect to the total mass of the smoking agent, is preferably from 0.1 to 2% by mass, more preferably from 0.1 to 1% by mass, even more preferably from 0.3 to 1% by mass, and particularly preferably from 0.4 to 0.8% by mass. If it is less than the lower limit described above, there is a possibility that after storing the smoking agent, the aroma during and after the smoking treatment or the aroma of the smoking agent itself becomes insufficient. If it is greater than the upper limit described above, there is a possibility that the smoke conversion rate of the component (A) is reduced.

When the component (D) is a perfume composition, the content of the perfume component in the component (D) is preferably from 50 to 99% by mass, and more preferably from 70 to 95% by mass, with respect to the total mass of the component (D).

[0044]

In the smoking agent, a mass ratio represented by the formula: [mass of the component (D)] / [mass of the component (C)] (hereinafter, referred to as the D/C ratio in some cases) is preferably from 5 to 100, more preferably from 6 to 80, and even more preferably from 10 to 18. If the D/C ratio is less than the lower limit described above, there is a possibility that the aroma during and after the smoking treatment becomes insufficient or the aroma of the smoking agent itself becomes insufficient. If the D/C ratio is greater than the upper limit described above, there is a possibility that the degradation of the aroma of the component (D) over time cannot be suppressed sufficiently.

[0045]

<Component (E): Water>

A component (E) is water. By including the component (E), the smoking agent can suppress deterioration of the aroma of the component (D) over time satisfactorily.

As the component (E), in the production method described below, it may be the tap water, ion-exchanged water, distilled water or the like to be newly added, or may be
5 the water already contained in the component (C) and the like.

[0046]

The content of the component (E) in the smoking agent with respect to the total mass of the smoking agent is from 0.1 to 5% by mass, preferably from 0.1 to 4% by mass, and more preferably from 0.3 to 2% by mass. If it is less than the lower limit described
10 above, the degradation of the aroma of the component (D) over time cannot be suppressed sufficiently, whereas if it is greater than the upper limit described above, the smoke conversion rate of the component (A) becomes insufficient.

[0047]

In the smoking agent, a mass ratio represented by the formula: [mass of the
15 component (C)] / [mass of the component (E)] (hereinafter, referred to as the C/E ratio in some cases) is preferably from 1 to 30, and more preferably from 5 to 30. If the C/E ratio is within the range described above, the smoke conversion rate of the component (A) can be further enhanced. In another aspect, the C/E ratio is preferably from 1 to 80, and more preferably from 2 to 80.

20 [0048]

In the smoking agent, a mass ratio represented by the formula: [mass of the component (D)] / [mass of the component (E)] (hereinafter, referred to as the D/E ratio in some cases) is preferably from 0.05 to 10, and more preferably from 0.2 to 2.5. If the D/E ratio is less than the lower limit described above, there is a possibility that the aroma
25 during and after the smoking treatment becomes insufficient or the aroma of the smoking

agent itself becomes insufficient. If the D/E ratio is greater than the upper limit described above, there is a possibility that the degradation of the aroma of the component (D) over time cannot be suppressed sufficiently.

[0049]

5 In the smoking agent, the total amount of the component (C) and the component (E) with respect to the total mass of the smoking agent is preferably from 3 to 15% by mass, and more preferably from 5 to 10% by mass. If it is less than the lower limit described above, the degradation of the aroma of the component (D) over time may not be suppressed sufficiently, whereas if it is greater than the upper limit described above,
10 there is a possibility that the volatilization rate of the component (A) is reduced.

[0050]

<Optional components>

The smoking agent can contain an optional component other than the components (A) to (E) within a range that does not impair the effects of the present
15 invention. Examples of the optional components include additives, such as stabilizers, binders, excipients, perfumes, and pigments. Of these optional components, it is preferable to contain any one or more types of stabilizers, binders and excipients.

[0051]

As the stabilizer, dibutylhydroxytoluene, butylhydroxyanisole, propyl gallate,
20 epoxy compounds (for example, epoxidized soybean oil, epoxidized linseed oil, and the like) and the like can be mentioned.

[0052]

Examples of the binder include methyl cellulose, ethyl cellulose, carboxymethyl cellulose, hydroxypropyl methylcellulose, hydroxypropyl cellulose, starch, dextrin,
25 hydroxypropyl starch, gelatin, polyvinyl alcohol, polyvinyl acetate, polyvinyl

pyrrolidone and sodium polyacrylate.

[0053]

Examples of the excipients include clay (that is, hydrous aluminum silicate), talc, diatomaceous earth, kaolin, bentonite and white carbon.

5 [0054]

<Production method>

The smoking agent of the present invention is prepared in the form of a solid formulation, such as a powder, a granule or a tablet. As a method for producing the smoking agent, a known production method is used depending on the intended dosage
10 form. For example, when preparing a granular formulation, it can be produced by a known method for producing a granulated material, such as an extrusion granulation method, a compression granulation method, an agitation granulation method, a tumbling granulation method and a fluidized bed granulation method.

Examples of the production methods through an extrusion granulation method
15 include the following method. First, each component of the smoking agent is mixed by a kneader or the like, followed by addition of an appropriate amount of water thereto and further mixing to obtain a mixture. At this time, it is preferable to form a mixed solution by mixing the components (C) to (E) and an optional component in the form of a liquid in advance, and then add the mixed solution to a powder mixture containing the
20 components (A) and (B) and an optional component in the form of a solid (for example, clay or the like) to mix. In addition, the aforementioned mixed solution is preferably an emulsified product.

By using a die having an arbitrary opening diameter, the resulting mixture is granulated with a forward extrusion- or lateral extrusion granulator. The
25 aforementioned granulated material is further cut into an arbitrary size with a cutter or

the like, and then dried.

Examples of the drying method include a heat-drying method using a conventionally known drying machine.

The drying temperature is not particularly limited, and is set at, for example, 50
5 to 100°C.

The drying time is determined appropriately depending on the drying temperature.

[0055]

As the smoking agent of the present invention, it is preferably a smoking agent
10 in which: the component (A) is at least one type selected from the group consisting of an inorganic silver salt, such as a silver simple substance, silver oxide and silver nitrate, and an inorganic drug in which these are supported on a carrier, the component (B) is at least one type selected from the group consisting of azodicarbonamide, p,p'-oxybis(benzenesulfonyl hydrazide), N,N'-dinitrosopentamethylenetetramine and
15 azobisisobutyronitrile, the component (C) is a nonionic surfactant, and the component (D) is a perfume composition containing at least one type of perfume component selected from the group consisting of γ -undecalactone, γ -decalactone, Iso E Super, acetyl cedrene, ambroxan, damascone, hexyl cinnamic aldehyde and coumarin, and the component (E) is water;

20 more preferably a smoking agent in which: the component (A) is at least one type selected from the group consisting of a zeolite-based inorganic antimicrobial agent carrying a silver compound, a silica/alumina-based inorganic antimicrobial agent carrying a silver compound, and a silicate-based inorganic antimicrobial agent carrying a silver compound, the component (B) is azodicarbonamide, the component (C) is at least
25 one type selected from the group consisting of a sorbitan fatty acid ester, a

polyoxyethylene sorbitan fatty acid ester, a glycerol fatty acid ester and an ethylene oxide adduct thereof that have a melting point of 25°C or less, the component (D) is a perfume composition containing at least one type of perfume component selected from the group consisting of ambroxan, anisaldehyde, acetyl cedrene, benzyl alcohol, citral, coumarin, cyclamen aldehyde, damascone α , galaxolide, γ -decalactone, γ -undecalactone, Habanolide, Hedione, heliotropine, hexyl acetate, hexyl cinnamic acid, hexyl salicylate, Iso E Super, Ligustral, lilial, limonene, methyl ionone gamma, phenylethyl alcohol, rosephenone and dipropylene glycol, and the component (E) is water;

and even more preferably a smoking agent in which: the component (A) is at least one type selected from the group consisting of a zeolite-based inorganic antimicrobial agent carrying silver, a silica/alumina-based inorganic antimicrobial agent carrying silver, and a silicate-based inorganic antimicrobial agent carrying silver, the component (B) is azodicarbonamide, the component (C) is at least one type selected from the group consisting of sorbitan monooleate, glyceryl monocaprylate, sorbitan monolaurate and polyoxyethylene sorbitan monooleate, the component (D) is a perfume composition containing ambroxan, anisaldehyde, acetyl cedrene, benzyl alcohol, citral, coumarin, cyclamen aldehyde, damascone α , galaxolide, γ -decalactone, γ -undecalactone, Habanolide, Hedione, heliotropine, hexyl acetate, hexyl cinnamic acid, hexyl salicylate, Iso E Super, Ligustral, lilial, limonene, methyl ionone gamma, phenylethyl alcohol, rosephenone and dipropylene glycol, and the component (E) is water.

[0056]

<Smoking method>

Examples of the smoking method of the present invention include conventionally known methods, and, for example, methods in which a smoking agent is accommodated in an arbitrary container, such as a metal container and a ceramic

container, and the smoking agent is heated directly or indirectly can be mentioned, and among these, a method to heat indirectly is preferred. This is because by indirectly heating a smoking agent, it is possible to reduce the indoor pollution caused by cinders of the smoking agent or the like. In addition, by using a smoking device which will be
5 described later, the target space may be subjected to a smoking treatment.

The target space is not particularly limited, and, for example, a bathroom, a living room, a closet, a toilet and the like can be mentioned.

[0057]

As means for indirectly heating the smoking agent, it may be one as long as the
10 thermal energy that can cause thermal decomposition of the component (B) can be supplied to the smoking agent without burning the smoking agent, and, for example, a method in which a smoking agent is accommodated in a metal container, and the smoking agent is heated through the metal container can be mentioned.

As a heating method, it is possible to use a conventionally known method, and
15 examples thereof include a method in which a substance that generates heat upon contact with water is brought into contact with water to utilize the heat of reaction; and a method in which an iron powder and an oxidizing agent (ammonium chlorate or the like) are mixed, or a metal and a metal oxide having a lower ionization tendency than the metal or an oxidizing agent are mixed to utilize the heat of oxidation reaction. Examples of the
20 substance that generates heat upon contact with water include calcium oxide, magnesium chloride, aluminum chloride, calcium chloride and iron chloride. Among these, from the viewpoint of practicality, the method in which a substance that generates heat upon contact with water is brought into contact with water to utilize the heat of reaction is preferred, and a method to utilize the heat of reaction between calcium oxide and water is
25 more preferred.

[0058]

The amount of smoking agent to be used may be set appropriately in accordance with the volume of the target space, and, for example, is preferably from 0.1 to 2.4 g and more preferably from 0.4 to 2.0 g, per 1 m³ of the target space.

5 The smoking treatment time (i.e., the time from the start of the smoking up to the release of the sealing of the target space) is not particularly limited, and is preferably 1 hour or more, and more preferably 1.5 hours or more.

[0059]

(Smoking device)

10 A smoking device according to a second aspect of the present invention is provided with an accommodation container in which the smoking agent according to the first aspect of the present invention is accommodated, and a heating means for heating the accommodated smoking agent.

15 A smoking device according to an embodiment of the present invention will be described below with reference to FIG. 1.

20 A smoking device 10 in FIG. 1 is a smoking device of an indirect heating system, and mainly includes a housing 12, a heating section 20 provided inside the housing 12, and a smoking agent section 32 provided inside the housing 12. The housing 12 is constituted of a substantially cylindrical shaped main body 14, a bottom portion 16 and a lid portion 18.

 A smoking agent container 30 (accommodation container) is provided inside the housing 12, and a smoking agent is accommodated in the smoking agent container 30 to form the smoking agent section 32.

 In the smoking device 10, the heating section 20 is a heating means.

25 [0060]

The lid portion 18 has a through hole, and examples thereof include a mesh, a punching metal and a grid-like frame body. Examples of the material of the lid portion 18 include a metal and a ceramic.

The material of the main body 14 is the same as that of the lid portion 18.

5 [0061]

The smoking agent container 30 functions as a container for accommodating the smoking agent section 32 and also functions as a heat transfer unit for transmitting the thermal energy generated by the heating section 20 to the smoking agent section 32. As the smoking agent container 30, for example, a container made of metal, and the like can
10 be used.

[0062]

The heating section 20 is determined by considering the amount of heat required for the smoke conversion of the smoking agent section 32, and, for example, may be those accommodating a substance that generates heat upon contact with water (for
15 example, calcium oxide or the like), may be those in which an iron powder and an oxidizing agent are accommodated while being separated by a partition member, or may be those in which a metal and a metal oxide having a lower ionization tendency than the metal or an oxidizing agent are accommodated while being separated by a partition member.

20 Among these, those accommodating a substance that generates heat upon contact with water are preferred, and those accommodating calcium oxide are more preferred.

[0063]

The bottom portion 16 can be determined depending on the mechanism of the
25 heating section 20, and, for example, when the heating section 20 is constituted of a

substance that generates heat upon contact with water (calcium oxide or the like), it is possible to use a non-woven fabric, a mesh made of metal or the like for the bottom portion 16. By using a non-woven fabric or mesh as the bottom portion 16, it is possible to heat water by infiltrating into the heating section 20 from the bottom portion 16.

[0064]

A smoking method using the smoking device 10 will be described. First, the smoking device 10 is installed inside the target space. Then, the heating section 20 is caused to generate heat in accordance with the mechanism of the heating section 20. For example, when the heating section 20 is composed of calcium oxide, the bottom portion 16 is immersed in water. When the bottom portion 16 is immersed in water, water infiltrates the bottom portion 16 and comes into contact with calcium oxide, thereby causing the heating section 20 to generate heat. When the heating section 20 generates heat, the smoking agent section 32 is heated through the smoking agent container 30. The smoking agent in the heated smoking agent section 32 produces a gas due to decomposition of the component (B), and, together with the produced gas, the component (A), the component (C) and the component (D) are converted to smoke, passed through the through hole of the lid portion 18, and diffused into the target space.

[0065]

The shape of the main body is not particularly limited, and may be a cylindrical shape or may be a rectangular parallelepiped shape. The shape of the bottom portion is not particularly limited, and may be a circular shape or a polygonal shape. More specifically, a cylindrical shape having a height of 6 to 12 cm and a radius of 3 to 6 cm is preferred.

The shape of the accommodation container is not particularly limited, and may

be a cylindrical shape or may be a rectangular parallelepiped shape. The shape of the bottom portion of the accommodation container is not particularly limited, and may be a circular shape or a polygonal shape. More specifically, a cylindrical shape having a height of 6.0 to 10.0 cm and a radius of 2.5 to 4.0 cm is preferred.

5 [0066]

In the above embodiment, although the smoking device was described by taking a smoking device of an indirect heating system as an example, the present invention is not limited thereto. For example, it may be a smoking device of a direct heating system similar to the smoking devices described in Japanese Unexamined Patent Application,
10 First Publication No. 2011-193874 and Japanese Unexamined Patent Application, First Publication No. 2002-199834. A smoking device of a direct heating system is one provided with a smoking agent section that accommodates the smoking agent and an igniter for igniting the smoking agent, and in which the igniter is a heating means.

However, because there is no generation of flame to burn the smoking agent
15 itself, a smoking device of an indirect heating system is preferred.

[0067]

As has been described above, due to the use of the component (A) as a drug, the smoking agent of the present invention can reduce the odor derived from the drug.

In addition, since the component (C) and the component (E) are included, it is
20 possible to suppress deterioration of the aroma of the component (D) over time.

Furthermore, since the contents of the component (C) and the component (E) are within a specific range, the effects of the component (A) can be exhibited sufficiently without impairing the smoke conversion rate of the component (A).

25 [Examples]

[0068]

A more detailed description of the present invention is presented below based on a series of Examples, although the present invention is in no way limited by the following description. It should be noted that in the tables, the content of the component (A) shows the content of silver, and the content of other components shows the amount in terms of pure content.

[0069]

(Raw materials used)

<Component (A): Drug containing silver>

10 A-1: silver carrying, zeolite-based inorganic antimicrobial agent (product name: Zeomic AJ10N; volume average particle size: 2.5 μm ; true specific gravity: 2 g/cm^3 (20°C); bulk specific gravity: 0.4 g/cm^3 (20°C); silver content: 2.5% by mass; manufactured by Sinanen Zeomic Co., Ltd.).

15 A-2: silver carrying, silica/alumina-based inorganic antimicrobial agent (product name: ATOMY BALL-(UA); volume average particle size: 15 nm; silver content: 0.07% by mass; manufactured by JGC Catalysts and Chemicals Ltd.).

 A-3: silver carrying, silicate-based inorganic antimicrobial agent (product name: AIS-NAZ320; volume average particle size: 2 μm ; silver content: 1.2% by mass; manufactured by JGC Catalysts and Chemicals Ltd.).

20 [0070]

<Component (B): Organic blowing agent>

 B-1: azodicarbonamide (ADCA) (product name: Daiblow AC.2040(C), manufactured by Dainichiseika Color & Chemicals Mfg. Co., Ltd.).

[0071]

25 <Component (C): Surfactant>

C-1: sorbitan monooleate (product name: Emasol O-10V, manufactured by Kao Corporation), melting point; 13°C.

C-2: glyceryl monocaprylate (product name: MG-80, manufactured by Dai-ichi Kogyo Seiyaku Co., Ltd.), melting point; 12°C.

5 C-3: sorbitan monolaurate (product name: Emasol L-10V, manufactured by Kao Corporation), melting point; 13°C.

C-4: polyoxyethylene sorbitan monooleate (20 mole adduct of ethylene oxide on average) (product name: Emasol O-120V, manufactured by Kao Corporation), melting point; -23°C. In the tables, it is described as POE (20) sorbitan monooleate.

10 [0072]

<Component (D): Perfume>

Perfume compositions shown in Table 1.

15

20

25 [0073]

[Table 1]

Component name	Mass%
Ambroxane	0.6
Anis aldehyde	1.0
Acetyl cedrene	2.0
Benzyl alcohol	1.5
Citral	1.0
Coumarin	1.0
Cyclamen aldehyde	4.0
Damascone α	4.0
Galaxolide	20.0
γ -decalactone	3.0
γ -undecalactone	6.5
Habanolide	4.5
Hedione	3.0
Heliotropine	0.5
Hexyl acetate	1.0
Hexyl cinnamic aldehyde	7.0
Hexyl salicylate	5.0
Iso E Super	5.0
Ligustral	0.5
Lilial	7.5
Limonene	1.0
Methyl ionone gamma	0.8
Phenyl ethyl alcohol	1.6
Rosephenone	1.0
Dipropylene glycol	17.0
Total	100.0

[0074]

<Optional components>

- 5 Binder: hydroxypropyl methylcellulose (HPMC) (product name: Metolose 60SH-50, manufactured by Shin-Etsu Chemical Co., Ltd.).

 Excipient: clay (product name: NK-300, manufactured by Showa KDE Co., Ltd.).

[0075]

- 10 (Evaluation method)

<Storage stability>

<<Aroma of smoking agent>>

5 g of a smoking agent of each example was placed in a storage container, and after closing the lid, stored for one month at 50°C and used as a sample. 5 g of a smoking agent of each example was placed in a storage container, and after closing the lid, stored for one month at 20°C and used as a reference product. For the storage container, a container of “Mizu de Hajimeru Varsan (water-activated Varsan) [for 6-8 tatami mats] (product name, manufactured by Lion Corporation)” was used.

The lids of the reference products and the samples were opened and subjected to a sensory evaluation in accordance with the following evaluation criteria. “Aroma” in the following evaluation criteria is the aroma of the component (D) which was incorporated into the smoking agent.

[0076]

[Evaluation criteria]

A: The aromas of the reference product and the sample are at the same level.

B: The aroma of the sample is slightly weak compared to the aroma of the reference product, but at a problem-free level.

C: The aroma of the sample is rather weak compared to the aroma of the reference product.

D: The aroma of the sample is significantly weak compared to the aroma of the reference product.

[0077]

<<Aroma after smoking treatment>>

A container of “Mizu de Hajimeru Varsan (water-activated Varsan) [for 6-8 tatami mats] (product name, manufactured by Lion Corporation)” was prepared, 5 g of a smoking agent of each example was accommodated in a smoking agent container inside

the aforementioned container, and 37 g of calcium oxide was accommodated in a heating agent container inside the same container to thereby produce a smoking device similar to the smoking device 10 in FIG. 1.

The thus obtained smoking device was stored for one month at 50°C and used as
5 a test device. Separately, a smoking device was stored for one month at 20°C and used as a reference device.

A plastic container for water supply with 23 mL of water therein was placed at the center of the testing room having a size of 3.42 m (in the lengthwise direction) × 3.82 m (in the widthwise direction) × 2.4 m (height), and the test device or the reference
10 device was put in the plastic container for water supply to start the smoking treatment. A sensory evaluation was carried out two hours after the start of the smoking treatment in accordance with the following evaluation criteria. “Aroma” in the following evaluation criteria is the aroma of the component (D) which was incorporated into the smoking agent.

15 [0078]

[Evaluation criteria]

A: The aroma inside the test chamber which has been subjected to the smoking treatment with the test device and the aroma inside the test chamber which has been subjected to the smoking treatment with the reference device are at the same level.

20 B: The aroma inside the test chamber which has been subjected to the smoking treatment with the test device is slightly weak, compared to the aroma inside the test chamber which has been subjected to the smoking treatment with the reference device, but at a problem-free level.

C: The aroma inside the test chamber which has been subjected to the smoking
25 treatment with the test device is rather weak, compared to the aroma inside the test

chamber which has been subjected to the smoking treatment with the reference device.

D: The aroma inside the test chamber which has been subjected to the smoking treatment with the test device is significantly weak, compared to the aroma inside the test chamber which has been subjected to the smoking treatment with the reference device.

5 [0079]

<Smoke conversion rate of the component (A)>

A container of “Mizu de Hajimeru Varsan (water-activated Varsan) [for 6-8 tatami mats] (product name, manufactured by Lion Corporation)” was prepared, 5 g of a smoking agent of each example was accommodated in a smoking agent container inside
10 the aforementioned container, and 37 g of calcium oxide was accommodated in a heating agent container inside the same container to thereby produce a smoking device similar to the smoking device 10 in FIG. 1. The smoking device was placed inside a plastic container for water supply containing 23 mL of water to carry out a smoking operation.

After the smoking operation, all the residues inside the smoking agent container
15 were recovered, and these residues were placed in a 5% by mass dilute nitric acid and the silver component was eluted, to thereby obtain a measurement sample. By quantifying the measurement sample by ICP emission analysis, the amount of silver remaining without being converted to smoke was determined.

In addition, for the smoking agent prior to the smoking operation, the amount of
20 silver (in 5 g of the smoking agent) was determined in the same manner as that for the aforementioned residues to calculate the smoke conversion rate by following equation (1). The thus obtained smoke conversion rates were classified in accordance with the following evaluation criteria.

[0080]

25
$$\text{Smoke conversion rate (mass\%)} = [(\text{mass of silver in smoking agent prior to the}$$

smoking operation) - (mass of silver in the residue)] / (mass of silver in smoking agent prior to the smoking operation) × 100 (1)

[0081]

<<Evaluation criteria>>

5 A: The smoke conversion rate is 60% by mass or more.

B: The smoke conversion rate is 40% by mass or more and less than 60% by mass.

C: The smoke conversion rate is 20% by mass or more and less than 40% by mass.

10 D: The smoke conversion rate is less than 20% by mass.

[0082]

(Examples 1 to 25, Comparative Examples 1 to 5)

According to the compositions shown in Tables 2 to 4, under the condition of 20°C, the component (A), the component (B), HPMC and clay that were the powder components were stirred and mixed with a kneader (S5-2G model, manufactured by Moriyama Co., Ltd.). A mixed solution of the component (C), component (D) and water (10 parts by mass of water with respect to a total of 100 parts by mass of the components (A) to (D) and the optional components) which was stirred and mixed in advance was added into the aforementioned kneader and mixed to obtain a mixture.

20 The resulting mixture was granulated using a forward extrusion granulator (EXK-1, manufactured by Fuji Paudal Co., Ltd.) with a die having a pore size of 2 mm in diameter to obtain a granulated product. The obtained granulated products were cut into 2 to 5 mm in length with a flash mill (FL300, manufactured by Fuji Paudal Co., Ltd.), and the drying time was adjusted using a drying machine (RT-120HL, manufactured by Alp Co., Ltd.) which was set to 70°C so that the amounts of the component (E) were

25

those described in tables, thereby obtaining particulate smoking agents. For the obtained smoking agents, the storage stability and the smoke conversion rate of the component (A) were evaluated, and the results are shown in tables.

[0083]

5

[Table 2]

Examples											
	1	2	3	4	5	6	7	8	9	10	
Composition	Component (A)	A-1	Zeomic [mass%]	AJ10N	0.05	0.05	0.05	0.05	0.05	0.05	
		A-2	ATOMY BALL-(UA) [mass%]	-	-	-	-	-	-	-	-
		A-3	AIS-NAZ320 [mass%]	-	-	-	-	-	-	-	-
	Component (B)	B-1	ADCA [mass%]	70	70	70	70	70	70	70	70
	Component (C)	C-1	Sorbitan monooleate [mass%]	8	8	8	3	5	6	10	12
		C-2	Glycerol monocaprylate [mass%]	-	-	-	-	-	-	-	-
		C-3	Sorbitan monolaurate [mass%]	-	-	-	-	-	-	-	-
		C-4	POE (20) sorbitan monooleate [mass%]	-	-	-	-	-	-	-	-
	Component (D)	D-1	Perfume composition	0.1	0.3	0.5	0.7	1	0.5	0.5	0.5
	Component (E)	E-1	Water	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
	Optional component	Binder	HPMC [mass%]	4	4	4	4	4	4	4	4
		Excipient	Clay [mass%]								
	Balance										
	Total	100	100	100	100	100	100	100	100	100	100
	D/C ratio	80	27	16	11	8	6	10	12	20	24
	C/E ratio	26.7	26.7	26.7	26.7	26.7	10.0	16.7	20.0	33.3	40
Results	Storage stability	Aroma of smoking agent	B	A	A	B	A	A	A	A	
		Aroma after smoking treatment	B	B	A	A	B	A	A	A	A
	Smoke conversion rate of component (A)		A	A	A	A	A	A	A	B	B
			66	65	65	64	64	65	58	42	

[0084]

[Table 3]

			Examples																	
			11	12	13	14	15	16	17	18	19	20								
Composition	Component (A)	A-1	Zeomic [mass%] AJ10N	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.5
		A-2	ATOMY BALL-(UA) [mass%]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		A-3	AIS-NAZ320 [mass%]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		B-1	ADCA [mass%]	65	68	75	70	70	70	70	70	70	70	70	70	70	70	70	70	70
		C-1	Sorbitan monooleate [mass%]	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
		C-2	Glyceryl monocaprylate [mass%]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		C-3	Sorbitan monolaurate [mass%]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		C-4	POE (20) sorbitan monooleate [mass%]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Component (D)	D-1	Perfume composition	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Component (E)	E-1	Water	0.3	0.3	0.3	0.1	0.2	0.5	0.5	1	4	4	4	4	4	4	4	4	0.3
	Optional component	Binder	HPMC [mass%]	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
		Excipient	Clay [mass%]																	
		Total			100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
		D/C ratio			16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
C/E ratio				26.7	26.7	26.7	80.0	40.0	16.0	8.0	5.3	2.0	26.7							
Results	Storage stability	Aroma of smoking agent		A	A	A	B	A	A	A	A	A	A	A	A	A	A	A	A	
		Aroma after smoking treatment		A	A	A	B	B	A	A	A	A	A	A	A	A	A	A	A	
	Smoke conversion rate of component (A)	Evaluation		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
		[Mass%]		60	64	70	66	66	64	64	64	64	64	64	64	64	63	58	59	

[0085]

[Table 4]

			Examples					Comparative Examples				
			21	22	23	24	25	1	2	3	4	5
Composition	Component (A)	A-1										
		A-2	-	-	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
	Component (B)	A-3	0.05	-	-	-	-	-	-	-	-	-
		B-1	-	0.05	-	-	-	-	-	-	-	-
		C-1	70	70	70	70	70	70	70	76	70	70
		C-2	8	8	-	-	-	2	14	8	8	-
	Component (C)	C-3	-	-	8	-	-	-	-	-	-	-
		C-4	-	-	-	-	8	-	-	-	-	-
	Component (D)	D-1	-	-	-	-	-	-	-	-	-	-
		E-1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Optional component	Binder	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.01	6	0.3
		Excipient	4	4	4	4	4	4	4	4	4	4
	Balance					Balance						
	Total		100	100	100	100	100	100	100	100	100	100
Results	D/C ratio		16	16	16	16	16	4	28	16	16	-
	C/E ratio		26.7	26.7	26.7	26.7	26.7	6.7	46.7	800.0	1.3	-
	Storage stability	Aroma of smoking agent	A	A	A	A	A	C	A	C	B	D
		Aroma after smoking treatment	A	A	A	A	A	C	A	D	A	D
	Smoke conversion rate of component (A)	Evaluation	A	A	A	A	B	A	C	A	D	A
		[Mass%]	62	61	64	62	59	69	24	70	18	72

[0086]

As shown in Tables 2 to 4, Examples 1 to 25 to which the present invention was

applied exhibited storage stabilities that were evaluated as “B” to “A”. That is, in Examples 1 to 25, the deterioration of the aroma of the component (D) over time was suppressed satisfactorily. In addition, in Examples 1 to 25, evaluation for the smoke conversion rate of the component (A) was “B” to “A”. In other words, they were those
5 in which the effect of the component (A) can be sufficiently exhibited.

On the other hand, in Comparative Example 1 where the content of the component (C) was 2% by mass and in Comparative Example 3 where the content of the component (E) was 0.01% by mass, the storage stability was evaluated as “D” to “C”. In Comparative Example 2 where the content of the component (C) was 14% by mass
10 and in Comparative Example 4 where the content of the component (E) was 6% by mass, evaluation for the smoke conversion rate of the component (A) was “D” to “C”. In Comparative Example 5 that did not contain the component (C), the storage stability was evaluated as “D”.

From these results, it became apparent that by applying the present invention,
15 the effect of the drug can be sufficiently exhibited and also the degradation of the aroma of perfume over time can be suppressed satisfactorily.

[Industrial Applicability]

[0087]

20 According to the smoking agent of the present invention, the effect of the drug can be sufficiently exhibited and also the degradation of the aroma of perfume over time can be suppressed satisfactorily.

[Reference Signs List]

25 [0088]

10 Smoking device

20 Heating section

30 Smoking agent container

32 Smoking agent section

[CLAIMS]

[Claim 1]

A smoking agent comprising:

- 5 a component (A): a drug containing silver;
a component (B): an organic blowing agent;
a component (C): 3 to 12% by mass of a surfactant;
a component (D): a perfume; and
a component (E): 0.1 to 5% by mass of water.

10

[Claim 2]

The smoking agent according to Claim 1,

wherein said component (A) is at least one type selected from the group

consisting of a silver simple substance, an inorganic silver salt, such as silver oxide and

- 15 silver nitrate, and an inorganic drug in which these were supported on a carrier.

[Claim 3]

The smoking agent according to Claim 1 or 2,

wherein said component (B) is at least one type selected from the group

- 20 consisting of azodicarbonamide, p,p'-oxybis(benzenesulfonyl hydrazide), N,N'-
dinitrosopentamethylenetetramine and azobisisobutyronitrile.

[Claim 4]

The smoking agent according to any one of Claims 1 to 3, wherein said

- 25 component (C) is a nonionic surfactant.

[Claim 5]

The smoking agent according to any one of Claims 1 to 4,
wherein said component (D) is a perfume composition containing at least one
type of perfume component selected from the group consisting of γ -undecalactone, γ -
5 decalactone, Iso E Super, acetyl cedrene, ambroxan, damascone, hexyl cinnamic
aldehyde and coumarin.

[Claim 6]

The smoking agent according to any one of Claims 1 to 5,
10 wherein a concentration of silver with respect to the total mass of the smoking
agent is from 0.001 to 0.5% by mass.

[Claim 7]

The smoking agent according to any one of Claims 1 to 6,
15 wherein a concentration of silver contained in said component (A) with respect
to the total mass of the component (A) is from 0.01 to 10% by mass.

[Claim 8]

The smoking agent according to any one of Claims 1 to 7,
20 wherein a content of said component (B) with respect to the total mass of the
smoking agent is from 50 to 80% by mass.

[Claim 9]

The smoking agent according to any one of Claims 1 to 8,
25 wherein a content of said component (C) with respect to the total mass of the

smoking agent is from 3 to 12% by mass.

[Claim 10]

5 The smoking agent according to any one of Claims 1 to 9,
 wherein a mass ratio represented by a formula: [mass of said component (D)] /
[mass of said component (C)] is from 5 to 100.

[Claim 11]

10 The smoking agent according to any one of Claims 1 to 10,
 wherein a mass ratio represented by a formula: [mass of said component (C)] /
[mass of said component (E)] is from 1 to 80.

[Claim 12]

15 A smoking device comprising:
 an accommodation container in which the smoking agent described in Claim 1 is
accommodated; and
 a heating means for heating said smoking agent.