

DESCRIPTION

AROMATIC COMPOSITION FOR SUPPRESSING APPETITE

5 **Technical Field**

The present invention relates to an aromatic composition for suppressing appetite, and more particularly to an aromatic composition for suppressing appetite, which is prepared by extracting appetite suppressant components from a number of medicinal herbs mixing the extracts with ethanol at suitable ratios to form a volatile liquid, and which can suppress appetite when the fragrance thereof is inhaled into the body, t reducing bodyweight.

15 **Background Art**

Generally, an aromatic is used as a fragrant agent for refreshing an indoor atmosphere and providing a pleasant and comfortable peeling or as a deodorizing agent for removing an offensive odor from a refrigerator and the like. Thus, preferred aromatics should satisfy the requirements of refreshing, pleasant and comfortable sensations and should sometimes have the effects of relieving and calming body and mind.

However, a conventional aromatic product is composed of a natural fragrance and a synthetic fragrance and is mainly used

to emit fragrance. In some cases, the conventional aromatic product does not provide refreshing sensations with fragrance, but rather causes a severe offensive odor, because the aromatic components of the aromatic product are present in a mixture with an offensive odor. Particularly, synthetic fragrances give giddy sensations depending on the intensity of fragrance thereof, and in some cases, cause a headache.

Thus, in recent years, there have been increasing attempts to use dried fragrant plants (herbs, Chinese medicinal herbs, etc.) as aromatics in order to provide natural fragrance. However, an aromatic composition which provides secure fragrance to the user has not yet been developed.

As the national economy increases, the intake of processed foods having a high energy content is increasing and the quantity of exercise is decreasing, and thus obesity is threatening human health. Obesity makes the person's appearance ugly and awkward, gives bad images and makes activity inconvenient. In addition, it has been reported that obese persons have a high incidence of diabetes, arteriosclerosis, hypertension, heart disease, liver disease, arthritis, kidney disease and the like and are at high risk during surgery, and thus are short-lived, compared to normal persons. Thus, obesity is a problem related to life in elderly persons and becomes a disadvantage in terms of beauty in young

women.

Obesity treatment methods suggested to date include diet therapy, exercise therapy, behavior therapy, drug therapy, surgical therapy, and the like. Among these therapies, the
5 diet therapy is the most basic therapeutic method for treatment of obesity, but most patients experience difficulty in performing diet therapy. For this reason, aroma therapy is being used to suppress appetite, but the effects thereof have not yet been sufficiently demonstrated.

10 The aroma therapy is naturopathic medicine in which fragrant oils extracted from natural sources are used to regulate the spontaneous healing capacity of humans and activate the immune system, thereby treating and preventing disease. In addition, the aroma therapy can show various
15 effects depending on the kind of material used, and it is used in a wide range of applications. In other words, the aroma therapy is used not only as a treatment method for physical and mental health, but also in the production of cosmetic products. In recent years, the aroma therapy has been used for interior
20 decoration.

Summary of Invention

The present invention refers to an aromatic composition for suppressing appetite, comprising ethanol, a *Glycyrrhiza* extract, a *Platycodon grandiflorum* extract, a *Rhubarb* extract, 5 a *Mentha arvensis* extract, an *Atractylodis rhizoma* extract, a *Cnidium officinale* extract, and a *Schizonepeta tenuifolia* extract.

Disclosure

10 Technical Problem

Accordingly, the present invention has been made in order to solve the above-described problems occurring in the prior

art, and an object of the present invention is to provide an aromatic composition for suppressing appetite, which has the effect of suppressing human appetite by natural herbal fragrance to reduce bodyweight in order not only to enhance
5 the human ability to spontaneously heal obesity, which is a main cause of adult diseases and becomes a problem in terms of beauty, but also to activate the immune system.

Another object of the present invention is to provide a composition for suppressing appetite, which can provide secure
10 fragrance to the user and enables the fragrance thereof to be maintained for a long time in a place in which the composition is placed.

Still another object of the present invention is to provide a composition for suppressing appetite, which is
15 prevented from being decomposed by various microorganisms even when it is used for a long time, and is maintained in a dry state for a long time so as to be prevented from being decomposed by moisture.

20 **Technical Solution**

In order to accomplish the above objects, the present invention provides a composition for suppressing appetite, comprising ethanol and medicinal herb extracts, including a *Glycyrrhiza* extract, a *Platycodon grandiflorum* extract, a
25 *Rhubarb* extract, a *Mentha arvensis* extract, an *Atractylodis*

rhizoma extract, a *Cnidium officinale* extract, a *Schizonepeta tenuifolia* extract, an *Angelica* root extract, a *Ledebouriella seseloides* extract, a *Gardeniae fructus* extract, a *Scutellaria baicalensis* extract, a ginger extract, a *Forsythia* extract and
5 a *Paeonia japonica* extract.

Preferably, the aromatic composition for suppressing appetite according to the present invention comprises, based on 90 parts by weight of ethanol, 0.5-1 part by weight of the *Glycyrrhiza* extract, 0.5-1 part by weight of the *Platycodon*
10 *grandiflorum* extract, 0.3-0.7 parts by weight of the *Rhubarb* extract, 0.3-0.7 parts by weight of the *Mentha arvensis* extract, 0.5-1 part by weight of the *Atractylodis rhizoma* extract, 0.3-0.7 parts by weight of the *Cnidium officinale* extract, 0.3-0.7 parts by weight of the *Schizonepeta tenuifolia*
15 extract, 0.3-0.7 parts by weight of the *Angelica* root extract, 0.3-0.7 parts by weight of the *Ledebouriella seseloides* extract, 0.3-0.7 parts by weight of the *Gardeniae fructus* extract, 0.5-0.1 part by weight of the *Scutellaria baicalensis* extract, 0.3-0.7 parts by weight of the ginger extract, 0.3-0.7
20 parts by weight of the *Forsythia* extract and 0.3-0.7 parts by weight of the *Paeonia japonica* extract.

Advantageous Effects

25 The aromatic composition for suppressing appetite

according to the present invention provides the effect of suppressing appetite using the natural fragrances of medicinal herbs, which enter the human body, thereby reducing bodyweight while maintaining health.

5 In addition, the present invention greatly contributes to human health using the fragrances of medicinal herbs contained in the aromatic composition.

 Moreover, the aromatic composition for suppressing appetite according to the present invention provides secure
10 fragrance to the user and enables the fragrance thereof to be maintained for a long time in a place in which the composition is placed.

 Furthermore, the aromatic composition for suppressing appetite according to the present invention is prevented from
15 being decomposed by various microorganisms even when it is used for a long time, and is maintained in a dry state for a long time so as to be prevented from being decomposed by moisture.

20 **Description of Drawings**

 FIG. 1 is a graphic diagram showing the difference in the number of leptin-positive cells between test groups.

 FIG. 2 is a graphic diagram showing the difference in the number of NPY-positive cells between test groups.

25 FIG. 3 is a graphic diagram showing the difference in the

short-term memory between test groups.

FIG. 4 is a graphic diagram showing the difference in the expression of BDNF protein between test groups.

5 **Best Mode**

The aromatic composition for suppressing appetite according to the present invention comprises ethanol and medicinal herb extracts, including a *Glycyrrhiza* extract, a *Platycodon grandiflorum* extract, a *Rhubarb* extract, a *Mentha*
10 *arvensis* extract, an *Atractylodis rhizoma* extract, a *Cnidium officinale* extract, a *Schizonepeta tenuifolia* extract, an *Angelica* root extract, a *Ledebouriella seseloides* extract, a *Gardeniae fructus* extract, a *Scutellaria baicalensis* extract, a ginger extract, a *Forsythia* extract and a *Paeonia japonica*
15 extract.

Mode for Invention

Hereinafter, the aromatic composition for suppressing appetite according to the present invention will be described
20 with reference to examples and the accompanying drawings.

In one example of the present invention, a test was carried out while changing the contents of medicinal herbs depending on the intensities of fragrances thereof, and as a result, the most suitable ratio of the fragrant components was
25 found. Based on this finding, the aromatic composition for

suppressing appetite according to the present invention comprises, based on 90 parts by weight of ethanol, 0.5-1 part by weight of the *Glycyrrhiza* extract, 0.5-1 part by weight of the *Platycodon grandiflorum* extract, 0.3-0.7 parts by weight of the *Rhubarb* extract, 0.3-0.7 parts by weight of the *Mentha arvensis* extract, 0.5-1 part by weight of the *Atractylodis rhizoma* extract, 0.3-0.7 parts by weight of the *Cnidium officinale* extract, 0.3-0.7 parts by weight of the *Schizonepeta tenuifolia* extract, 0.3-0.7 parts by weight of the *Angelica* root extract, 0.3-0.7 parts by weight of the *Ledebouriella seseloides* extract, 0.3-0.7 parts by weight of the *Gardeniae fructus* extract, 0.5-0.1 part by weight of the *Scutellaria baicalensis* extract, 0.3-0.7 parts by weight of the ginger extract, 0.3-0.7 parts by weight of the *Forsythia* extract and 0.3-0.7 parts by weight of the *Paeonia japonica* extract.

The present invention relates to the aromatic composition for suppressing appetite, and a method for preparing the composition comprises the steps of:

1) drying each of *Glycyrrhiza*, *Platycodon grandiflorum*, *Rhubarb*, *Mentha arvensis*, *Atractylodis rhizoma*, *Cnidium officinale* and *Schizonepeta Tenuifolia*, mixing the dried materials, and grinding the mixture;

2) placing the mixture in a supercritical extractor and supplying a supercritical fluid thereto;

3) elevating the internal temperature of the extractor to

40 °C at a rate of 0.5 °C/min while maintaining the pressure of the extractor at 400 atm;

4) maintaining the temperature and pressure of the extractor at 30~50 °C and 200-500 atm, respectively, for 5-7 hours, and then reducing the pressure of the extractor to 1 atm; and

5) dissolving the mixture of step 4) in a solvent such as ethanol to remove waxy components and non-volatile components therefrom, thereby obtaining an aromatic composition for suppressing appetite.

The extraction step in the method for preparing the aromatic composition for suppressing appetite according to the present invention will now be described in detail.

First, *Glycyrrhiza*, *Platycodon grandiflorum*, *Rhubarb*, *Mentha arvensis*, *Atractylodis rhizoma*, *Cnidium officinale* and *Schizonepeta tenuifolia* are dried sufficiently, mixed with each other and then ground finely with a grinder.

The ground mixture is placed in a supercritical extractor, and carbon dioxide is supplied to the extractor by a high-pressure gas pump to increase the pressure of the extractor. When the pressure of the extractor reaches 400 atm, the supply of carbon dioxide is stopped. At this time, the internal temperature of the extractor is maintained at 25~35 °C, and the reason therefor is because the pressurizing pump and the extractor are connected to each other by a long tube (1-m

long), and thus a place near the pressurizing pump is heated, but the internal temperature of the extractor does not change.

After supply of carbon dioxide, the internal temperature of the extractor is elevated to 65 °C at a rate of 0.5 °C/min using a temperature controller. During the elevation of temperature, the pressure of the extractor is maintained at 200-500 atm by discharging a portion of carbon dioxide using a pressure controller attached to the outlet of the extractor.

After the temperature and pressure of the extractor are increased as described above, the temperature and pressure of the extractor are maintained at 30-50 °C and 200-500 atm, respectively, for 5-7 hours. The high-pressure gas pump is operated again, and carbon dioxide is continuously supplied to the extractor at a flow rate of 20 L/min. At the same time, the extract is discharged using the pressure controller attached to the outside of the extractor, while the temperature and pressure of the extractor are maintained at constant levels. Then, the pressure of the discharged extract is reduced to 1 atm to discharge carbon dioxide to the air, and the active ingredient of the aromatic essential oil extract is collected into a collector. The above process can be performed for 12 hours, thereby obtaining an extract.

The aromatic composition for suppressing appetite according to the present invention is composed of a 5:45 (w/w) mixture of the natural essential oil extract, obtained by the

above extraction method, and ethanol.

An aromatic composition for suppressing appetite according to another embodiment of the present invention comprises, based on 90 parts by weight of ethanol, 0.5-1 part by weight of the
5 *Glycyrrhiza* extract, 0.5-1 part by weight of the *Platycodon grandiflorum* extract, 0.3-0.7 parts by weight of the *Rhubarb* extract, 0.3-0.7 parts by weight of the *Mentha arvensis* extract, 0.5-1 part by weight of the *Atractylodis rhizoma* extract, 0.3-0.7 parts by weight of the *Cnidium officinale*
10 extract, 0.3-0.7 parts by weight of the *Schizonepeta tenuifolia* extract, 0.3-0.7 parts by weight of the *Angelica* root extract, 0.3-0.7 parts by weight of the *Ledebouriella seseloides* extract, 0.3-0.7 parts by weight of the *Gardeniae fructus* extract, 0.5-0.1 part by weight of the *Scutellaria baicalensis*
15 extract, 0.3-0.7 parts by weight of the ginger extract, 0.3-0.7 parts by weight of the *Forsythia* extract and 0.3-0.7 parts by weight of the *Paeonia japonica* extract.

Another embodiment of the present invention relates to an aromatic composition for suppressing appetite, which contains
20 14 kinds of medicinal herb extracts, and a method for preparing the aromatic composition may comprise the steps of:

1) drying each of *Glycyrrhiza*, *Platycodon grandiflorum*, *Rhubarb*, *Mentha arvensis*, *Atractylodis rhizoma*, *Cnidium officinale*, *Schizonepeta Tenuifolia*, *Angelica* root,
25 *Ledebouriella seseloides*, *Gardeniae Fructus*, *Scutellaria*

baicalensis, ginger, *Forsythia* and *Paeonia japonica*, mixing the dried materials, and grinding the mixture;

2) placing the mixture in a supercritical extractor and supplying a supercritical fluid thereto;

5 3) elevating the internal temperature of the extractor to 40 °C at a rate of 0.5 °C/min while maintaining the pressure of the extractor at 400 atm;

4) maintaining the temperature and pressure of the extractor at 30~50 °C and 200~500 atm, respectively, for 5-7
10 hours, and then reducing the pressure of the extractor to 1 atm; and

5) dissolving the mixture of step 4) in a solvent such as ethanol to remove waxy components and non-volatile components therefrom, thereby obtaining an aromatic composition for
15 suppressing appetite.

Specifically, *Glycyrrhiza*, *Platycodon grandiflorum*,
Rhubarb, *Mentha arvensis*, *Atractylodis rhizoma*, *Cnidium officinale*,
Schizonepeta tenuifolia, *Angelica root*, *Ledebouriella seseloides*,
Gardeniae fructus, *Scutellaria*
20 *baicalensis*, ginger, *Forsythia* and *Paeonia japonica* are dried sufficiently, mixed with each other and then ground finely with a grinder.

The ground mixture is placed in a supercritical extractor, and carbon dioxide is supplied to the extractor by a high-
25 pressure gas pump to increase the pressure of the extractor.

When the pressure of the extractor reaches 400 atm, the supply of carbon dioxide is stopped. At this time, the internal temperature of the extractor is maintained at 25~35 °C, and the reason therefor is because the pressurizing pump and the
5 extractor are connected to each other by a long tube (1-m long), and thus a place near the pressurizing pump is heated, but the internal temperature of the extractor does not change.

After supply of carbon dioxide, the internal temperature of the extractor is elevated to 65 °C at a rate of 0.5 °C/min
10 using a temperature controller. During the elevation of temperature, the pressure of the extractor is maintained at 200-500 atm by discharging a portion of carbon dioxide using a pressure controller attached to the outlet of the extractor.

After the temperature and pressure of the extractor are
15 increased as described above, the temperature and pressure of the extractor are maintained at 30~50 °C and 200-500 atm, respectively, for 5-7 hours. The high-pressure gas pump is operated again, and carbon dioxide is continuously supplied to the extractor at a flow rate of 20 L/min. At the same time,
20 the extract is discharged using the pressure controller attached to the outside of the extractor, while the temperature and pressure of the extractor are maintained at constant levels. Then, the pressure of the discharged extract is reduced to 1 atm to discharge carbon dioxide to the air, and
25 the active ingredient of the aromatic essential oil extract is

collected into a collector. The above process can be performed for 12 hours, thereby obtaining an extract.

The aromatic composition for suppressing appetite according to the present invention is composed of a 5:45 (w/w) mixture of the natural essential oil extract, obtained by the above extraction method, and ethanol.

The contents of the medicinal herbs in the composition of the present invention are determined as described above in consideration of the characteristic odors of the medicinal herbs.

Specifically, in order for the user to feel pleasant, the contents of the *Mentha arvensis* extract, the *Schizonepeta tenuifolia* extract and the *Glycyrrhiza* extract are set at 0.3-0.7 parts by weight, 0.3-0.7 parts by weight and 0.5-1 part by weight, respectively. Also, in order to suppress fever that is a cause of obesity, the content of each of the *Rhubarb* extract and the *Cnidium officinale* extract is set at 0.3-0.7 parts by weight. Moreover, in order to prevent the body from getting skinny as a result of the suppression of appetite, the content of the *Atractylodis rhizoma* extract is set at 0.5-1 part by weight. In addition, in order to increase the metabolic activity of the body, the content of each of the ginger extract and the *Paeonia japonica* extract is set at 0.3-0.7 parts by weight.

In other words, if the contents of the medicinal herbs are

out of the above-specified ranges, fragrances will be excessively emitted, the effect of suppressing fever will be reduced, and the characteristics odors of the medicinal herbs can cause the user to vomit.

5 If the above-described medicinal herbs are separately used, the fragrances thereof will excessively easily diffuse such that they will immediately disappear. For this reason, the medicinal herbs are combined with each other as described above, whereby the fragrances thereof can be prevented from
10 easily diffusing and scattering. In addition, the medicinal herbs are combined with each other in the above-described amounts, whereby the herbal aromatic composition according to the present invention will stably provide special refreshing, pleasant and comfortable sensations to the user.

15 The aromatic composition according to the present invention comprises a *Glycyrrhiza* extract, a *Platycodon grandiflorum* extract, a *Rhubarb* extract, a *Mentha arvensis* extract, an *Atractylodis rhizoma* extract, a *Cnidium officinale* extract, a *Schizonepeta tenuifolia* extract, an *Angelica* root
20 extract, a *Ledebouriella seseloides* extract, a *Gardeniae fructus* extract, a *Scutellaria baicalensis* extract, a ginger extract, a *Forsythia* extract and a *Paeonia japonica* extract. These medicinal herbs emit strong fragrances which are not stayed in a place in which the aromatic composition is placed,
25 but rather diffuse to a wider area. In order to inhibit the

diffusion of such fragrances such that the fragrances do not scatter from an area surrounding a place in which the aromatic composition is placed, the *Rhubarb* extract is preferably contained in an amount of 0.2-0.5 parts by weight based on 90 parts by weight of ethanol. In addition, the content of the *Rhubarb* extract may be set at 0.3-0.7 parts by weight, whereby the emission of fragrances from the aromatic composition can be inhibited by the *Rhubarb* extract.

Hereinafter, the construction and effect of the present invention will be described in further detail with reference to examples and comparative examples. It is to be understood, however, that these examples are for illustrative purposes only and are not intended to limit the scope of the present invention.

Example 1: Preparation of aromatic composition for suppressing appetite

80 g of *Glycyrrhiza*, 80 g of *Platycodon grandiflorum*, 60 g of *Rhubarb*, 40 g of *Mentha arvensis*, 80 g of *Atractylodis rhizoma*, 40 g of *Cnidium officinale* and 40 g of *Schizonepeta tenuifolia* were dried, mixed and ground. The mixture was placed in a supercritical extractor, and carbon dioxide was supplied to an extractor using a high-pressure gas pump. When the pressure of the extractor reached 450 atm, the supply of carbon dioxide was stopped. The internal temperature of the extractor was elevated to 65 °C at a rate of 0.5 °C/min through

a heat wire surrounding the outside of the extractor by means of a temperature controller. Then, the temperature and pressure of the extractor were maintained at 65 °C and 450 atm for 6 hours while a portion of carbon dioxide was discharged using a pressure controlled attached to the outlet of the extractor. Then, the high-pressure gas pump was operated again, and carbon dioxide was continuously supplied to the extractor at a flow rate of 20 L/min. At the same time, the extract was discharged using the pressure controller attached to the outlet of the extractor while the temperature and pressure of the extractor were maintained at constant levels.

Then, the pressure of the discharged extract was reduced to 1 atm to discharge carbon dioxide to the air, and the active ingredient of the aromatic composition for suppressing appetite is collected in a collector. The above process was performed for 12 hours, thereby obtaining 51.3 g of a natural essential oil. 50 g of the natural essential oil was dissolved in 450 g of ethanol. The prepared aromatic composition for suppressing appetite was tested, and the results of the test are shown in Table 1 below.

[Table 1]

Results of examination of fragrance-inhaled group (IH) and non-fragrance-inhaled group (NIH) by VAS method

Group	Time after inhalation				
	Before inhalation	15 min	30 min	45 min	60 min

IH	4.5	3.7	3.4	3.4	3.5
NIH	4.9	4.7	4.9	4.8	4.9
P-value		p<0.05	p<0.01	p<0.01	p<0.01

Table 1 above shows the results of examination of the fragrance-inhaled group and non-fragrance-inhaled group by the VAS method (graded on a scale from 0 to 10 for the suppression of appetite). As can be seen in Table 1, the appetite of the inhaled group was significantly inhibited compared to that of the non-inhaled group. The appetite of the non-inhaled group remained constant with the passage of time, whereas the appetite of the group inhaled with the composition prepared according to the present invention was suppressed gradually with the passage of time.

In addition, in order to block the effect of other factors on appetite to ensure the accuracy of the test, the test subjects were instructed not to take materials other than water one hour before inhalation of the aromatic composition. Also, in order to ensure the accuracy of evaluation of appetite, the test subjects were instructed not to do actions requiring concentration, such as reading or internet activities, or TV watching, during a test time of 60 minute. In addition, because the aromatic composition could cause severe irritation upon direct contact with the skin, only 2-4 drops of the composition were dried and inhaled.

Such test results indicated that the aromatic composition

had the effect of suppressing appetite in the inhaled group, suggesting that the composition of the present invention can contribute to suppressing appetite, thereby reducing bodyweight.

5 Example 2: Preparation of aromatic composition for suppressing appetite

An aromatic composition was prepared using 100 g of *Glycyrrhiza*, 100 g of *Platycodon grandiflorum*, 80 g of *Rhubarb*, 60 g of *Mentha Arvensis*, 100 g of *Atractylodis Rhizoma*, 60 g of
10 *Cnidium officinale* and 60 g of *Schizonepeta Tenuifolia* under the same conditions and in the same manner as Example 1.

The prepared aromatic composition for suppressing appetite was tested, and the results of the test are shown in Table 2 below.

15 [Table 2]

Results of examination of fragrance-inhaled group (IH) and non-fragrance-inhaled group (NIH) by VAS method

Group	Time after inhalation				
	Before inhalation	15 min	30 min	45 min	60 min
IH	4.5	3.5	3.2	3.2	3.3
NIH	4.8	4.9	4.7	4.6	4.8
P-value		p<0.05	p<0.01	p<0.01	p<0.01

The test was performed in the same conditions as Example
20 1. As can be seen in Table 2 above, the increases in the contents of the medicinal herbs led to a slight increase in the

effect of the composition on the suppression of appetite. In addition, as the contents of the *Mentha Arvensis* and *Schizonepeta Tenuifolia* extracts increased, the test subjects felt refreshed. Also, the test subjects did not show particular abnormal conditions after the test.

Example 3: Preparation of aromatic composition for suppressing appetite

An aromatic composition was prepared using 50 g of Glycyrrhiza, 50 g of *Platycodon grandiflorum*, 30 g of Angelica root, 37 g of Rhubarb, 30 g of *Mentha arvensis*, 30 g of *Ledebouriella seseloides*, 50 g of *Atractylodis rhizoma*, 30 g of *Cnidium officinale*, 30 g of *Gardeniae fructus*, 50 g of *Scutellaria baicalensis*, 30 g of ginger, 30 g of *Forsythia*, 30 g of *Paeonia japonica* and 30 g of *Schizonepeta tenuifolia* under the same conditions and in the same manner as Example 1.

The prepared aromatic composition for suppressing appetite was tested, and the results of the test are shown in Table 3 below.

[Table 3]

Results of examination of fragrance-inhaled group (IH) and non-fragrance-inhaled group (NIH) by VAS method

Group	Before inhalation	Time after inhalation			
		15 min	30 min	45 min	60 min
IH	4.5	3.0	2.7	2.6	2.7
NIH	4.8	4.9	4.7	4.6	4.8
P-value		p<0.05	p<0.01	p<0.01	p<0.01

The test was performed in the same conditions as Example 1. In the results of the test, *Angelica root*, *Ledebouriella seseloides* and the like which were not used in Example 1 enhanced the effect of *Glycyrrhiza* to suppress the fever of the body, thereby further increasing the effect of suppressing appetite. In addition, as the ginger and *Paeonia japonica* extracts were contained, the composition also had the effect of supplementing Qi.

10 Example 4: Preparation of aromatic composition for suppressing appetite

An aromatic composition was prepared using 60 g of *Glycyrrhiza*, 60 g of *Platycodon grandiflorum*, 40 g of *Angelica root*, 57 g of *Rhubarb*, 50 g of *Mentha arvensis*, 40 g of *Ledebouriella seseloides*, 60 g of *Atractylodis rhizoma*, 40 g of *Cnidium officinale*, 40 g of *Gardeniae fructus*, 60 g of *Scutellaria baicalensis*, 40 g of ginger, 40 g of *Forsythia*, 40 g of *Paeonia japonica* and 40 g of *Schizonepeta tenuifolia* under the same conditions and in the same manner in Example 1.

20 The prepared aromatic composition for suppressing appetite was tested, and the results of the test are shown in Table 4 below.

[Table 4]

Results of examination of fragrance-inhaled group (IH) and
25 non-fragrance-inhaled group (NIH) by VAS method

Group	Time after inhalation				
	Before inhalation	15 min	30 min	45 min	60 min
IH	4.5	3.0	2.7	2.6	2.7
NIH	4.8	4.9	4.7	4.6	4.8
P-value		p<0.05	p<0.01	p<0.01	p<0.01

The test was performed in the same conditions as Example 1. In the results of the test, *Angelica root*, *Ledebouriella seseloides* and the like which were not used in Example 1 enhanced the effect of *Glycyrrhiza* to suppress the fever of the body, thereby further increasing the effect of suppressing appetite. In addition, as the ginger and *Paeonia japonica* extracts were contained, the composition also had the effect of supplementing Qi.

10 Comparative Example 1

An aromatic composition for suppressing appetite was prepared using 60 g of *Glycyrrhiza*, 60 g of *Platycodon grandiflorum*, 40 g of *Rhubarb*, 20 g of *Mentha Arvensis*, 60 g of *Atractylodis rhizoma*, 20 g of *Cnidium officinale* and 20 g of *Schizonepeta Tenuifolia* under the same conditions and in the same manner as Example 1.

The prepared aromatic composition for suppressing appetite was tested, and the results of the test are shown in Table 5 below.

20 [Table 5]

Results of examination of fragrance-inhaled group (IH) and

non-fragrance-inhaled group (NIH) by VAS method

Group	Time after inhalation				
	Before inhalation	15 min	30 min	45 min	60 min
IH	4.5	4.2	4.1	4.1	4.2
NIH	4.9	4.7	4.9	4.8	4.9
P-value		p<0.05	p<0.01	p<0.01	p<0.01

The test was performed in the same conditions as Example 1. In the results of the test, the suppression of appetite in the group inhaled with the aromatic composition and the non-inhaled group was not so significant. As the contents of the medicinal herbs decreased, the intensities of the characteristic odors thereof decreased, and thus the degree of giving unpleasantness to the user decreased. However, the effects of the medicinal herbs also decreased, and thus the effect of the composition on the suppression of appetite was insignificant.

Comparative Example 2

An aromatic composition for suppressing appetite was prepared using 120 g of *Glycyrrhiza*, 120 g of *Platycodon grandiflorum*, 100 g of *Rhubarb*, 80 g of *Mentha Arvensis*, 120 g of *Atractylodis rhizoma*, 80 g of *Cnidium officinale* and 80 g of *Schizonepeta Tenuifolia* under the same conditions and in the same manner as Example 1.

The prepared aromatic composition for suppressing appetite was tested, and the results of the test are shown in Table 6

below.

[Table 6]

Results of examination of fragrance-inhaled group (IH) and non-fragrance-inhaled group (NIH) by VAS method

Group	Time after inhalation				
	Before inhalation	15 min	30 min	45 min	60 min
IH	4.5	3.7	3.4	3.4	3.5
NIH	4.9	4.7	4.9	4.8	4.9
F-value		p<0.05	p<0.01	p<0.01	p<0.01

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The test was performed in the same conditions as Example 1. In the results of the test, appetite in the group inhaled with the aromatic composition was suppressed compared to that in the non-inhaled group. However, as the contents of the medicinal herbs increased, the characteristic fragrances thereof were excessively emitted, and thus caused the user to vomit or feel offensive.

Comparative Example 3: Preparation of aromatic composition for suppressing appetite

15 An aromatic composition was prepared using 30 g of *Glycyrrhiza*, 30 g of *Platycodon grandiflorum*, 20 g of *Angelica* root, 27 g of *Rhubarb*, 20 g of *Mentha arvensis*, 20 g of *Ledebouriella seseloides*, 30 g of *Atractylodis rhizoma*, 20 g of *Cnidium officinale*, 20 g of *Gardeniae fructus*, 30 g of *Scutellaria baicalensis*, 20 g of ginger, 20 g of *Forsythia*, 20 g of *Paeonia japonica* and 20 g of *Schizonepeta tenuifolia* under

the same conditions and in the same manner in Example 1.

The prepared aromatic composition for suppressing appetite was tested, and the results of the test are shown in Table 7 below.

5 [Table 7]

Results of examination of fragrance-inhaled group (IH) and non-fragrance-inhaled group (NIH) by VAS method

Group	Time after inhalation				
	Before inhalation	15 min	30 min	45 min	60 min
IH	4.5	4.2	4.1	4.2	4.1
NIH	4.8	4.9	4.7	4.6	4.8
P-value		p<0.05	p<0.01	p<0.01	p<0.01

The test was performed in the same conditions as Example
10 1. In the results of the test, as the contents of medicinal herbs were low, the characteristic fragrances thereof were not intense, and thus did not cause vomiting. However, the effect of the composition on the suppression of appetite was insignificant compared to Example 1.

15 Comparative Example 4: Preparation of aromatic composition for suppressing appetite

An aromatic composition was prepared using 70 g of *Glycyrrhiza*, 70 g of *Platycodon grandiflorum*, 50 g of *Angelica* root, 47 g of *Rhubarb*, 50 g of *Mentha arvensis*, 50 g of
20 *Ledebouriella seseloides*, 70 g of *Atractylodis rhizoma*, 50 g of *Cnidium officinale*, 50 g of *Gardeniae fructus*, 70 g of

Scutellaria baicalensis, 50 g of ginger, 50 g of *Forsythia*, 50 g of *Paeonia japonica* and 50 g of *Schizonepeta tenuifolia* under the same conditions and in the same manner in Example 1.

The prepared aromatic composition for suppressing appetite was tested, and the results of the test are shown in Table 8 below.

[Table 8]

Results of examination of fragrance-inhaled group (IH) and non-fragrance-inhaled group (NIH) by VAS method

Group	Time after inhalation				
	Before inhalation	15 min	30 min	45 min	60 min
IH	4.5	3.3	3.2	3.3	3.2
NIH	4.8	4.9	4.7	4.6	4.8
P-value		p<0.05	p<0.01	p<0.01	p<0.01

10

The test was performed in the same conditions as Example 1. In the results of the test, *Angelica root*, *Ledebouriella seseloides* and the like which were not used in Example 1 enhanced the effect of *Glycyrrhiza* to suppress the fever of the body, thereby further increasing the effect of suppressing appetite. In addition, as the ginger and *Paeonia japonica* extracts were contained, the composition also had the effect of supplementing Qi. However, the characteristic fragrances of the medicinal herbs were excessively intense, and thus caused the user to feel offensive and vomit in severe cases.

The most significant characteristic of the inventive

composition obtained by the above extraction method is that the aromatic composition consists only of natural medicinal herbs and has an excellent deodorizing effect. The aromatic composition according to the present invention consists only of
5 medicinal herbs whither containing a synthetic fragrance or a synthetic fragrance/natural fragrance combination, unlike conventional aromatic compositions, and thus shows the effect of relaxing body and mind to cause the body to feel secure and calm while achieving the objects of conventional aromatic
10 compositions. In addition, the aromatic composition of the present invention is a novel aromatic composition has an excellent deodorizing effect of removing an offensive odor and a cigarette odor.

Furthermore, the medicinal herbal components of the
15 composition of the present invention mostly suppress fever and eliminate damp. Most obese patients are attacked by many diseases due to fever and damp, and thus the elimination of damp and fever means solving the problems of obese patients.

Hereinafter, the functions of the aromatic essential oil
20 composition for suppressing appetite according to the present invention will be described with reference to test examples.

Test Examples

1. Test subjects

Animals used in this test were 5-week-old ICR mice (25 g $\pm$
25 2) supplied from Orient Bio Co., Ltd. (Kyung-Gi, Korea). The

test animals were acclimated for 3 days, and then divided randomly into three groups: a control group (n= 8), a fasting group (n=8), and a fasting-dietary aromatic essential oil fragrance-inhaled group (n =8). The fasted mice were given
5 only water for 48 hours. The mice of each group were placed in a cage (30 cm × 20 cm) under the conditions of constant temperature (20 ± 2 °C) and constant humidity (60%) with a 12-hr light/12-hr dark cycle.

For inhalation of the fragrance of the aromatic essential
10 composition for suppressing appetite, the aromatic essential composition was placed in a closed plastic box (35 × 23 × 24 cm) one day before the start of the test such that it sufficiently spread in the plastic box.

For inhalation of the fragrance of the composition, the
15 mice were placed in the closed box twice (10 am and 6 pm) a day for 2 days such that the mice freely inhaled the fragrance.

2. Measurement of memory

For measurement of memory, step-down avoidance task (NeuroLab, Korea) was used. First, the test animals were
20 placed on a 7 × 25 cm platform (2.5 cm high) for 2 minutes, and then the memory thereof was measured. The measurement was recorded when all the four paws of the mice placed on the platform reached stainless steel rods (42 × 25 cm) arranged in parallel at 1-cm intervals. The mice which came down from the
25 platform were given an electric shock of 0.2 mA for 2 second to

allow the mice to memorize the platform location. After 1 hour, the test was repeated. The measurement was recorded in the same manner as above, and no electric shock was applied to the mice. The time taken for all the four paws to reach the rods was recorded up to 180 seconds.

3. Treatment of tissue

The tested animals were injected intraabdominally with 10 mg/kg of Zoletile 50[®] (Vibac, Carros, France), and then the thoracic cavity was open and 50 mM of phosphate buffer saline (PBS) was injected into the mice through the left ventricle for 5 minutes. Then, the mice were perfused with a fixative solution of 4% paraformaldehyde (PFA) in 100 mM phosphate buffer (PB) for 10 minutes, after which the brain was extracted. Then, the brain was precipitated in 4% PFA solution at 4 °C for 24 hours, and then fixed. The fixed brain tissue was precipitated in 30% sucrose solution for one week, and then sectioned to a thickness of 40 µm using a freezing microtome (Leica, Nussloch, Germany).

4. Immunohistochemistry

1) Leptin immunohistochemistry

In order to inactivate intrinsic peroxidase present in tissue, the selected brain tissue was incubated for 30 minutes in 1% hydrogen peroxide (H₂O₂) diluted with 50mM PBS, after which it was washed three times with 50 mM of PBS and allowed to react with 1% bovine serum albumin (BSA) and 10% goat serum

for 1 hour. Then, the tissue was allowed to react with a primary antibody solution (containing rabbit anti-leptin antibody (1:500, DiaSorni, Stillwater, MN, USA), 0.05% BSA and 0.3% Triton X-100) at room temperature for 12 hours. Then, the
5 tissue was allowed to react with biotinylated rabbit secondary antibody (1:2000, Vector Laboratories, Burlingame, CA, USA) for 1 hour, and then allowed to react with an avidin-biotin-peroxidase complex (Vectastain ABC[®]kit, Vector Laboratories) at room temperature for 1 hour. Then, the tissue was color-
10 developed for 5 minutes with 3,3'-diaminobenzidinetetrahydrochloride (DAB), which was diluted to 0.02% with 0.05M Tris-HCl (pH 7.6) and contained 0.03% H₂O₂. The color-developed tissue was placed on gelatin-coated slide glass and dried at room temperature for 2 hours, after which it
15 was dehydrated with increasing concentrations (70%, 80%, 90% and 100%) of ethanol. Then, the tissue was cleared with xylene and mounted in polymount.

2) NPY immunohistochemistry

In order to inactivate intrinsic peroxidase present in
20 tissue, the selected brain tissue was incubated for 30 minutes in 1% hydrogen peroxide (H₂O₂) diluted with 50mM PBS, after which it was washed three times with 50 mM of PBS and allowed to react with 1% bovine serum albumin (BSA) and 10% goat serum for 1 hour. Then, the tissue was allowed to react with a
25 primary antibody solution (containing rabbit anti-NPY antibody

(1:500, DiaSorni, Stillwater, MN, USA), 0.05% BSA and 0.3% Triton X-100) at room temperature for 12 hours. Then, the tissue was allowed to react with biotinylated rabbit secondary antibody (1:2000, Vector Laboratories, Burlingame, CA, USA) for 1 hour, and then allowed to react with an avidin-biotin-peroxidase complex (Vectastain ABC[®]kit, Vector Laboratories) at room temperature for 1 hour. Then, the tissue was color-developed for 5 minutes with 3,3'-diaminobenzidinetetrahydrochloride (DAB), which was diluted to 0.02% with 0.05M Tris-HCl (pH 7.6) and contained 0.03% H₂O₂. The color-developed tissue was placed on gelatin-coated slide glass and dried at room temperature for 2 hours, after which it was dehydrated with increasing concentrations (70%, 80%, 90% and 100%) of ethanol. Then, the tissue was cleared with xylene and mounted in polymount.

5. Measurement of expression of BDNF protein

In order to analyze the expression of BDNF protein in the hippocampus, the tissue was washed with PBS, and then lysed with a lysis buffer containing 50 mM HEPES (pH 7.5), 150 mM NaCl, 10% glycerol, 1% Triton X-100, 1.5 mM magnesium chloride hexahydrate, 1 mM ethyleneglycol-bis-(β -aminoethyl ether)-N,N'-tetraacetic acid(EGTA), 1 mM phenylmethylsulfonyl fluoride (PMSF), 2 μ g/ml leupeptin, 1 μ g/ml pepstatin, 1 mM sodium ortho vanadate and 100 mM sodium fluoride. Then, protein was extracted from the tissue, the tissue solution was centrifuged,

the supernatant was collected, and the protein in the supernatant was quantified. The extracted protein was electrophoresed on SDS-polyacrylamide gels and transferred to a nitrocellulose membrane (Schleicher & Schuell GmbH, Dassel, Germany). The transferred membrane was blocked, and then allowed to react with mouse actin antibody (1:1000; Santa Cruz Biotech, Santa Cruz, CA, USA) and rabbit BDNF antibody (1:1000; Santa Cruz Biotech). Horseradish peroxidase-conjugated rabbit anti-mouse antibody (1:2000; Amersham Pharmacia Biotech GmbH, Freiburg, Germany) was used as the secondary antibody for actin, and anti-rabbit antibody (1:4000; Santa Cruz biotech) was used as the secondary antibody for BDNF. The results of Western blotting were confirmed by an enhanced chemiluminescence (ECL) detection system (Amersham Pharmacia Biothech GmbH).

6. Data processing

Data obtained in the test were analyzed with SPSS version 11.0 statistical program to determine mean $\pm$ standard error mean (S.E.M) for each item. The differences in the expressions of Leptin, NPY and BDNF and the latency time between the groups were analyzed with one-way analysis of variance (ANOVA), and posteriori group comparisons were performed by the Duncan's method. The level of significance was set at $P < 0.05$.

7. Test results

1) Change in number of Leptin-positive cells

As shown in FIG. 1, the number of leptin-positive cells in the hypothalamus of each group, which indicates the suppression of appetite, was 137.23 ± 10.12 for the control group (A), 72.17 ± 5.22 for the fasting group (B), and 111 ± 8.41 for the
5 fasting-dietary aromatic essential oil composition fragrance-inhaled group (C).

In the test results, the number of leptin-positive cells in the fasting group statistically significantly decreased compared to that in the control group ($P < 0.05$), whereas the
10 number of leptin-positive cells in the fasting-dietary aromatic essential oil composition fragrance-inhaled group statistically significantly increased compared to that in the fasting group ($P < 0.05$). Thus, the results of the test indicated that the expression of leptin which indicates the suppression of
15 appetite was reduced by fasting, resulting in an increase in appetite, and the expression of leptin was increased by the inhalation of the fragrance of the aromatic essential oil composition, suggesting that the inhalation of the fragrance reduced the appetite that increased by fasting.

20 2) Change in number of NPY-positive cells

As shown in FIG. 2, the number of NPY-positive cells in the hypothalamus of each group, which indicates the improvement of appetite, was 94.7 ± 4.12 for the control group (A), 116.25 ± 1.90 for the fasting group (B), and 106 ± 3.15 for the
25 fasting-dietary aromatic essential oil composition fragrance-

inhaled group (C).

In the test results, the number of NPY-positive cells in the fasting group statistically significantly increased compared to that in the control group ($P < 0.05$), whereas the
5 number of NPY-positive cells in the fasting-dietary aromatic essential oil composition fragrance-inhaled group significantly decreased compared to that in the fasting group ($P < 0.05$). Thus, the test results indicated that the expression of NPY, which indicates the improvement of appetite, was increased by
10 fasting, resulting in an increase in appetite, and the expression of NPY was reduced by the inhalation of the fragrance of the aromatic essential oil composition, suggesting that the inhalation of the fragrance reduced the appetite that increased by fasting.

15 3) Effect of inhalation of fragrance of aromatic essential oil composition on short-term memory

In this test, in order to evaluate the effect of inhalation of the fragrance of aromatic essential oil composition on short-term memory, the passive avoidance test
20 was performed. As a result, as shown in FIG. 3, the latency time was 84.0 ± 8.4 for the control group (A), 32.0 ± 4.2 for the fasting group (B), and 60.9 ± 3.2 for the fasting-dietary aromatic essential oil composition fragrance-inhaled group (C).

As can be seen from the test results, the short-term
25 memory of the fasting group significantly decreased compared to

that of the control group ($P < 0.05$), whereas the short-term memory of the fasting-dietary aromatic essential oil composition fragrance-inhaled group was significantly increased compared to the fasting group ($P < 0.05$). Thus, the test results indicated that short-term memory was decreased by fasting and that the inhalation of the fragrance of the aromatic essential oil composition improved the short-term memory that decreased by fasting.

4) Change in expression of BDNF protein

The expression of the nerve growth factor BDNF protein in the hippocampus area was quantified by Western blotting. As a results, as shown in FIG. 4, when the expression of BDNF in the control group (A) was taken as 1.00, the expression of BDNF was 0.71 ± 0.02 in the fasting group (B), and 0.85 ± 0.02 in the fasting-dietary aromatic essential oil composition fragrance-inhaled group (C).

In the test results, the expression of BDNF protein in the fasting group significantly decreased compared to that in the control group ($P < 0.05$). On the other hand, the expression of BDNF protein in the fasting-dietary aromatic essential oil composition fragrance-inhaled group significantly increased compared to that in the fasting group ($P < .05$). Thus, the test results indicated that the expression of the nerve growth factor BDNF protein was decreased by fasting, suggesting that fasting reduces the production of nerve growth factor, and the

inhalation of the fragrance of the aromatic essential oil composition increased the expression of BDNF protein that decreased by fasting, thereby increasing the production of nerve growth factor.

5

Industrial Applicability

As described above, the aromatic composition for suppressing appetite according to the present invention provides the effect of suppressing appetite using the natural
10 fragrances of medicinal herbs, which enter the human body, thereby reducing bodyweight while maintaining health.

In addition, the present invention greatly contributes to human health using the fragrances of medicinal herbs contained in the aromatic composition.

15 Moreover, the aromatic composition for suppressing appetite according to the present invention provides secure fragrance to the user and enables the fragrance thereof to be maintained for a long time in a place in which the composition is placed.

20 Furthermore, the aromatic composition for suppressing appetite according to the present invention is prevented from being decomposed by various microorganisms even when it is used for a long time, and is maintained in a dry state for a long time so as to be prevented from being decomposed by
25 moisture.

CLAIMS

1. An aromatic composition for suppressing appetite, comprising ethanol, a *Glycyrrhiza* extract, a *Platycodon*
5 *grandiflorum* extract, a *Rhubarb* extract, a *Mentha arvensis* extract, an *Atractylodis rhizoma* extract, a *Cnidium officinale* extract, and a *Schizonepeta tenuifolia* extract.

2. The aromatic composition of claim 1, comprising,
10 based on 90 parts by weight of ethanol, 0.5-1 part by weight of the *Glycyrrhiza* extract, 0.5-1 part by weight of the *Platycodon* *grandiflorum* extract, 0.3-0.7 parts by weight of the *Rhubarb* extract, 0.3-0.7 parts by weight of the *Mentha arvensis* extract, 0.5-1 part by weight of the *Atractylodis rhizoma*
15 extract, 0.3-0.7 parts by weight of the *Cnidium officinale* extract, 0.3-0.7 parts by weight of the *Schizonepeta tenuifolia* extract.

3. The aromatic composition of claim 1, further
20 comprising an *Angelica* root extract, a *Ledebouriella seseloides* extract, a *Gardeniae fructus* extract, a *Scutellaria baicalensis* extract, a ginger extract, a *Forsythia* extract and a *Paeonia japonica* extract.

25 4. The aromatic composition of claim 3, further

comprising, based on 90 parts by weight of ethanol, 0.3-0.7 parts by weight of the *Angelica* root extract, 0.3-0.7 parts by weight of the *Ledebouriella seseloides* extract, 0.3-0.7 parts by weight of the *Gardeniae fructus* extract, 0.5-0.1 part by weight of the *Scutellaria baicalensis* extract, 0.3-0.7 parts by weight of the ginger extract, 0.3-0.7 parts by weight of the *Forsythia* extract and 0.3-0.7 parts by weight of the *Paeonia japonica* extract.

ABSTRACT

The present invention relates to an aromatic composition for suppressing appetite comprising medicinal herbal components. Specifically, the aromatic composition comprises
5 ethanol and mixed extracts of a *Platycodon grandiflorum* extract, a *Rhubarb* extract, a *Mentha arvensis* extract, an *Atractylodis rhizoma* extract, a *Cnidium officinale* extract, a *Schizonepeta tenuifolia* extract and the like. The aromatic composition is used as a fragrant agent for refreshing an
10 indoor atmosphere and providing a pleasant and comfortable peeling or as a deodorizing agent for removing an offensive odor from a refrigerator and the like. In addition, the aromatic composition suppresses appetite when the natural fragrances of the medicinal herbs enter the human body,
15 thereby reducing bodyweight.