ANTI-OBESITY INGREDIENTS FROM MEDICINAL PLANTS AND THEIR COMPOSITION

FIELD OF THE INVENTION

The present invention relates to a composition for preventing obesity comprising mixed herbal medicines, in particular, to a composition for inhibiting and preventing obesity and various adult diseases associated with the same, which comprises a mixed extract obtained from Ephedrae Herba, Scutellariae Radix and Typhae Pollen or the composition comprising the mixed extract described above together with at least one selected from the group consisting of Acorus gramineus Rhizome, Armeniacae Semen, Nelumbinus Folium and Polygalae Radix.

DESCRIPTION OF THE RELATED ART

As living standards being upgraded, people tend to eat foods that contain high calories such as processed foods while being less actively indulged themselves in doing physical exercises, thus threatening their health conditions resulted from obesity. Obesity often gives bad images to others and also causes inconveniences in managing social activities. Furthermore, obesity has been known to increase the incidence of various diseases such as diabetes, arteriosclerosis, hypertension, heart disease, liver disease, cholelithiasis, gout, kidney disease, and also increases a risk at the time of a surgical operation. Therefore, obesity has drawn much attention of those who are middle aged or older because it is highly likely to develop various life-threatening diseases, whereas it is again raised as a most important issue for young women who would wish to keep their physical beauties at a desired level.

Recently, there has been an increasing interest on several medicinal ingredients, whose safety and efficacy have been approved through a number of generations, to

use them for preventing and treating geriatric diseases such as obesity in addition to a suitable exercise. In fact, there have been various kinds of health foods introduced in commercial market which contain dietary fibers, ingredients for herbal medicines or several food materials allegedly being effective in treating obesity of people, however, most of the products have showed little efficacies. In addition, when people depend their regular diet largely on those dietary products while much reducing the amount of their regular food intake, it would be very difficult for them to manage their normal lives because they would probably suffer from many side effects such as lack of nutrition. Meanwhile, if they stop taking those dietary products, their body will rapidly return to their original obese state much to their regret.

Accordingly, for overcoming the shortcomings of the dietary products described above, the present inventors have conducted extensive researches, and as a result, have found that the composition comprising a mixed extract of Ephedrae Herba, Scutellariae Radix and Typhae Pollen or the composition comprising the mixed extract described above together with at least one selected from the group consisting of Acorus gramineus Rhizome, Armeniacae Semen, Nelumbinus Folium and Polygalae Radix can prevent and remedy obesity as well as other adult diseases.

Accordingly, it is an object of this invention to provide a composition consisting of herbal medicines to prevent and treat obesity and diseases associated with the same.

Further, it is another object of this invention to provide a therapeutic agent for treating obesity comprising the composition.

It is still another object of this invention to provide a health food comprising the composition.

DETAILED DESCRIPTION OF THIS INVETNION

The present invention relates to a composition for preventing obesity, which comprises a mixed extract from Ephedrae Herba, Scutellariae Radix and Typhae Pollen or the composition comprising the mixed extract described above together with at least one selected from the group consisting of Acorus gramineus Rhizome, Armeniacae Semen, Nelumbinus Folium and Polygalae Radix.

In addition, the present invention relates to a therapeutic agent for treating obesity, and a health food comprising the composition.

The present invention will be described in more detail hereunder.

The present invention relates to a composition for preventing obesity and several adult diseases associated with the same, which comprises a mixed extract obtained from Ephedrae Herba, Scutellariae Radix and Typhae Pollen or the composition comprising the mixed extract described above together with at least one selected from the group consisting of Acorus gramineus Rhizome, Armeniacae Semen, Nelumbinus Folium and Polygalae Radix.

The object of this invention described above to treat obesity can be accomplished by using the composition comprising as dry weight 30-60 weight parts of each of Ephedrae Herba, Scutellariae Radix and Typhae Pollen.

In addition, the object of this invention described above can be accomplished by using the composition comprising the mixed extract described above together with at least one selected from the group consisting of 30-60 weight parts of Acorus gramineus Rhizome, 30-60 weight parts of Armeniacae Semen, 15-45 weight parts of Nelumbinus Folium and 15-45 weight parts of Polygalae Radix.

The herbal medicines constituting the present composition exhibit a main efficacy to extinguish heat and wet. Most of obesity patients suffer from several

diseases resulted from heat and wet from the view of oriental medicine. Therefore, it is thought that the removal of heat and wet can dispel the problems of obesity patients.

The ingredients of the present composition will be described in more detail as follows.

Ephedrae Herba removes ill heat in body by virtue of perspiration and prevents rigor infiltration into body and heat generation. Roasted Ephedrae Herba together with honey strengthens lungs, stops a cough and removes phlegm. The pharmacological effect of ephedrine is similar to that of adrenaline and exhibits slowly for a long period of time. Ephedrine results in significant excitation in central nerve system through the relaxation of smooth muscle of bronchus, excitation of heart, contraction of blood vessel and alleviation of blood pressure. Ephedrae Herba exhibits anti-fatigue effect in skeletal muscle. In addition, the ingredients in Ephedrae Herba inhibit the proliferation of Influenza virus. In the present composition, the amount of Ephedrae Herba ranges from 30 to 60 weight parts. If the amount used is less than 30 weight parts, its efficacy to prevent obesity becomes negligible, while if it exceeds 60 weight parts its efficacy is not improved even when its amount is further increased.

Scutellariae Radix is a root of *Scutellaria baicallensis* belonging to *Labiatae*. The ingredient affects the level of lipid in blood, shows anti-inflammatory effect, anti-allergic effect, antimicrobial effect, antipyretic effect, diuretic effect and the effect of lowering blood pressure. Scutellariae Radix treats conditions resulting from fever toxicity accumulated in body. The ingredient treats rigor and heat generated in bone, extinguishes thirst due to heat. Furthermore, it exhibits efficacy in treating jaundice, dysentery, diarrhea and gastric fever. It mitigates expectoration and promotes the

circulation of energy in body. Purulent diseases such as amygdalitis, abscess on breast or back and malignant abscess resulting from fever toxicity can be treated with Scutellariae Radix. In the present composition, the amount of Scutellariae Radix ranges from 30 to 60 weight parts. If the amount is less than 30 weight parts, its efficacy to prevent obesity becomes negligible; but if it exceeds 60 weight parts, its efficacy is not improved even when its amount is further increased.

Typhae Pollen is a pollen of *Typha latifolia* belonging to *Typhaceae*. Since it can purify blood and stanch bleeding, it is useful in bleeding with fever. When there is a sudden nasal bleeding due to inflammation in nose, Typhae Pollen is topically or orally applied. The ingredient is effective in treating symptoms such as vomiting of blood, bloody phlegm, bleeding due to abscess, stomach bleeding and bleeding associated with hemorrhoids. In addition, it is effective in treating acute bleeding of urinary organs and bloody urine of nephrotuberculosis, since it may improve bowel movement and diuresis. The ingredient shows the effects of uterine contraction and bleeding stanching. In the present composition, the amount of Typhae Pollen ranges from 30 to 60 weight parts. If the amount is less than 30 weight parts, its efficacy to prevent obesity becomes negligible; but if it exceeds 60 weight parts, its efficacy is not improved even when its amount is increased further.

Acorus gramineus Rhizome is a subterranean stem of *Acorus gramineus* belonging to *Araceae*. It removes expectoration, so that it promotes circulation of energy and blood in body, and removes wet. The ingredient acts on brain to be effective in amnesia, nonsense and insecurity through removing stagnation of water in body. In addition, it is effective in treating sore condition due to wet. In the present composition, a random amount of Acorus gramineus Rhizome in the range of from 30 to 60 weight parts is added.

Armeniacae Semen is a mature seed of *Prunus armeniaca* belonging to *Rosaceae*.

In oriental medicine, it has been mostly used for stopping cough by promoting lung energy and for improving bowel movement. Among ingredients of Armeniacae Semen, the hydrolysates of amygdalin inhibit the activity of the respiratory center to stabilize a respiratory movement, thereby stopping cough. In the present composition, a random amount of Armeniacae Semen in the range of from 30 to 60 weight parts of is added.

Nelumbinus Folium is a leaf of *Nelumbo nucifera* belonging to *Nymphaeaceae*. The ingredient elevates virility to loosen ill blood in body. Therefore, it may be effective in treating vomiting of blood, bloody phlegm, postpartal extravasated blood and pain due to a bruise. In addition, it has been revealed to discharge wet to treat edema. In the present composition, a random amount of Nelumbinus Folium in the range of from 15 to 45 weight parts is added.

Polygalae Radix is a root of *Polygala tenuifolia* belonging to *Polygalaceae*. It is effective in stabilization of spirit, clarification of brain condition, and alleviating gloominess. According to oriental medicine, Shin means to a spirit, and Polygalae Radix has been reported to involve in actions of Shin. It is effective in pectoral effect, excitation on uterus and loosening energy. In the present composition, a random amount of Polygalae Radix in the range of from 15 to 45 weight parts is added.

In a process for preparing the present composition, it is preferred that the ingredients described above are mixed as dried material at the ratio described above and 5-15 fold amount of distilled water or alcohol solution are added and extracted. Alternatively, each extract from the ingredients is mixed to obtain a mixture with the ingredient ratio described above. The extract is filtered, concentrated under vacuum and frozen at a temperature below -40℃, followed by freeze-drying under less than 0.2 Torr to obtain powder. Alternatively, the residual concentrated under vacuum is separated using hydrogenated low grade alcohol, concentrated under vacuum to

remove residual solvent and subject to freeze-drying as described above, finally yielding powder. The final product is advantageous in terms of administration.

When the present composition is formulated to provide a pharmaceutical composition, it may be administered orally or parentally and may be formulated to provide a general drug form.

The present composition may be provided for oral or parental administration, using a general diluent or a carrier for formulation including a filler, a thickener, a binder, a wetting agent, a disintegrating agent and a surfactant.

The solid formulation for oral administration includes a tablet, a pill, powder, granule and a capsule, which may be prepared by using lignan and lactone compounds and its derivatives together with at least one carrier, for example, starch, calcium carbonate, sucrose, lactose and gelatin. In addition, lubricant such as magnesium stearate or talc as well as a general carrier may be incorporated. The solution formulation for oral administration includes suspension, solution for internal application, emulsion and syrup, which may be prepared by using a carrier such as a wetting agent, a sweetner, aromatic and a preservative as well as a general diluent such as water, liquid paraffin.

The formulation for parenteral administration includes sterilized aqueous solution, non-aqueous solution, suspension, emulsion, freeze-dried preparation and suppositories. For non-aqueous solution and suspension, propylene glycol, polyethylene glycol, plant oil such as olive oil and esters for injection such as ethyloleate may be used. For suppositories, Witepsol, Macrogol, Tween 61, Cacao butter, laurine oil and glycerol gelatin may be used.

The amount of the present composition as an active ingredient in the formulation may be determined depending on absorption rate, inactivation rate and excretion rate of active ingredient in body, age, sex and physical condition of a

patient. Generally, the amount ranges from 10 to 200 mg/kg, preferably, 20-100 mg/kg. It may be administered 1-3 times/day.

In addition, the present invention provides a health food for treating obesity comprising the present composition as an active ingredient.

The health food refers to a food that can exhibit a specific physiological efficacy of interest when ingested, which is prepared by using general ingredients of food and is very advantageous in sustained administration since it shows little or no adverse effects. The health food may be prepared in the form of general food, a capsule, powder and a suspension.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a flow chart representing the process for preparing the present composition of Example 1.

Fig. 2 is a flow chart representing the process for preparing the present composition of Example 2.

Fig. 3 is a flow chart representing the process for preparing the present composition of Example 3.

Fig. 4 is a flow chart representing the process for preparing the present composition of Example 4.

Fig. 5 is a flow chart representing the process for preparing the present composition of Example 5.

Fig. 6 is a flow chart representing the process for preparing the present composition of Example 6.

Fig. 7 is a flow chart representing the process for preparing the present composition of Example 7.

Fig. 8 is a graph showing the influence of the present composition on body

weight of C57BL/6 mouse(Experimental Example 1).

Fig. 9 is a graph showing the influence of the present composition on adipose tissue of epididymis of C57BL/6 mouse(Experimental Example 2).

Fig. 10 is a graph showing the influence of the present composition on postrenal adipose tissue of C57BL/6 mouse(Experimental Example 2).

Fig. 11 is a graph showing the influence of the present composition on neutral lipids of C57BL/6 mouse(Experimental Example 3).

Fig. 12 is a graph showing the influence of the present composition on body weight of ob/ob mouse(Experimental Example 4).

Best Mode of This Invention

The following specific examples are intended to be illustrative of the present invention and should not be construed as limiting the scope of the invention as defined by appended claims.

EXAMPLE 1

10-fold weight of distilled water was added to 135 g of the combined ingredients of herbal medicines containing 45 g of each of Ephedrae Herba, Scutellariae Radix and Typhae Pollen. The extraction was performed at 100℃ for 3 hr. The extract was filtered, the filtrate was frozen at -70℃ for 24 hr and then subject to freeze-drying at -50℃ under 5 mTorr, yielding 27.0 g of powder (extraction yield: 20.0%).

The overall procedure is shown in Fig. 1.

EXAMPLE 2

The filtrate produced in Example 1 was concentrated under vacuum to

decrease its volume to 5 volumes (v/w) relative to the weight of ingredients of herbal medicines. To the resultant, an equal volume of hydrosaturated normal-butyl alcohol was added, the mixture was applied to separation funnel and agitated, and kept to stand, thereby separating the normal-butyl alcohol layer. After performing refractionation 2-3 times, the layers of normal-butyl alcohol was concentrated under vacuum to completely remove the solvent, and then subject to freeze-drying as Example 1, obtaining 3.5 g of powder (extraction yield: 2.6%). The overall procedure is schematically represented in Fig. 2.

EXAMPLE 3

10-fold weight of distilled water was added to 225 g of the combined ingredients of herbal medicines containing 45 g of each of Ephedrae Herba, Scutellariae Radix, Typhae Pollen, Acorus gramineus Rhizome and Armeniacae Semen. The extraction was performed at 100℃ for 3 hr. The extract was filtered, the filtrate was frozen at -70℃ for 24 hr and then subject to freeze-drying at -50℃ under 5 mTorr, yielding 40.8 g of powder (extraction yield: 18.1%). The overall procedure is shown in Fig. 3.

EXAMPLE 4

The filtrate produced in Example 3 was concentrated under vacuum to decrease its volume to 5 volumes (v/w) relative to the weight of ingredients of herbal medicines. To the resultant, an equal volume of hydrosaturated normal-butyl alcohol was added, the mixture was applied to separation funnel and agitated, and kept to stand, thereby separating the normal-butyl alcohol layer. After performing refractionation 2-3 times, the layers of normal-butyl alcohol was concentrated under vacuum to completely remove the solvent, and then subject to freeze-drying as

Example 3, obtaining 5.0 g of powder (extraction yield: 2.2%). The overall procedure is schematically represented in Fig. 4.

EXAMPLE 5

10-fold weight of distilled water was added to 285 g of the combined ingredients of herbal medicines containing 45 g of each of Ephedrae Herba, Scutellariae Radix, Typhae Pollen, Acorus gramineus Rhizome and Armeniacae Semen and 30 g of each of Nelumbinus Folium and Polygalae Radix. The extraction was performed at 100℃ for 3 hr. The extract was filtered, the filtrate was frozen at -70℃ for 24 hr and then subject to freeze-drying at -50℃ under 5 mTorr, yielding 52.7 g of powder (extraction yield: 18.5%). The overall procedure is shown in Fig. 5.

EXAMPLE 6

The filtrate produced in Example 5 was concentrated under vacuum to decrease its volume to 5 volumes (v/w) relative to the weight of ingredients of herbal medicines. To the resultant, an equal volume of hydrosaturated normal-butyl alcohol was added, the mixture was applied to separation funnel and agitated, and kept to stand, thereby separating the normal-butyl alcohol layer. After performing refractionation 2-3 times, the layers of normal-butyl alcohol was concentrated under vacuum to completely remove the solvent, and then subject to freeze-drying as Example 5, obtaining 8.6 g of powder (extraction yield: 3.0%). The overall procedure is schematically represented in Fig. 6.

EXAMPLE 7

Seven-fold weight of 30% ethanol solution was added to 285 g of the combined ingredients of herbal medicines containing 45 g of each of Ephedrae Herba,

Scutellariae Radix, Typhae Pollen, Acorus gramineus Rhizome and Armeniacae Semen and 30 g of each of Nelumbinus Folium and Polygalae Radix. The extraction was performed at 80℃ for 4 hr. The extract was filtered, the filtrate was concentrated under vacuum to remove ethanol and the resultant was suspended in distilled water. An equal volume of hydrosaturated normal-butyl alcohol was added, the mixture was applied to separation funnel and agitated, and kept to stand, thereby separating the normal-butyl alcohol layer. After performing refractionation 2-3 times, the layers of normal-butyl alcohol was concentrated under vacuum to completely remove the solvent, and the resultant was frozen at -70℃ for 24 hr and then subject to freeze-drying at -50℃ under 5 mTorr, yielding 14 g of powder (extraction yield: 4.9%). The overall procedure is schematically represented in Fig. 7.

EXPERIMENTAL EXAMPLE 1: Efficacy on Weight Loss (Animal Test)

Male C57BL/6 mice aged 4 weeks were used for experiments fed with the fodder indicated in Table 1, which was designed for enabling the mice to ingest about 30% of total calories from fat. The composition of the feed is based on AIN-93G as follows:

Eight experimental groups were divided: control was administered with distilled water and other groups were administered with 500 mg/kg/day, 65 mg/kg/day, 500 mg/kg/day, 60 mg/kg/day, 500 mg/kg/day, 80 mg/kg/day and 87 mg/kg/day of compositions of Examples 1-7, respectively. The administration was orally performed once a day for 8 weeks.

TABLE 1

Composition of Feed	
Ingredients	g
Casein	20
Sucrose	10

Maize starch	31
Dextrose	10
Lard(80%)	13.5
Soy bean	5.5
Cellulose	5
Vitamins mix	1
Minerals mix	3.5
Cholin bitartarate	0.2
L-cysteine	0.3
Butylhydroxyquinoline	0.0014
Total	100

TABLE 2

Composition of 3 Nutrients in Feed			
Nutrients	g	cal	cal%
Carbohydrate	51	204	47.1284
Protein	20.54	82.16	18.98073
Lipid	16.3	146.7	33.89087
Total	87.84	432.86	100

The C57BL/6 mice were weighted after the 8-week long administration. The results are summarized in Table 3 and Fig. 8.

TABLE 3

Cat.	Control	Exa.1	Exa.2	Exa.3	Exa.4	Exa.5	Exa.6	Exa.7
Weight (g)	33.19 ±0.70	31.18 ± 0.85	30.72 ±0.81	30.94 ±0.80	30.61 ±0.84	30.42 ±0.80	30.12 ±0.82	30.03 ±0.78
Mean ±standard error								

In view of body weight after 8-week administration, the groups administered

with the present compositions of Examples 1-7 exhibited the decreased pattern by 2.01 g(6.1%), 2.47 g(7.4%), 2.25 g(6.8%), 2.58 g(7.8%), 2.77 g(8.3%), 3.07 g(9.2%) and 3.16 g(9.5%).

EXPERIMENTAL EXAMPLE 2: Influence on Adipose Tissues in Abdominal Cavity

Blood samples were collected from the mice of Experimental example 1 and autopsy was then carried out by separating adipose tissues distributed around the epididymis and kidney in abdominal cavity. The separated tissues were weighted and frozen on dry ice, followed by storing at -70℃. The results are represented in Table 4 and Figs. 9 and 10.

TABLE 4

Cat.	Control	Exa.1	Exa.2	Exa.3	Exa.4	Exa.5	Exa.6	Exa.7
Adipose tissues of epididymis (g)	2.102 ±0.097	1.888 ±0.134	1.804 ±0.094	1.802 ±0.081	1.794 ±0.096	1.785 ±0.091	1.769 ±0.085	1.765 ±0.092
Postrenal adipose tissues (g)	0.782 ±0.029	0.715 ±0.038	0.709 ±0.042	0.703 ±0.049	0.698 ±0.039	0.687 ±0.032	0.681 ±0.039	0.679 ±0.041
Mean ±standard error								

In view of adipose tissues of epididymis after 8-week administration, the groups administered with the present compositions of Examples 1-7 exhibited the decreased pattern relative to control by 0.214 g(10.2%), 0.298 g(14.2%), 0.3 g(14.3%), 0.308 g(14.7%), 0.317 g(15.1%), 0.333 g(15.8%) and 0.337 g(16.0%).

In view of postrenal adipose tissues after 8-week administration, the groups administered with the present compositions of Examples 1-7 exhibited the

decreased pattern relative to control by 0.067 g(8.6%), 0.073 g(9.3%), 0.079 g(10.1%), 0.084 g(10.7%), 0.095 g(12.1%), 0.101 g(12.9%) and 0.103 g(13.2%).

EXPERIMENTAL EXAMPLE 3: Change of Blood Lipids

The mice of Experimental example 1 were asphyxiated over 16 hr and blood samples were collected from their hearts. The concentration of neutral lipids was measured using serum. The analysis was carried out by using a kit (Asan Pharmaceuticals, Inc.) using enzyme reaction. The results are summarized in Table 5 and Fig. 11.

TABLE 5

Cat.	Control	Exa.1	Exa.2	Exa.3	Exa.4	Exa.5	Exa.6	Exa.7
Triglyceride (mg/dL)	133.09 ±6.56	99.33 ±4.23	88.14 ±4.91	87.22 ±5.16	82.40 ±4.14	79.91 ±4.45	75.47 ±5.05	75.41 ±4.92
Mean ±standard error								

In view of neutral lipids (triglyceride) in serum after 8-week administration, the groups administered with the present compositions of Examples 1-7 exhibit the decreased pattern relative to control by 33.74 mg/dℓ(25.4%), 44.93 mg/dℓ(33.8%), 45.85 mg/dℓ(34.5%), 50.67 mg/dℓ(38.1%), 53.16 mg/dℓ(39.9%), 57.6 mg/dℓ(43.3%) and 57.66 mg/dℓ(43.3%).

EXPERIMENTAL EXAMPLE 4: Change of Body Weight

Male ob/ob mice aged 6 weeks were provided by Harlan Lab and kept to be freely accessible to feed and water to adapt to our Lab for 1 week. Afterwards, they were weighted (0 day) and distributed to show the identical mean weight. The animals were classified to 9 groups and then the control was administered with a carrier, the positive control with reductil, and experimental groups with the compositions of Examples 1-7, respectively. The dosage is the same as that of

Experimental example 1. The administration was orally performed once a day for 4 weeks.

During 4-week administration, the change of body weight was exmained. The efficacy was evaluated with comparing the prevention effect on body weight increase to that of control. The results are summarized in Table 6 and Fig. 12.

TABLE 6

Cat.	Control	Reductil	Exa.1	Exa.2	Exa.3	Exa.4	Exa.5	Exa.6	Exa.7
Body weight (g)	63.22 ±1.87	57.69 ±0.92	58.21 ±1.12	57.91 ±1.07	57.31 ±1.85	57.1 ±1.01	57.13 ±1.73	56.82 ±1.27	56.41 ±1.15
Mean ±standard error									

Following 4-week administration, the body weight of control showed 63.22 g while that of positive control administered with reductil showed 57.69 g, which represents the decrease by 5.53 g(8.7%). The groups administered with the present compositions of Examples 1-7 exhibited the body weight of 58.21 g, 57.91 g, 57.31 g, 57.1 g, 57.13 g and 56.41 g, respectively. These results represent the decreased pattern by 5.01 g(7.9%), 5.31 g(8.4%), 5.91 g(9.3%), 6.12 g(9.7%), 6.09 g(9.7%), 6.4 g(10.1%) and 6.81 g(10.8%).

FORMULATION EXAMPLE 1: Powder and Capsules

14.8 mg of lactose, 3 mg of crystalline cellulose, 0.2 mg of magnesium stearate and 200 mg of extract of Examples 1, 3 or 5, or 100 mg of fraction of Examples 2, 4, 6 or 7 were mixed. Gelatin capsules of No. 5 were charged with the mixture using suitable apparatus.

The composition of the powder and capsule is as follows:

Active ingredient 200 mg (Examples 1, 3 and 5)

	100 mg (Examples 2, 4, 6 and 7)
Lactose	14.8 mg
Crystalline cellulose	3 mg
Magnesium stearate	0.2 mg

FORMULATION EXAMPLE 2: Solution for Injection

180 mg of mannitol, 26 mg of $Na_2HPO_4 \cdot 12H_2O$, 2974 mg of distilled water and 100 mg of extract of Examples 1, 3 or 5, or 50 mg of fraction of Examples 2, 4, 6 or 7 were mixed. The mixture was poured into bottle and sterilized at 20℃ for 30 min.

Active ingredient	100 mg (Examples 1, 3 and 5)
	50 mg (Examples 2, 4, 6 and 7)
Mannitol	180 mg
$Na_2HPO_4 \cdot 12H_2O$	26 mg
Distilled water	2974 mg

FORMULATION EXAMPLE 3: Health food

For 1-day administration, powdered vitamin E, ferric lactate, zinc oxide, nicotinic acid amide, vitamin A, vitamin B1, vitamin B2 and 400 mg of extract of Examples 1, 3 or 5, or 200 mg of fraction of Examples 2, 4, 6 or 7 were mixed.

The composition of the health food is as follows (1-day dose for human):

Active ingredient	400 mg (Examples 1, 3 and 5)
	200 mg (Examples 2, 4, 6 and 7)
Vitamin C	100 mg
Powdered Vit. E	120 mg
Ferric lactate	2 mg

Zinc oxide	2 mg
Nicotinic acid amide	20 mg
Vitamin A	5 mg
Vitamin B1	2 mg
Vitamin B2	2 mg
Maize starch	200 mg
Magnesium stearate	20 mg

Industrial Applicability

As described above, the present composition can reduce body weight, adipose tissues and neutral lipids, thus showing an excellent therapeutic effect for preventing obesity. Accordingly, the present composition is very useful as health food and a therapuetic agent for treating diseases associated with obesity as well as reducing body weight.

What is claimed is:

1. A composition for preventing obesity comprising as dry weight 30-60 weight parts of Ephedrae Herba, Scutellariae Radix and Typhae Pollen, respectively.

2. The composition according to claim 1, wherein said composition further comprises at least one selected from the group consisting of 30-60 weight parts of Acorus gramineus Rhizome, 30-60 weight parts of Armeniacae Semen, 15-45 weight parts of Nelumbinus Folium and 15-45 weight parts of Polygalae Radix.

3. An agent for treating obesity comprising the composition of claim 1 or 2 as an active ingredient.

4. A health food comprising the composition of claim 1 or 2.

5. A process for preparing a composition for preventing obesity, wherein said process comprises steps of:

extracting a mixture of 30-60 weight parts of each of Ephedrae Herba, Scutellariae Radix and Typhae Pollen as dry weight in hot water;

concentrating said extract under vacuum and separating said extract by using an equal amount of a lower alcohol or a nonpolar solvent, followed by concentrating the resultant under vacuum;

azetotropically concentrating the resulting concentrate by virtue using water; and

freeze-drying the resultant to obtain a powdered extract.

6. The process according to claim 5, wherein said mixture further comprises at least

one selected from the group consisting of 30-60 weight parts of Acorus gramineus Rhizome, 30-60 weight parts of Armeniacae Semen, 15-45 weight parts of Nelumbinus Folium and 15-45 weight parts of Polygalae Radix.

7. A process for preparing a composition for preventing obesity, wherein said process comprises steps of:

refluxing and extracting a mixture of 30-60 weight parts of each of Ephedrae Herba, Scutellariae Radix and Typhae Pollen as dry weight by using an aqueous alcoholic solution;

concentrating said extract under vacuum to remove the alcohol and separating said extract by using an equal amount of a lower alcohol or a nonpolar solvent,

azetotropically concentrating the resulting concentrate by using water; and

freeze-drying the resultant to obtain a powdered extract.

8. The process according to claim 7, wherein said mixture further comprises at least one selected from the group consisting of 30-60 weight parts of Acorus gramineus Rhizome, 30-60 weight parts of Armeniacae Semen, 15-45 weight parts of Nelumbinus Folium and 15-45 weight parts of Polygalae Radix.