

DESCRIPTION

TITLE OF INVENTION: COMPOSITION FOR MAINTAINING OR
IMPROVING DAILY LIFE ACTIVITY AMOUNT, OR FOR PREVENTING OR
5 SUPPRESSING DECREASE IN DAILY LIFE ACTIVITY AMOUNT

TECHNICAL FIELD

[0001]

The present invention relates to a composition for
10 maintaining or improving the daily living activity level or
preventing or suppressing a decrease in daily living
activity level. The present invention also relates to a
method of maintaining or improving the daily living
activity level or preventing or suppressing a decrease in
15 daily living activity level, and use of at least one
sesamin-class compound for maintaining or improving the
daily living activity level or preventing or suppressing a
decrease in daily living activity level.

20 BACKGROUND ART

[0002]

Nowadays, taking daily measures for health has been
an important agenda in countries all over the world
including Japan. In a country like Japan where the ratio
25 of elderly in the population is high, prolongation of
health life expectancy has also been an important challenge.
In such a circumstance, preventing lifestyle-related
diseases and aiming to prolong the health life expectancy
through improvement of muscle strength through continuous
30 exercise are encouraged. Recently, increasing the physical
activity level in daily life has been recommended as a
measure that can be easily started with low psychological
hurdles, compared to starting exercise. For example,
walking during travel to work or school and doing house
35 chores are recommended as activities that can be easily

done by many people in daily life.

[0003]

According to "Exercise Guidelines 2006 for Health
Promotion" published by the Ministry of Health, Labour and
5 Welfare of Japan, the term "physical activities" is defined
as "all activities that consume more energy than resting"
and can be classified into exercise and daily living
activities. The term "daily living activities" is defined
as "physical activities excluding exercise". The product
10 of physical activity intensity and activity time is
expressed as the physical activity level.

[0004]

According to Annual Health, Labour and Welfare Report
2014 issued by the Ministry of Health, Labour and Welfare
15 of Japan, the term "health life expectancy" is defined as
"the period during which one can live without any daily
life restrictions due to health problems". The period
during which one can live without requiring nursing care is
synonymous with the period during which one's daily living
20 activities are not restricted. Aging increases the
likelihood of interference with daily living activities.
For example, Non-Patent Literature 1 discloses that daily
living activities decrease with aging. Non-Patent
Literature 3 discloses that the higher physical activity
25 level results in longer health life expectancy. The aging
society requires people to maintain the physical activity
level by maintaining not only the exercise level but also
daily living activity level, and prolong the health life
expectancy.

30 [0005]

The human physical activity level can be measured
based on the number of steps as a basic index. For example,
in animal tests, infrared-based measurement of the number
of movements and telemetry-based measurement of distance
35 travelled are the mainstream. However, evaluation of the

daily living activity level excluding exercise also requires evaluation of low intensity activities. A measurement method using an activity tracker with a built-in triaxial accelerometer has been developed recently as a method of measuring the human daily living activity level. Use of this measurement method enables an accurate measurement of low intensity activities, so that the method can provide an index that reflects a more accurate measurement of the daily living activity level. It was proved with this measurement method that the human daily living activity level decreases with aging (Non-Patent Literature 1).

CITATION LIST

- Non-Patent Literature
[0006]

Non-Patent Literature 1: Shuzo Kumagai, Shigeho Tanaka, Hiro Kishimoto, et al., Measurements of Physical Activity and Sedentary Behavior by Tri-axial Accelerometers and Their Application to Epidemiological Studies, Research in Exercise Epidemiology, 2015, 17(2), 90-103

Non-Patent Literature 2: Takada S, Kinugawa S, Matsushima S, et al. Sesamin prevents decline in exercise capacity and impairment of skeletal muscle mitochondrial function in mice with high-fat diet-induced diabetes. Exp Physiol. 2015 Nov 1, 100(11), 1319-1330

Non-Patent Literature 3: Leskinen T, Stenholm S, Aalto V, et al. Physical activity level as a predictor of healthy and chronic disease-free life expectancy between ages 50 and 75, Age and Ageing, 2018 May 1, 47(3), 423-429

SUMMARY OF INVENTION

- Technical Problem
[0007]

Non-Patent Literature 2 has demonstrated that sesamin

suppresses a decrease in endurance of rats subjected to exercise load tests with a high fat diet. However, no reports have been made on whether a sesamin-class compound prevents a decrease in daily living activity level but not exercise level of physical activities and contributes to maintenance of the daily living activity level. In other words, it has been unknown that the sesamin-class compound such as sesamin has an action to maintain the daily living activity level. In particular, no reports have been made on whether the sesamin-class compound such as sesamin contributes to maintenance of the daily living activity level that decrease with aging.

[0008]

The present invention aims to provide a composition for maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level. The present invention also aims to provide a method of maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level, and use of at least one sesamin-class compound for maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level.

25 - Solution to Problem

[0009]

As a result of extensive studies to solve the above issues, the present inventors used the activity tracker with a built-in triaxial accelerometer described in Non-Patent Literature 1 to measure the activity level of rats without exercise load, whereby they found that a sesamin-class compound has an action to maintain the physical activity level excluding exercise, i.e., the daily living activity level. The present inventors also found that the sesamin-class compound is useful in preventing aging-

induced decrease in daily living activity level or maintaining the daily living activity level that decreases with aging.

[0010]

5 The present invention relates to the following composition for maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level.

10 (1) A composition for maintaining or improving daily living activity level or preventing or suppressing a decrease in daily living activity level, the composition containing at least one sesamin-class compound.

15 (2) The composition according to (1) above, wherein the at least one sesamin-class compound is at least one of sesamin or episesamin.

 (3) The composition according to (1) or (2) above, wherein the at least one sesamin-class compound is episesamin.

20 (4) The composition according to any one of (1) to (3) above, wherein the composition is for preventing or suppressing aging-induced decrease in daily living activity level, for improving the daily living activity level that has decreased with aging, preventing or suppressing aging-induced increase in inactivity time, or alleviating the inactivity time that has increased with aging.

 (5) The composition according to any one of (1) to (4) above, wherein the composition is an oral composition.

30 (6) The composition according to (5) above, wherein the oral composition is a food or beverage, a pharmaceutical product, a quasi-pharmaceutical product, or feed.

35 (7) The composition according to (6) above, wherein the food or beverage is a food for specified health uses, a nutritionally functional food, or a food with one or more function claims.

(8) A method of maintaining or improving daily living activity level or preventing or suppressing a decrease in daily living activity level, the method including administering at least one sesamin-class compound.

5 (9) Use of at least one sesamin-class compound for maintaining or improving daily living activity level or preventing or suppressing a decrease in daily living activity level.

10 - Advantageous Effects of Invention
[0011]

 The present invention can provide a composition for maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living
15 activity level. The present invention can also provide a method of maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level. The present invention can also provide use of at least one sesamin-class compound for
20 maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level.

 Ingestion of at least one sesamin-class compound can provide an effect of maintaining or improving the daily
25 living activity level or preventing or suppressing a decrease in daily living activity level. Ingestion of at least one sesamin-class compound can also prevent or suppress aging-induced decrease in daily living activity level, improve the daily living activity level that has
30 decreased with aging, or prevent, suppress, or alleviate aging-induced increase in inactivity time. The sesamin-class compound for use in the present invention is a component that has a long history of consumption as food, and is advantageous in that it is highly safe and can be
35 ingested continuously.

BRIEF DESCRIPTION OF DRAWINGS

[0012]

Fig. 1 is a graph showing an effect of a mixture of
5 sesamin and episesamin (sesamin:episesamin = 1:1 by weight)
on the daily living activity level.

DESCRIPTION OF EMBODIMENTS

[0013]

10 The composition of the present invention for
maintaining or improving the daily living activity level or
preventing or suppressing a decrease in daily living
activity level contains at least one sesamin-class compound.

The sesamin-class compound is one of major lignan-
15 class compounds of sesame, and is contained in an amount of
about 0.5 to 1.0 wt% in sesame. While long-term ingestion
of artificially synthesized compounds is not preferable in
terms of unexpected side effects or the like, the sesamin-
class compound with guaranteed safety is most suited for
20 long-term ingestion.

[0014]

In the present invention, the terms "physical
activity", "physical activities", "exercise", "daily living
activity", and "daily living activities" are synonyms with
25 the terms "physical activity", "physical activities",
"exercise", "daily living activity", and "daily living
activities", respectively, as defined in "Exercise
Guidelines 2006 for Health Promotion" issued by the
Ministry of Health, Labour and Welfare of Japan. In other
30 words, the terms "physical activity" and "physical
activities" each encompass all the activities that require
more energy expenditure than resting. The terms "daily
living activity" and "daily living activities" each
encompass all the physical activities excluding exercise.
35 Exercise is, for example, performed systematically and/or

intentionally with an aim to maintain and/or improve the physical strength. In the case of humans, the daily living activity level can be measured by an activity tracker with a built-in triaxial accelerometer ("Actimarker" available
5 from Panasonic). In the case of animals, the daily living activity level can be measured by an activity tracker with a built-in triaxial accelerometer (nano tag[®] available from Kissei Comtec Co., Ltd.) without exercise load of treadmill exercise or the like.

10 [0015]

The daily living activity in the present invention is not limited. Examples include activities such as house chores, work-related activities, and childcare-related activities. In the case of animals, the activity level
15 measured without exercise load is considered to correspond to the daily living activity level of humans.

[0016]

In the present invention, the daily living activity level can be measured as the daily living activity level and/or daily living activity time. In other words, the
20 phrase "maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level" means maintaining, improving, or increasing the daily living activity level and/or daily
25 living activity time or preventing or suppressing a decrease in daily living activity level and/or daily living activity time.

The inactivity time increases due to a decrease in daily living activity time. Thus, the maintaining or
30 improving the daily living activity level or preventing or suppressing a decrease in daily living activity level in the present invention also encompasses preventing, suppressing, or alleviating an increase in inactivity time. The terms "inactivity time" as used herein refers to the
35 time not involving physical activities, i.e., the sleeping

or resting time (e.g., activities in sitting position).

[0017]

Preferably, the maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level is preventing or suppressing a decrease in daily living activity level, improving the decreased daily living activity level, preventing or suppressing an increase in inactivity time, or alleviating the increased inactivity time.

10 [0018]

Preferably, the maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level is preventing or suppressing aging-induced decrease in daily living activity level, improving the daily living activity level that has decreased with aging, preventing or suppressing aging-induced increase in inactivity time, or alleviating the inactivity time that has increased with aging.

The term "aging" as used herein refers to changes with aging that occur during or after middle age, especially around 40 years old and thereafter.

[0019]

(Sesamin-class compound)

In the present invention, the term "sesamin-class compound" is the collective term for compounds including sesamin and its analogs. Sesamin is one of major lignan compounds found in sesame. Examples of the sesamin analogs include episesamin and dioxabicyclo[3.3.0]octane derivatives described in JP H04-9331 A. The at least one sesamin-class compound may include a single compound alone or two or more compounds. Specific examples of the sesamin-class compound include sesamin, episesamin, sesaminol, episesaminol, sesamol, and sesamolin. Stereoisomers or racemates of these compounds may be used alone or in mixture. In addition, metabolites of the

sesamin-class compound (e.g., those described in JP 2001-139579 A) are also sesamin analogs included in the sesamin-class compound of the present invention, and can also be used in the present invention, as long as they exhibit the effect of the present invention. In the present invention, 5 sesamin and/or episesamin can be suitably used as the at least one sesamin-class compound. Sesamin and episesamin, or episesamin can be more suitably used, and episesamin can be even more suitably used. When sesamin and episesamin 10 are used, the ratio of these components is not limited. For example, the ratio of sesamin to episesamin by weight is preferably 1:0.1 to 1:9, more preferably 1:0.3 to 1:3, still more preferably 1:0.5 to 1:2.

[0020]

15 The sesamin-class compound for use in the present invention is not limited in any way by its form, production method, or the like. For example, when the sesamin-class compound is sesamin, sesamin extracted from sesame oil by a known method (e.g., the method described in JP H04-9331 A) 20 can be used (hereinafter, such sesamin is called a sesamin extract or purified sesamin). Commercially available sesame oil (in liquid form) can also be used as is. However, when sesame oil is used, the characteristic flavor of sesame oil is sometimes evaluated as being 25 organoleptically undesirable. Thus, a tasteless and odorless sesamin extract (or purified sesamin) from sesame oil is preferably used. In addition, since sesame oil has a low sesamin content, use of sesame oil to incorporate a desired amount of sesamin results in excess volume per unit 30 dosage of a composition to be prescribed. This sometimes causes inconvenience in ingestion. In particular, in the case where the composition is formulated for oral administration, the preparation (e.g., tablet or capsule) becomes so bulky that it causes trouble in ingestion. Thus, 35 use of sesamin extract (or purified sesamin) from sesame

oil is preferred because it does not require a large amount of ingestion. In the present invention, at least one purified or isolated sesamin-class compound may be used. The sesamin-class compound can also be obtained by
5 synthesis. For example, sesamin and episesamin can be synthesized by the method of Beroza et al. (J. Am. Chem. Soc., 78, 1242 (1956)). Metabolites of sesamin and episesamin can be synthesized by the method of Urata et al. (Chem. Pharm. Bull. (Tokyo), 56(11), 1611-1612 (2008)).

10 [0021]

The sesamin-class compound is a compound that is found in natural products and food and beverages and that has a history of consumption as food. Thus, the sesamin-class compound is less likely to cause problems in terms of
15 safety, for example, even if ingested daily. The present invention can provide a composition for maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level, the composition containing a highly safe material as an active
20 ingredient.

[0022]

The composition of the present invention is applicable for either therapeutic use (medical use) or non-therapeutic use (non-medical use). The "non-therapeutic"
25 is a concept that does not include medical activities, i.e., a concept that does not include methods of surgery, therapy, or diagnosis of humans.

The composition of the present invention can be provided in the form of a food or beverage, a
30 pharmaceutical product, a quasi-pharmaceutical product, feed, or the like. The composition of the present invention may be a food or beverage, a pharmaceutical product, a quasi-pharmaceutical product, feed, or the like for maintaining or improving the daily living activity
35 level or preventing or suppressing a decrease in daily

living activity level by itself, or may be a formulation, material, or the like to be added to these products.

The composition of the present invention can be provided in the form of an agent for example, but it is not
5 limited thereto. Such an agent may be provided as a composition as is, or as a composition containing the agent.

The composition of the present invention may be either an oral composition or a parenteral composition, but it is preferably an oral composition. The oral composition
10 may be a food or beverage, an oral pharmaceutical product, an oral quasi-pharmaceutical product, or feed, preferably a food or beverage or an oral pharmaceutical product, more preferably a food or beverage.

[0023]

15 The composition of the present invention can contain optional additives and optional ingredients in addition to the at least one sesamin-class compound, as long as the effect of the present invention is not impaired. Such additives and ingredients may be selected depending on the
20 form of the composition, for example, and those generally usable in food and beverages, pharmaceutical products, quasi-pharmaceutical products, feed, and the like can be used. When the composition of the present invention is provided as a food or beverage, a pharmaceutical product, a
25 quasi-pharmaceutical product, feed, or the like, any common method can be used for the production.

[0024]

For example, when the composition of the present invention is provided as a food or beverage, ingredients
30 usable in food and beverages (e.g., food materials, and optional food additives) can be added to the at least one sesamin-class compound to provide various food and beverages. The food or beverage is not limited. Examples thereof include general food and beverages, health foods,
35 dietary supplements, health drinks, foods with function

claims, foods for specified health uses, and foods for the sick. The health foods, dietary supplements, foods with function claims, foods for specified health uses, and the like can be used in various forms of formulations such as fine granules, tablets, granules, powders, capsules, chewable tablets, dry syrups, syrups, liquid agents, beverages, and liquid foods.

[0025]

When the composition of the present invention is provided as a pharmaceutical product or a quasi-pharmaceutical product, for example, a pharmacologically acceptable carrier, an optional additive, or the like can be added to the at least one sesamin-class compound to provide various dosage forms of pharmaceutical products or quasi-pharmaceutical products. Such a carrier, an additive, or the like may be any pharmacologically acceptable one that can be used in pharmaceutical products or quasi-pharmaceutical products. Examples thereof include excipients, binders, disintegrants, lubricants, antioxidants, and colorants. One or more of these can be used. The form of administration (ingestion) of the pharmaceutical product or the quasi-pharmaceutical product may be oral or parenteral (e.g., transdermal, transmucosal, enteral, or injection) administration. When the composition of the present invention is provided as a pharmaceutical product or a quasi-pharmaceutical product, it is preferably an oral pharmaceutical product or a quasi-pharmaceutical product. Examples of the dosage form for oral administration include liquids, tablets, powders, fine granules, granules, sugar-coated tablets, capsules, suspensions, emulsions, and chewable tablets. The pharmaceutical product may be for non-human animals.

[0026]

When the composition of the present invention is provided as feed, at least one sesamin-class compound is

simply added to feed. The feed includes feed additives. Examples of the feed include feed for farm animals such as cows, pigs, chickens, sheep, and horses; feed for small animals such as rabbits, rats, and mice; and pet food for animals such as dogs, cats, and birds.

[0027]

The amount of the sesamin-class compound in the composition of the present invention is not limited, and can be set according to the form of the composition or the like.

The total amount of the sesamin-class compound in the composition of the present invention is, for example, preferably 0.001 wt% or more, more preferably 0.01 wt% or more, still more preferably 0.05 wt% or more and is preferably 10 wt% or less, more preferably 5 wt% or less.

In one embodiment, the total amount of the sesamin-class compound in the composition is preferably 0.001 to 10 wt%, more preferably 0.01 to 5 wt%, still more preferably 0.05 to 5 wt%.

When the composition contains two or more sesamin-class compounds, the total amount is the sum of these compounds.

[0028]

Preferably, the composition of the present invention is orally ingested (orally administered). The intake (which can also be referred to as "dosage") of the composition of the present invention is not limited. The intake of the composition of the present invention may be an amount that achieves the effect of maintaining or improving the daily living activity level or preventing or suppressing a decrease in daily living activity level. The intake may be appropriately set according to the administration form, administration method, body weight of a subject, and the like.

[0029]

In one embodiment, when the composition of the present invention is orally fed or administered to a human (adult), the total intake of the sesamin-class compound is preferably 0.5 mg or more, more preferably 1 mg or more, 5 still more preferably 3 mg or more, and is preferably 200 mg or less, more preferably 100 mg or less, still more preferably 80 mg or less per 60 kg body weight per day.

In one embodiment, the total intake of the sesamin-class compound is preferably 0.5 to 200 mg, more preferably 10 1 to 100 mg, still more preferably 3 to 80 mg per 60 kg body weight per day in the case of a human (adult).

Preferably, the above amount of the composition is fed or administered in at least one portion per day, for example, in one to several portions (e.g., two or three 15 portions) per day.

In one embodiment, preferably, the above amount of the sesamin-class compound is orally fed or administered to a human.

In one embodiment, the composition of the present invention can be used to feed or administer the above 20 amount of the sesamin-class compound to a human per 60 kg body weight per day.

When the composition contains two or more sesamin-class compounds, the total intake is the sum of these 25 compounds.

In one embodiment, preferably, sesamin and/or episesamin is orally fed or administered to a human (adult) in an amount of preferably 0.5 to 200 mg, more preferably 1 to 100 mg, still more preferably 3 to 80 mg per 60 kg body 30 weight per day as the total intake of sesamin and episesamin.

[0030]

Preferably, the composition of the present invention is continuously fed or administered. The above effects are 35 likely to be enhanced when the sesamin-class compound is

continuously fed or administered. In one embodiment, the composition of the present invention is continuously fed or administered for preferably one week or more, more preferably four weeks or more, still preferably eight weeks or more, particularly preferably 12 weeks or more.

[0031]

The subject to which the composition of the present invention is fed or administered (which can also be referred to as an "administration subject") is not limited. The composition can be fed to humans and non-human animals. Examples of the non-human animals include industrial animals, pets, and laboratory animals. Specifically, the term "industrial animals" refers to animals that are bred for industrial purposes. Examples include farm animals such as cows, horses, pigs, goats, and sheep; poultry such as chickens, ducks, quails, turkeys, and ostriches; and fish such as yellowtail, young yellowtail, red seabream, Japanese horse mackerel, carp, rainbow trout, and eel. The term "pets" refers to pet animals or companion animals such as dogs, cats, common marmosets, birds, and hamsters. The term "laboratory animals" refers to mice, rats, guinea pigs, beagles, miniature pigs, rhesus monkeys, crab-eating monkeys, and other animals that are used in research in fields of medicine, biology, agronomy, pharmacy, and the like.

[0032]

The administration subject of the composition of the present invention is preferably a human or non-human mammal, more preferably a human.

In one embodiment, the administration subject may be one who needs or wants to maintain or improve the daily living activity level or prevent or suppress a decrease in daily living activity level. Examples of such a subject include middle-aged people and older people, a subject who needs or wants to maintain, improve, or increase the daily

living activity level and/or daily living activity time or prevent or suppress a decrease in daily living activity level and/or daily living activity time, and a subject who is feeling a decline in vitality or energy to perform daily living activities. The middle-aged and older people may be those who are 40 years old or older, for example. The term "middle-aged and older people" is a concept that includes the elderly. In one embodiment, the elderly are preferred subjects among the middle-aged and older people. The elderly may be people who are 60 years old or older or 65 years old or older, for example. The composition of the present invention can be used by healthy people for purposes such as preventing symptoms or diseases that are expected to be prevented or alleviated by maintaining, improving, or increasing the daily living activity level and/or daily living activity time or preventing or suppressing a decrease in daily living activity level and/or daily living activity time.

[0033]

The composition of the present invention may be labeled with a function claim for an effect that may be achieved by maintaining, improving, or increasing the daily living activity level and/or daily living activity time or preventing or suppressing a decrease in daily living activity level and/or daily living activity time. For example, the composition may be labeled with one or more function claims selected from the group consisting of "maintaining or improving the daily living activity level that decreases with aging", "maintaining or extending the daily living activity time that decreases with aging", "suppressing, preventing, reducing, or alleviating an increase in inactivity time that increases with aging", "maintaining or improving the level of daily living activities such as walking in daily life", "maintaining or improving the level of daily living activities such as

hobbies, leisure activities, and work-related activities",
"supporting active life", "suppressing or preventing a
decrease in daily living activity abilities or maintaining,
improving, or increasing daily living activity abilities",
5 and "maintaining independent daily living activities".

In one embodiment of the present invention,
preferably, the composition of the present invention is a
food or beverage labeled with one or more function claims
described above. These labels may be labels indicating use
10 for obtaining these functions.

[0034]

The present invention also encompasses the following
method:

a method of maintaining, improving, or increasing the
15 daily living activity level and/or daily living activity
time or preventing or suppressing a decrease in daily
living activity level and/or daily living activity time,
the method including administering at least one sesamin-
class compound.

20 [0035]

The present invention encompasses the following use:
use of at least one sesamin-class compound for
maintaining, improving, or increasing the daily living
activity level and/or daily living activity time or
25 preventing or suppressing a decrease in daily living
activity level and/or daily living activity time.

The above method and use may be therapeutic or non-
therapeutic.

Administering at least one sesamin-class compound to
30 a subject enables to maintain, improve, or increase the
daily living activity level and/or daily living activity
time or prevent or suppress a decrease in daily living
activity level and/or daily living activity time.

[0036]

35 In the above method and use, the sesamin-class

compound and its preferred embodiments are as described above for the composition of the present invention. The at least one sesamin-class compound may include one sesamin-class compound or two or more sesamin-class compounds. In 5 the above method and use, preferably, the at least one sesamin-class compound is administered (fed) to a subject at least once a day, for example, one to several times (e.g., two to three times) a day. In the above method and use, preferably, the sesamin-class compound is orally 10 administered (fed). The above use is preferably for humans or non-human mammals, more preferably for humans.

[0037]

The above method and use only require use of at least one sesamin-class compound in an amount (effective amount) 15 that achieves a desired effect(s). Preferred intake, preferred administration subjects, and the like of the sesamin-class compound are as described above for the composition of the present invention. The sesamin-class compound may be administered as is, or may be administered 20 in the form of a composition containing the sesamin-class compound. For example, the above-described composition of the present invention may be used.

[0038]

The present invention also encompasses use of at 25 least one sesamin-class compound for producing the composition of the present invention. All academic literature and patent literature cited herein are incorporated herein by reference.

30 EXAMPLES

[0039]

The present invention is described in further detail below with reference to examples. A series of animal experiments was performed based on a plan approved by the 35 relevant chief through evaluation of the in-house animal

experiment committee, in compliance with the animal welfare management laws and other related laws and regulations. The present invention is not limited to these examples.

[0040]

5 <Example 1: Effect of 1:1 mixture of sesamin and episesamin on suppression of decrease in daily living activity level (in vivo test)>

This experiment was performed without exercise load, so that all the activity levels measured are considered to correspond to the daily living activity levels of humans. A regular feed group and a sesamin·episesamin-containing feed group were made in such a manner that the daily living activity level would be equal between the groups. The daily living activity level was measured using an
10 accelerometer nanotag (available from Kissei Comtec Co., Ltd.). An accelerometer was embedded in the skin of the neck region of each male Slc:SD rat (14 months of age) under isoflurane anesthesia. After recovery was confirmed, the activity level in the active period (dark period) was
15 measured for three days. In measurement of the daily living activity level, the number of vibrations of a certain intensity or higher was continuously measured, and the total number of vibrations was regarded as the daily living activity level. The rats were divided into a group to be fed with regular feed (AIN-93M available from CLEA
20 Japan, Inc.) and a group to be fed with feed prepared by mixing the regular feed with a 0.1 wt% mixture of sesamin and episesamin (sesamin:episesamin = 1:1 by weight) (8 rats per group). Each group was fed with its corresponding feed
25 (test diet) for eight months. The group fed with the regular feed is referred to as the old regular feed group (regular feed group); the group fed with the feed containing 0.1 wt% sesamin and episesamin is referred to as the old sesamin·episesamin-containing feed group
30 (sesamin·episesamin-containing feed group). The feed

containing sesamin and episesamin had a total amount of sesamin and episesamin of 0.1 wt%, and was prepared by mixing the regular feed with a mixture of sesamin and episesamin (sesamin:episesamin = 1:1 by weight).

5 The daily living activity level in the active period was measured for one week at 17 months of age and 22 months of age.

10 In order to understand the health conditions of the animals, the amount of feed and body weight of each animal were measured regularly. A rat determined as inappropriate for further testing was euthanized in an appropriate manner and excluded from analysis. The subjects of analysis were ultimately four rats in the old regular feed group and six rats in the old sesamin·episesamin-containing feed group.

15 [0041]

 Fig. 1 shows changes in relative daily living activity level, taking the daily living activity level before starting test diet as 1. In the graph in Fig. 1, the circles (●) indicate the old regular feed group, and the triangles (▲) indicate the old sesamin·episesamin-containing feed group (*: $p < 0.05$ vs. old regular feed group, repeated measures two-way ANOVA). A lower value indicates a lower daily living activity level. As shown in Fig. 1, the regular feed group showed a decrease in daily living activity level with aging. In contrast, the sesamin·episesamin-containing feed group showed suppression of aging-induced decrease in daily living activity level. Repeated measurement analysis showed an interaction between test diet and time ($p = 0.014$) in the sesamin·episesamin-containing feed group. At 22 months of age, the sesamin·episesamin-containing feed group showed a significantly higher daily living activity level than the regular feed group (Bonferroni test, $p = 0.023$).

[0042]

35 <Example 2: Effect of administration of sesamin or

episesamin alone on suppression of decrease in daily living activity level (in vivo test)>

Example 2 is a test performed to examine which one of sesamin or episesamin makes a greater contribution to suppressing a decrease in daily living activity level. The basic operation was the same as that in Example 1.

Male Slc:SD rats (14 months of age) were divided into a group to be fed with regular feed (CE-2 available from CLEA Japan, Inc.), a group to be fed with feed containing 0.1% sesamin, and a group to be fed with 0.1% episesamin (3 rats/group) in such a manner that the daily living activity level would be equal among the groups. Each group was fed with its corresponding feed (test diet) for one month. The rats were subjected to measurement of the daily living activity level in the active period at 16 months of age one month after ingestion of the test diet for one month. The subjects of analysis were ultimately two rats in the regular feed group, three rats in the sesamin-containing feed group, and three rats in the episesamin-containing feed group.

Table 1 shows the daily living activity level of each group after fed with the test diet for one month, taking the daily living activity level before starting the test diet as 1. A lower value indicates a lower daily living activity level. As shown in Table 1, the regular feed group showed a decrease in daily living activity level. In contrast, the sesamin-containing feed group and the episesamin-containing feed group showed suppression of aging-induced decrease in daily living activity level, compared to the regular feed group. The episesamin-containing feed group showed no aging-induced decrease in daily living activity level.

[0043]

[Table 1]

Group name	Activity level, taking activity level before starting test diet as 1
Regular feed group	0.89
Sesamin group	0.91
Episesamin group	1.07

[0044]

The above suggested that sesamin and episesamin suppressed aging-induced decrease in daily living activity level, maintained or improved the daily living activity level, or prevented or suppressed a decrease in daily living activity level. The above also clearly showed that episesamin has a stronger action.

CLAIMS

Claim 1. A composition for maintaining or improving
daily living activity level or preventing or suppressing a
5 decrease in daily living activity level, the composition
comprising at least one sesamin-class compound.

Claim 2. The composition according to claim 1,
wherein the at least one sesamin-class compound is at
10 least one of sesamin or episesamin.

Claim 3. The composition according to claim 1 or 2,
wherein the at least one sesamin-class compound is
episesamin.

15 Claim 4. The composition according to any one of
claims 1 to 3,
wherein the composition is for preventing or
suppressing aging-induced decrease in daily living activity
20 level, for improving the daily living activity level that
has decreased with aging, preventing or suppressing aging-
induced increase in inactivity time, or alleviating the
inactivity time that has increased with aging.

25 Claim 5. The composition according to any one of
claims 1 to 4,
wherein the composition is an oral composition.

30 Claim 6. The composition according to claim 5,
wherein the oral composition is a food or beverage, a
pharmaceutical product, a quasi-pharmaceutical product, or
feed.

35 Claim 7. The composition according to claim 6,
wherein the food or beverage is a food for specified

health uses, a nutritionally functional food, or a food with one or more function claims.

5 Claim 8. A method of maintaining or improving daily living activity level or preventing or suppressing a decrease in daily living activity level, the method comprising:

 administering at least one sesamin-class compound.

10 Claim 9. Use of at least one sesamin-class compound for maintaining or improving daily living activity level or preventing or suppressing a decrease in daily living activity level.