

【DESCRIPTION】

【INVENTION TITLE】

COMPOSITION CONTAINING *CAMELLIA SINENSIS* EXTRACT

5 **【Technical Field】**

The present invention relates to a composition containing an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), and more particularly, to a
10 composition containing, as an active ingredient, an extract of a new cultivar of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl) gallate(EGCG3''Me; 3''-O-Me-EGCG).

15 **【Background Art】**

Human skin undergoes changes due to several internal and external factors as it ages. In other words, internally, the secretion of various hormones that regulate metabolism decreases, the function of
20 immune cells and the activity of cells are reduced, thereby reducing the biosynthesis of immunity protein and biological constituent protein required for the living body. Externally, due to the destruction of the ozone layer, the amount of ultraviolet rays
25 reaching the earth's surface in the sun's rays

increases and environmental pollution becomes more serious, which lead to an increase in free radicals and active harmful oxygen. Thereby, a variety of changes are occurred, for example, not only skin
5 thickness decreases, wrinkles increase, elasticity decreases, but also skin color is dull, skin troubles frequently occur, and spots, freckles, and age spots increase.

As aging progresses, symptoms of changes or
10 reduction in the content and sequence (arrangement) of collagen, elastin, hyaluronic acid and glycoprotein, constituting a skin, appear, and oxidative stress due to free radicals and active harmful oxygen occurs. In addition, due to aging
15 progress or ultraviolet rays, it is known that in most cells constituting the skin, the biosynthesis of cyclooxygenase-2 (Cox-2), which is an enzyme that produces proinflammatory cytokine, known to cause inflammation, increases, the biosynthesis of matrix
20 metalloproteinase (MMP), which is an enzyme that degrades skin tissues by these inflammatory factors, increases, and the production of nitric oxide (NO) by inducible nitric oxide synthase (iNOS) increases.

That is, the cellular activity associated with
25 endogenous aging that naturally progresses decreases,

and the biosynthesis of matrix material decreases due to microinflammation. Degradation and degeneration are accelerated by external factors such as an increase in stress caused by various harmful environments and an increase in free radical species by sun's rays. Thus, as the skin matrix is destroyed and thinned, various symptoms of skin aging appear. Therefore, many studies have been conducted on active ingredients that can prevent and improve such an aging phenomenon.

In 1969, McCord and Fridovich discovered the superoxide dismutase (SOD) which is an enzyme that scavenges superoxide radicals. With such discovery, the research on antioxidants has been promoted in earnest by getting interested in the generation of active oxygen in the living body, biotoxicity and defense and elimination mechanism.

Free radicals such as superoxide are produced in the body by external stress, ultraviolet rays, smoking, drugs, active oxygen, etc. and perform non-selective and irreversible disruption function of lipids, proteins, sugars, nucleic acids (e.g., DNA), which are cell constituents. Thereby, it is known to cause not just aging but also cause cancer, brain diseases such as stroke, Parkinson's disease, etc.,

and various diseases such as heart disease, ischemia, arteriosclerosis, skin disease, gastrointestinal diseases, inflammation, rheumatism, autoimmune diseases, etc. As such, free radicals cause various functional disorders due to oxidative destruction of cells, which may cause aging and diseases.

Recently, as the fact that active oxygen and superoxide act as a direct cause to various diseases and aging has been clarified, research into antioxidants has shifted from research and development of antioxidants as food additives to research to find antioxidants as anti-aging and disease treatment agents.

Tea plant is an evergreen belonging to the family *Theaceae*, the genus *Camellia* and the scientific name is *Camellia sinensis*. The cultivated tea plant can be divided into *assamica* variety (var. *assamica*) and Chinese variety (var. *sinesis*). The *assamica* variety has lobar characteristics, and is distributed in tropical and subtropical areas such as India and Sri Lanka, and it has weak cold resistance, and is widely used for black tea. The Chinese variety has lobular characteristics, and is distributed in temperate areas such as Korea, China, and Japan, and have high cold resistance.

Traditional Korean tea plants are mainly classified as a Chinese variety. Tea plants are subtropical crops, with an annual average temperature of 14 to 16°C being the optimal temperature for growth. Low temperature is a limiting factor for the growth of tea plants, and even a variety with strong cold resistance when passed at -15°C for 1 hour, the leaves die, and if it exceeds 40°C, a high-temperature failure occurs. The minimum amount of rainfall required for the growth of tea plants is at least 1,300 mm, but more than 1,500 mm of rainfall amount per year is required for the optimum tea plant cultivation.

In Korea, in connection with tea plants, it has been reported that DaeRyoun brought tea seeds from China in the late period of Silla 828 and planted them around Jiri mountain, but there is also an introductory theory from of India by Huh Huang-Ok in early Karakguk. Most of tea plants are naturally grown in the southern region, which is south of the cultivation limit line of 13 °C, and are cultivated in areas such as Jeonbuk, Jeonnam, Gyeongnam and Jeju.

Tea has a feature that it contains a large amount of nitrogen compounds, polyphenols, sugars, organic acids, vitamins and minerals compared to

other palatable drinks. It is known that amino acids are closely related to the taste of tea, certain amino acids such as theanine greatly affect the quality, and the ingredients of these amino acids
5 also correlate with the price of the product. The total nitrogen content of tea leaf components has traditionally been an important factor in determining the tea quality together with amino acids.

Of the total nitrogen content of tea leaves,
10 about 20% by weight is caffeine, and other nitrogen compounds include amino acids, amides, proteins, nucleic acids and the like. Tea protein is hardly eluted by binding to tannin or solidifying by heating in the manufacturing process, but amino acids and
15 amides are water soluble and thus are eluted and greatly influence the taste of tea.

Moreover, since teas are palatable drinks from old times, and also have various pharmacological actions, it has been widely used. Recently, attention
20 has been paid to the functionality of the tea, and research thereon has been actively conducted. Tea contains particularly a large amount of polyphenols, and the polyphenols of tea are mostly flavonoids known as catechin compounds.

25 Theanine is a component with a high proportion

that accounts for about 40 to 60% by weight of the total free amino acids of green tea, and is a component that is hardly detected in other crops and is contained only in tea leaves. Theanine components
5 have a great influence on the palatable taste of the tea, and show a correlation with the tea quality along with total free amino acids and total nitrogen, and is used as an important index during quality evaluation along with sensory evaluation. This has
10 been evaluated as an important selection factor in the development of a new variety of tea plants.

On the other hand, the tea plant is allogamous plant that cross-pollinates between individuals of different genotypes, and the variations between
15 individuals are severe. Therefore, the conventionally cultivated native variety of tea plant is not a single variety, but a hybrid that has been long descended due to sexual propagation. The genetic traits of each tea plant are all different, and
20 various characteristics such as harvest time, growth rate, shape and color of leaves, composition, disease resistance, and cold resistance are different. These native varieties have high genetic value for breeding of the varieties, but it is urgent to develop tea
25 plant varieties that can maintain a uniform quality

while exhibiting excellent functionality even after repeated breeding.

As an example, a method of breeding a new tea plant variety (named "Jangwon No. 1"), which has a
5 higher catechin content than conventional tea plants, and thus has an excellent antioxidant effect (Korean Unexamined Patent Publication No. 10-2011-0020676), and a method of breeding a new tea plant variety (named "Jangwon No. 2"), which has higher amino acid
10 and theanine content than conventional tea plants, has been developed (Korean Unexamined Patent Publication No. 10-2012-0107751). All of these breeding methods have features that tea plants having a desired characteristic can be selected among the
15 native tea plant varieties and reproduced asexually by cutting, thereby being able to reproduce excellent genetic traits without mutation.

As such, breeding methods of new tea plant varieties containing a large amount of specific
20 components are known to some extent, but since these tea plants not only have the problem of a long breeding period like other perennials, they are allogamous and genetically very complexed, therefore it is difficult to improve the tea plant variety, and
25 the efficacy of the tea leaf extract obtained from

these tea plants has not been specifically clarified.

In this regard, the present inventors analyzed the components of the extract obtained from the tea leaves of a new cultivar of *Camellia sinensis* (Jangwon No. 3) produced through the breeding method and the cultivation method of the new cultivar of *Camellia sinensis*, and conducted intensive studies to apply them to pharmaceuticals, cosmetics, food, etc. As a result, the inventors have found that an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) has particularly a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) and is excellent in anti-oxidant, anti-inflammatory, anti-aging and anticancer effects, thereby completing the present invention.

【DETAILED DESCRIPTION OF THE INVENTION】

【Technical Problem】

An object of the present invention is to provide a composition containing, as an active ingredient, an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) according

to the present invention.

Another object of the present invention is to provide a pharmaceutical composition, cosmetic composition or health functional food composition having anti-oxidant, anti-inflammatory, anti-aging and anti-cancer uses containing, as an active ingredient, an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate according to the present invention.

【Technical Solution】

In order to achieve the above objects, one embodiment of the present invention provides a composition containing, as an active ingredient, an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate.

Another embodiment of the present invention provides a pharmaceutical composition, cosmetic composition or health functional food composition for the antioxidant containing, as an active ingredient, an extract of *Camellia sinensis*, preferably an

extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate.

Another embodiment of the present invention provides an anti-inflammatory pharmaceutical composition, cosmetic composition or health functional food composition containing, as an active ingredient, an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate.

Another embodiment of the present invention provides an anti-aging pharmaceutical composition, cosmetic composition or health functional food composition containing, as an active ingredient, an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate.

Another embodiment of the present invention provides an anticancer pharmaceutical composition, cosmetic composition or health functional food composition containing, as an active ingredient, an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No.

3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate.

Yet another embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an antioxidant in the production of a pharmaceutical composition or medicament for the antioxidant.

Yet another embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an antioxidant in the production of a cosmetic composition for the antioxidant.

Yet another embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an antioxidant in the production of a health functional food composition for the antioxidant.

Yet another embodiment of the present invention provides the use of an extract of *Camellia sinensis*,

preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an anti-inflammatory or anti-phlogistic agent in the
5 production of an anti-inflammatory or anti-phlogistic pharmaceutical composition or medicament.

A further embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia*
10 *sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an anti-inflammatory or anti-phlogistic agent in the production of an anti-inflammatory or anti-phlogistic cosmetic composition.

15 A further embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an anti-
20 inflammatory or anti-phlogistic agent in the production of an anti-inflammatory or anti-phlogistic health functional food composition.

A further embodiment of the present invention provides the use of an extract of *Camellia sinensis*,
25 preferably an extract of a new cultivar of *Camellia*

sinensis (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an anti-aging agent in the production of an anti-aging pharmaceutical composition or medicament.

5 A further embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an anti-aging agent in the production of an anti-aging
10 cosmetic composition.

 A further embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an anti-aging agent in the production of an anti-aging health
15 functional food composition.

 A further embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an anti-cancer agent in the production of an anti-cancer
20 pharmaceutical composition or medicament.
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A further embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate as an anti-cancer agent in the production of an anti-cancer cosmetic composition.

A further embodiment of the present invention provides the use of an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), having a high content of epigallocatechin 3-O-(3-O-methyl)gallate, as an anti-cancer agent in the production of an anti-cancer health functional food composition.

【ADVANTAGEOUS EFFECTS】

The composition containing, as an active ingredient, an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate according to the present invention has an antioxidant effect due to the elimination and suppression of free radicals, has an anti-aging effect on the skin due to having an excellent ability to inhibit the formation of collagenase, has an anti-inflammatory effect due to inhibiting the expression

and secretion of inflammatory factors, such as prostaglandin and IL-8 and the like, in skin cells, has an excellent anticancer effect with respect to cancer cell lines derived from various tissues.

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【BRIEF DESCRIPTION OF THE DRAWING】

FIG. 1 shows the selection of elite lines of the collected green tea plant germplasm.

FIG. 2 shows the single cutting propagation of
10 the selected green tea plant.

FIG. 3 shows a new cultivar of *Camellia sinensis* (Jangwon No. 3).

FIG. 4 shows the superoxide anion scavenging activity of the extract of a new cultivar of *Camellia*
15 *sinensis* (Jangwon No. 3).

FIG. 5 shows the hydroxyl radical scavenging activity of the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3).

20 【DETAILED DESCRIPTION OF THE EMBODIMENTS】

Unless otherwise defined, all technical and scientific terms used herein have the same meaning as commonly understood by a person skilled in the art to which the present invention pertains. In general, the
25 terminology used herein is well-known and commonly

used in the art.

Hereinafter, the present invention is described in more detail.

In one embodiment of the present invention, tea
5 leaf extract of a new cultivar of *Camellia sinensis*
(Jangwon No. 3) (seed accession number: KCTC (Korean
Collection for Type Cultures) 12213BP (2012.5.14);
see [Accession No.] below), which is a selected new
cultivar of *Camellia sinensis*, is prepared, and then
10 the components of the extract are analyzed. As a
result, the total content of catechin showed as 41.1
wt% in the tea leaf extract of a new cultivar of
Camellia sinensis (Jangwon No. 3) which was found to
be higher than an extract of Yabukida leaf (28.1 wt%),
15 an extract of Kanayamidori leaf (26.7 wt%) and an
extract of Yutakamidori leaf (26.4 wt%), which are a
common tea plant-introduced variety. In addition, an
extract of a new cultivar of *Camellia sinensis*
(Jangwon No. 3) contains epigallocatechin 3-O-(3-O-
20 methyl) gallate (EGCG3''Me; 3''-O-Me-EGCG) in an amount
of 2.5% by weight, and thus was found to contain 10
times or more higher than common tea plant-introduced
varieties (see Example 1 and Table 6 of Test Example
1).

25 On the other hand, as a result of comparative

analysis of the components of catechin and caffeine in the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) leaf and the leaf extract of Yabukida which are produced as tea products, it was found that the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) leaf had a higher total catechin content than the extract of Yabukida. Further, the content of 3"-O-Me-EGCG in the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) leaf was found to be 4.7 mg·g⁻¹, 3.6 mg·g⁻¹ and 1.94 mg·g⁻¹ in in green tea, Oolong tea (semi-fermented tea) and black tea (fermented tea), respectively (see Example 2 and Table 7 of Test Example 1).

In another embodiment of the present invention, the antioxidant effect of the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention was confirmed. As a result, as shown in Table 8, (i) in the DPPH (1,1-diphenyl-2-picrylhydrazyl) test, the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention (Example 1) exhibited a similar antioxidant effect compared to ascorbic acid (vitamin C) which is an antioxidant used as a positive control, and it exhibited a much higher antioxidant effect compared to the extracts of

common tea plant-introduced varieties Yabukida, Kanayamidori and Yutakamidori of Comparative Examples 1 to 3, (ii) in the superoxide anion scavenging activity test, the extract of the new cultivar of
5 *Camellia sinensis* (Jangwon No. 3) exhibited a higher superoxide anion scavenging activity than the ascorbic acid which is a positive control, and (iii) in the hydroxyl radical scavenging activity test, the extract of the new cultivar of *Camellia sinensis*
10 (Jangwon No. 3) exhibited a higher hydroxyl radical scavenging activity than Yabukida extract (see Test Example 2).

In another embodiment of the present invention, the anti-aging effect of the new cultivar of *Camellia*
15 *sinensis* (Jangwon No. 3) according to the present invention was confirmed through the ability to inhibit the production of collagenase. As a result, as shown in Table 9, as the expression level of collagenase is lower, the ability to inhibit the
20 expression of collagenase is higher, less collagen degradation in the skin occurs, a decrease in skin elasticity is inhibited, and thus, the amount of wrinkles produced is reduced. That is, it was confirmed that the extract of the new cultivar of
25 *Camellia sinensis* (Jangwon No. 3) (Example 1)

according to the present invention effectively inhibited the expression of collagenase in vitro, and the ability to inhibit the expression of collagenase was superior to that of tocopherol which were used as
5 a positive control group. In particular, it was confirmed that the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) (Example 1) according to the present invention more effectively inhibited the expression of collagenase compared to
10 the extracts of common tea plant-introduced varieties Yabukida, Kanayamidori and Yutakamidori of Comparative Examples 1 to 3, thereby inhibiting collagen breakdown in the skin and thus confirming excellent enhancing effect of skin elasticity and
15 wrinkle reducing effect (see Test Example 3).

In another embodiment of the present invention, the anti-inflammatory effect of the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention was confirmed
20 through the inhibitory effect of the production of prostaglandin and the inhibitory effect of the production of Interleukin-8 (IL-8). As a result, as shown in Table 10, it was found that the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3)
25 (Example 1) according to the present invention

exhibited a very high inhibitory effect on the production of prostaglandin as in a control group treated with aspirin, and exhibited a remarkably higher inhibitory effect of prostaglandin production compared to the extracts of common tea plant-introduced varieties Yabukida, Kanayamidori and Yutakamidori of Comparative Examples 1 to 3. Moreover, as shown in Table 11, it was found that the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention (Example 1) exhibited a very high effect of inhibiting the secretion of IL-8 increased by PGSA, an inflammation-inducing stimulant, and that it significantly inhibited the secretion of IL-8 compared to the extracts of common tea plant-introduced varieties Yabukida, Kanayamidori and Yutakamidori of Comparative Examples 1 to 3 (see Test Example 4).

In another embodiment of the present invention, the anticancer effect of the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention was confirmed through the cancer cell growth inhibitory effect. As a result, as shown in Table 12, (i) when the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) was treated to each cancer cell line at a

concentration of $100\ \mu\text{g}\cdot\text{mL}^{-1}$, it exhibited a cancer cell growth (survival rate) of 50% or less in all cancer cell lines; when the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) was
5 treated to each cancer cell line at a concentration of $200\ \mu\text{g}\cdot\text{mL}^{-1}$, it exhibited a cancer cell growth rates of 12%, 24% and 16% in a lung cancer cell line (A549), a prostate cancer cell line (LNCaP) and a breast cancer cell line (MCF-7), respectively. Thus,
10 the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) was confirmed to have an effect of inhibiting the growth of cancer cells. (ii) in addition, as a result of treating each cancer cell line with 3"-O-Me-EGCG isolated from the extract of
15 the new cultivar of *Camellia sinensis* (Jangwon No. 3), it exhibited inhibition of a cancer the cell growth in a concentration-dependent manner with respect to all cancer cell lines, in particular, when 3"-O-Me-EGCG was treated to a prostate cancer cell line
20 (LNCaP) at concentrations of $50\ \mu\text{g}\cdot\text{mL}^{-1}$, $100\ \mu\text{g}\cdot\text{mL}^{-1}$ and $200\ \mu\text{g}\cdot\text{mL}^{-1}$, the cancer cell growth rate exhibited as 46%, 37.7%, and 20%, respectively, which showed a higher cancer cell growth inhibitory effect than the extract of the new cultivar of *Camellia sinensis*
25 (Jangwon No. 3). Breast cancer cell line (MCF-7) also

exhibited a high cancer cell growth inhibitory effect when treated with 3"-O-Me-EGCG under the same conditions. When 3"-O-Me-EGCG was treated to a lung cancer cell line (A549) at concentrations of 50 $\mu\text{g} \cdot \text{mL}^{-1}$, 100 $\mu\text{g} \cdot \text{mL}^{-1}$ and 200 $\mu\text{g} \cdot \text{mL}^{-1}$, it exhibited a cancer cell growth rate of 41.0%, 20.0% and 16.0%, respectively, and thus, the lung cancer cell line (A549) exhibited a higher cancer cell growth inhibitory effect than a prostate cancer cell line (LNCaP) and a breast cancer cell line (MCF-7) (see Test Example 5).

In another embodiment of the present invention, the sensory evaluation of tea products containing the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention was performed. As a result, as shown in Table 13, regardless of the processing method in the sensory evaluation, the new cultivar of *Camellia sinensis* (Jangwon No. 3) was evaluated as having a higher palatability in all of a semi-fermented tea, a fermented tea and a post-fermented tea compared to Yabukida, Kanayamidori and Okumidori.

Therefore, in one aspect, the present invention relates to a composition containing, as an active ingredient, an extract of a new cultivar of *Camellia*

sinensis having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG).

The extract of *Camellia sinensis* may be characterized by being an extract of a new cultivar
5 of *Camellia sinensis* (Jangwon No. 3), but the present invention is not limited thereto.

The composition may be an antioxidant, anti-inflammatory, anti-aging and anticancer pharmaceutical composition, cosmetic composition or
10 health functional food composition, but is not limited thereto.

The content of epigallocatechin 3-O-(3-O-methyl)gallate contained in the extract of *Camellia sinensis* is 1.25% by weight or more, preferably 1.25
15 to 8.00% by weight, more preferably 1.88 to 7.00% by weight, most preferably 2.25 to 6.00% by weight.

In another aspect, the present invention relates to a pharmaceutical composition, cosmetic composition or health functional food composition for the
20 antioxidant containing, as an active ingredient, an extract of a new cultivar of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG),

wherein the content of epigallocatechin 3-O-(3-O-methyl)gallate contained in the extract of *Camellia*
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sinensis is 1.25% by weight or more, preferably 1.25 to 8.00% by weight, more preferably 1.88 to 7.00% by weight, most preferably 2.25 to 6.00% by weight.

In another aspect, the present invention relates to an anti-inflammatory pharmaceutical composition, cosmetic composition or health functional food composition containing, as an active ingredient, an extract of a new cultivar of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3"Me; 3"-O-Me-EGCG),

wherein the content of epigallocatechin 3-O-(3-O-methyl)gallate contained in the extract of *Camellia sinensis* is 1.25% by weight or more, preferably 1.25 to 8.00% by weight, more preferably 1.88 to 7.00% by weight, most preferably 2.25 to 6.00% by weight.

In another aspect, the present invention relates to an anti-aging pharmaceutical composition, cosmetic composition or health functional food composition containing, as an active ingredient, an extract of a new cultivar of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3"Me; 3"-O-Me-EGCG),

wherein the content of epigallocatechin 3-O-(3-O-methyl)gallate contained in the extract of *Camellia sinensis* is 1.25% by weight or more, preferably 1.25

to 8.00% by weight, more preferably 1.88 to 7.00% by weight, most preferably 2.25 to 6.00% by weight.

In another aspect, the present invention relates to an anticancer pharmaceutical composition, cosmetic composition or health functional food composition containing, as an active ingredient, an extract of a new cultivar of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3"Me; 3"-O-Me-EGCG),

wherein the content of epigallocatechin 3-O-(3-O-methyl)gallate contained in the extract of *Camellia sinensis* is 1.25% by weight or more, preferably 1.25 to 8.00% by weight, more preferably 1.88 to 7.00% by weight, most preferably 2.25 to 6.00% by weight.

A new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention (seed accession number: KCTC (Korean Collection for Type Cultures) 12213BP (May 14, 2012) according to the present invention is supplied from Jangwon Co., Ltd. The new cultivar of *Camellia sinensis* (Jangwon No. 3) has excellent antioxidant, anti-aging, skin whitening, anti-cancer and anti-allergic effects and is a variety obtained for the purpose of developing varieties of functional tea plants containing a large amount of catechin which is a functional component

effective for preventing and improving various stress diseases. After performing the method of separating and breeding for the native tea plant genetic resources collected at Andeok-myeon, Seogwipo-si, 5 Jeju-do in 2006, a few tea plant resources with high catechin content were selected for evaluations such as growth characteristics and component content analysis. Since the agronomic characteristics of the selected tea plant resources were not good, cross- 10 breeding with an excellent breeding line was performed in consideration of quality and quantity. Seedling was carried out in a breeding house for cross seedling. After formalizing this package, a second selection was conducted in 2010 through 15 component analysis and plant characteristic evaluation. The agronomic characteristics were measured according to the International Union for the Protection of New Varieties of Plants (UPOV) from Korea Seed & Variety Service (see Preparation Example 20 below).

In the present invention, the extract of *Camellia sinensis* may be at least one extract selected from the group consisting of flowers, leaves, fruits, stems and roots of *Camellia sinensis*, but the 25 present invention is not limited thereto. Preferably,

it is a leaf extract of *Camellia sinensis*.

The *Camellia sinensis* according to the present invention has, in particular, a high catechin content in its leaves. The content of epigallocatechin 3-O-(3-O-methyl)gallate in the catechin contained in an
5 extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) is 1.25% by weight or more, preferably 1.25 to 8.00% by weight, more preferably 1.88 to 7.00% by weight,
10 most preferably 2.25 to 6.00% by weight.

For the extract of *Camellia sinensis*, the content of epigallocatechin 3-O-(3-O-methyl)gallate contained in the flower, leaf, fruit, stem or root of *Camellia sinensis* may differ depending on the harvest
15 time (harvest season) or leaf-plucking time (leaf-plucking season) of the flower, leaf, fruit, stem or root of *Camellia sinensis*. For example, when the leaf-plucking time of a new cultivar of *Camellia sinensis* (Jangwon No. 3) is May, it is possible to
20 obtain an extract of *Camellia sinensis* containing epigallocatechin 3-O-(3-O-methyl)gallate in an amount of 2.50% by weight. Also, it is possible to obtain an extract of *Camellia sinensis* containing
25 epigallocatechin 3-O-(3-O-methyl)gallate in an amount of 4.16% by weight when it is August or 5.36% by

weight when it is November.

In the present invention, the epigallocatechin 3-O-(3-O-methyl)gallate is EGCG having an O-methylated form, and is named 3"-O-Me-EGCG or
5 EGCG3"Me.

The *Camellia sinensis* according to the present invention has, in particular, a high catechin content in its leaves. An extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia*
10 *sinensis* (Jangwon No. 3) contains a total of eight catechins of gallocatechin (GC), epigallocatechin (EGC), catechin (C), epicatechin (EC), epigallocatechin gallate (EGCG), gallocatechin gallate (GCG), epicatechin gallate (ECG) and catechin
15 gallate (CG) in an amount of 20.55 to 82.2% by weight, preferably 30.8 to 61.65% by weight, more preferably 37~51.38% by weight.

In the present invention, the extract of *Camellia sinensis*, preferably the extract of a new
20 cultivar of *Camellia sinensis* (Jangwon No. 3) may be contained in an amount of 0.01 to 20% by weight based on the total weight of the composition. When the content of the extract of *Camellia sinensis*, preferably the extract of a new cultivar of *Camellia*
25 *sinensis* (Jangwon No. 3) is less than 0.01% by weight,

it is not possible to expect an anti-oxidation effect, an anti-inflammatory effect, an anti-aging effect and an anticancer effect. When the content of the extract of *Camellia sinensis*, preferably the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) is more than 20% by weight, a skin irritation due to cytotoxicity may be a concern.

The new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention is characterized in that it is obtained by a method for breeding a new cultivar of *Camellia sinensis* including a step of selecting *Camellia sinensis* having the following characteristics (1) to (5) from a native *Camellia sinensis*; a step of collecting the selected *Camellia sinensis* when the bottom part of the stem from which the first tea crop has not been harvested begins to harden; and a step of cutting with one node-to-one leaf and two node-to-two leaf and performing asexual propagation by cutting.

The present invention provides a breeding method, characterized in that the selected *Camellia sinensis* has the following characteristics (1) to (5):

(1) the content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) in catechins contained in the extract of *Camellia sinensis* (e.g.,

tea leaf extract) is 1.25% by weight or more, preferably 1.25 to 8.00% by weight, more preferably 1.88 to 7.00% by weight, most preferably 2.25 to 6.00% by weight;

5 (2) the leaf width is 37 to 47 mm, preferably 39 to 46 mm, more preferably 43 to 45 mm, most preferably 44.1 mm, and the leaf length is 85 to 95 mm, preferably 87 to 95 mm, more preferably 94 to 95 mm, most preferably 94.2 mm, the leaf area is 2200 to
10 3200 mm² or 4000 to 4500 mm², preferably 2500 to 2800 mm² or 4100 to 4300 mm², more preferably 4150 to 4200 mm², most preferably 4154.2 mm²;

(3) the leaf shape is long elliptical, the trichome density is medium, and the leaf color is
15 green;

(4) the sprout length is 145.0 to 165.0mm, preferably 150.0 to 165.0mm, more preferably 162.0 to 164.0mm, most preferably 163.5mm, and 100-bud weight is 123.0 to 143.0 g/100bud, preferably 128.0
20 to 139.0 g/100bud, more preferably 136.0 to 139.0 g/100bud, most preferably 138.3 g/100bud; and

(5) the form of plant branches is upright.

In the present invention, the selected *Camellia sinensis* may be a tea plant additionally having the
25 following characteristics (6) to (17).

(6) chlorophyll content (soil & plant analyzer development, SPAD) is 58 to 62;

(7) the total amino acid (TFAA) content is 3.50% by weight or more;

5 (8) the theanine content is 2.20% by weight or more;

(9) the total nitrogen content is 6.00% by weight or more;

(10) the caffeine content is 23.5 mg/g or less;

10 (11) The power of plant branches is medium, and the branch thickness and branch density are medium;

(12) the germination time is late March;

(13) the flowering start time is September, the full bloom start time is October, the full bloom end
15 time is October and the flowering end time is November;

(14) it is possible to harvest 3 to 4 times in May, June~August and October;

(15) the earliness is medium flowering, the cold
20 resistance is strong, and the disease resistance is severe;

(16) the extract of *Camellia sinensis* includes 6.35 to 25.4% by weight, preferably 9.53 to 19.05% by weight, more preferably 11.4 to 15.9% by weight of
25 epigallocatechin (EGC), 9.4 to 37.6% by weight,

preferably 14.1 to 28.2% by weight, more preferably 16.9 to 23.5% by weight of epigallocatechin gallate (EGCG) and 2.65 to 10.6% by weight, preferably 3.98 to 7.95% by weight, more preferably 4.77 to 6.63% by weight of epicatechin gallate (ECG); and

(17) the total content of catechin in gallocatechin (GC), epigallocatechin (EGC), catechin (C), epicatechin (EC), epigallocatechin gallate (EGCG), gallocatechin gallate (GCG), epicatechin gallate (ECG) and catechin gallate (CG) is 20.55 to 82.2% by weight, preferably 30.8 to 61.65 weight%, more preferably 37 to 51.38% by weight.

In the present invention, the breeding method may be characterized in that it further comprises the steps of: leaving about 2 to 3 cm from the bottom leaf after cutting, cutting the bottom part of cut branches obliquely and immersing it in water for 1 to 2 hours.

In the present invention, a general cultivation conditions of the native *Camellia sinensis* is applied, and for example, it can carry out as follows. Sunscreening is performed immediately after cutting, and the ray transmittance is set so as to be about 30 to 45%. Since the cuttings are absorbed and survived from the lower cut end like a cut flower until

rooting, they are usually sufficiently watered in the morning and evening. Approximately 1 month after cutting, cuttings are excised slightly to root. After rooting, 50 to 60% of the maximum amount of water is appropriate. Fertilization may be performed after August and it may begin from an additional fertilization (September). Weeding and pest control in seedlings should be carried out with care and eliminate sunburn after a sufficient rooting and growth.

In addition, in order to increase the content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) included in *Camellia sinensis*, the tea plants were cultivated using a cultivation method of a new cultivar of *Camellia sinensis*, characterized by cultivating *Camellia sinensis* under the following conditions (1) to (5):

- (1) ray transmittance of 30% to 45%;
- (2) watering twice a day for rooting of the cuttings;
- (3) sprinkling excision rooted 1 month after cutting;
- (4) the maximum amount of water after rooting is 50-60%; And
- (5) Fertilization starts from after August or

September.

The cultivated *Camellia sinensis* is not particularly limited, but a new cultivar of *Camellia sinensis* according to the present invention having
5 the following properties (1) to (16) is preferred:

(1) the content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3"Me; 3"-O-Me-EGCG) in catechins contained in the extract of *Camellia sinensis* (e.g., tea leaf extract) is 1.25% by weight or more,
10 preferably 1.25 to 8.00% by weight, more preferably 1.88 to 7.00% by weight, most preferably 2.25 to 6.00% by weight;

(2) chlorophyll content (soil & plant analyzer development, SPAD) is 58 to 62;

15 (3) the total amino acid (TFAA) content is 3.50% by weight or more;

(4) the theanine content is 2.20% by weight or more;

(5) the total nitrogen content is 6.00% by
20 weight or more;

(6) the caffeine content is 23.5 mg/g or less;

(7) the leaf width is 37 to 47 mm, preferably 39 to 46 mm, more preferably 43 to 45 mm, most preferably 44.1 mm, and the leaf length is 85 to 95
25 mm, preferably 87 to 95 mm, more preferably 94 to 95

mm, most preferably 94.2 mm, and the leaf area is 2200 to 3200 mm² or 4000 to 4500 mm², preferably 2500 to 2800 mm² or 4100 to 4300 mm², more preferably 4150 to 4200 mm², most preferably 4154.2 mm²;

5 (8) the leaf shape is long elliptical, the trichome density is medium, and the leaf color is green;

(9) the sprout length is 145.0 to 165.0 mm, preferably 150.0 to 165.0 mm, more preferably 162.0
10 to 164.0 mm, most preferably 163.5 mm, and 100-bud weight is 123.0 to 143.0 g/100bud, preferably 128.0 to 139.0 g/100bud, more preferably 136.0 to 139.0 g/100bud, most preferably 138.3 g/100bud; and

(10) the form of plant branch is upright, the
15 power of plant branch is medium, and the branch thickness and branch density are medium;

(11) the germination time is late March;

(12) the flowering start time is September, the full bloom start time is October, the full bloom end
20 time is October and the flowering end time is November;

(13) it is possible to harvest 3 to 4 times in May, June~August and October;

(14) the earliness is medium flowering, the cold
25 resistance is strong, and the disease resistance is

severe;

(15) the extract of a new cultivar of *Camellia sinensis* includes 6.35 to 25.4% by weight, preferably 9.53 to 19.05% by weight, more preferably 11.4 to 15.9% by weight of epigallocatechin (EGC), 9.4 to 37.6% by weight, preferably 14.1 to 28.2% by weight, more preferably 16.9 to 23.5% by weight of epigallocatechin gallate (EGCG) and 2.65 to 10.6% by weight, preferably 3.98 to 7.95% by weight, more preferably 4.77 to 6.63% by weight of epicatechin gallate (ECG); and

(16) the total content of catechin in gallocatechin (GC), epigallocatechin (EGC), catechin (C), epicatechin (EC), epigallocatechin gallate (EGCG), gallocatechin gallate (GCG), epicatechin gallate (ECG) and catechin gallate (CG) is 20.55 to 82.2% by weight, preferably 30.8 to 61.65 weight%, more preferably 37 to 51.38% by weight.

In the present invention, a pharmaceutical composition containing an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) may further contain a pharmaceutical adjuvant such as preservative, stabilizer, wetting agent or emulsifying promoter, salt and/or buffer for controlling osmotic pressure,

and other therapeutically useful substances, and may be prepared into various formulations for oral or parenteral administration according to commonly employed methods.

5 The term "carrier" defines a chemical compound that facilitates the incorporation of a compound into cells or tissues. For example, dimethyl sulfoxide (DMSO) is a commonly utilized carrier as it facilitates the uptake of many organic compounds into
10 the cells or tissues of an organism.

 The term "excipient" is a substance that is further added in order to make the medicine easier to take or to achieve the desired color and form when the amount of the main ingredient is small in the
15 formulation process of tablets or pills, and lactose or starch is mainly used.

 The term "diluent" defines chemical compounds diluted in water that will dissolve the compound of interest as well as stabilize the biologically active
20 form of the compound. Salts dissolved in buffered solutions are utilized as diluents in the art. One commonly used buffered solution is phosphate buffered saline because it mimics the salt conditions of human blood. Since buffer salts can control the pH of a
25 solution at low concentrations, a buffered diluent

rarely modifies the biological activity of a compound.

The composition containing an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) may be administered alone to a patient, or be administered to a patient as a pharmaceutical composition prepared by mixing the compound with other active ingredients or with an appropriate carrier or excipient as in combination therapy.

The carrier, excipient and diluent which can be included in the pharmaceutical composition may include lactose, dextrose, sucrose, sorbitol, mannitol, xylitol, erythritol, malitol, starch, acacia gum, alginate, gelatin, calcium phosphate, calcium silicate, cellulose, methyl cellulose, microcrystalline cellulose, polyvinylpyrrolidone, water, methyl hydroxybenzoate, propyl hydroxybenzoate, talc, magnesium stearate and mineral oils.

Further, the oral administration agent may be powders, granules, tablets, capsules, syrups, and the like, and the parenteral administration agent may be, for example, formulations such as injections, drops, ointments, lotions, gels, creams, sprays, suspensions, emulsions, suppositories, patches, and the like, but the present invention is not limited thereto.

The pharmaceutical composition according to one embodiment of the present invention can be administered parenterally, rectally, topically, transdermally, or the like. The pharmaceutical composition according to one embodiment of the present invention can be administered topically, for example, to the scalp.

The pharmaceutically acceptable dosage, i.e., administration dosage of the active ingredient will be different depending on age, sex, body weight of a subject to be treated, particular disease or physiological condition to be treated, severity of a disease or physiological condition, route of administration, and determination by a prescriber. Determination of the administration dosage based on these factors is within the level of those skilled in the art. A daily dose of 0.01~5000 mg, preferably 0.1 to 2000 mg, more preferably 0.5 to 500 mg, most preferably 1 to 100 mg, per 1 kg body weight may be administered once or several times a day. However, the aforesaid dosage does not limit the scope of the present disclosure by any means.

The pharmaceutical composition suitable for use in the present invention includes compositions where the active ingredients including an extract of

Camellia sinensis, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) are contained in an amount effective to achieve its intended purpose. More specifically, a
5 therapeutically effective amount means an amount of compound effective to prolong the survival of the subject being treated or prevent, alleviate or ameliorate symptoms of disease. Determination of a therapeutically effective amount is within the
10 capability of those skilled in the art, especially in light of the detailed disclosure provided herein.

The therapeutically effective amount for an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No.
15 3), and a composition (compounds) containing the same as an active ingredient can be initially determined initially from cell culture assays. For example, the dose can be calculated in an animal model to obtain a range of circulating concentrations that includes
20 IC_{50} (half maximal inhibitory concentration) or EC_{50} (half maximal effective concentration) determined in cell culture. Such information can be used to more accurately determine useful doses in humans.

Toxicity and therapeutic efficacy of the extract
25 of *Camellia sinensis*, preferably the extract of a new

cultivar of *Camellia sinensis* (Jangwon No. 3), and the composition (compounds) containing the same as an active ingredient described herein can be determined by standard pharmaceutical procedures, using either
5 cells in culture or experimental animals to determine the LD₅₀ (the dose lethal to 50% of the population), the ED₅₀ (the dose required to be therapeutically effective in 50% of the population) and the IC₅₀ (the dose required to therapeutically inhibit 50% of the
10 population). The dose ratio between toxic and therapeutic effects is the therapeutic index and it can be expressed as the ratio between LD₅₀ and ED₅₀ (or IC₅₀). Compounds that exhibit high therapeutic indices are preferred. The data obtained from the
15 cell culture assays can be used in formulating a range of dosage for use in humans. The dosage or application amount of such compounds lies preferably within a range of circulating concentrations that include the ED₅₀ (or IC₅₀) with little or no toxicity.
20 In the present invention, the formulation of the pharmaceutical composition is preferably any one selected from the group consisting of ointments, lotions, gels, creams, sprays, suspensions, emulsions, and patches. When the composition according to the
25 invention is applied to a pharmaceutical composition,

it can be formulated in liquid, semi-solid or solid forms by adding conventional inorganic or organic carriers to the composition as an active ingredient. The active ingredient of the present invention can be easily formulated according to conventional methods, and surfactant, excipient, colorant, flavoring agent, stabilizer, antiseptic, preservative, buffering agent, wetting agent, emulsifying promoter, suspending agent, salt and/or buffer for controlling osmotic pressure, and other commonly used supplements can be suitably used.

In the present invention, the pharmaceutical composition may be a pharmaceutical composition that is effective in treating a cancer or a tumor.

The terms "cancer" and "tumor" refer to or describe the physiological condition in mammals in which a population of cells are characterized by unregulated cell growth/proliferation. Examples of cancer include, but are not limited to, carcinoma, lymphoma (e.g., Hodgkin and non-Hodgkin lymphoma), blastoma, sarcoma, and leukemia. More particular examples of such cancers include squamous cell cancer, small-cell lung cancer, non-small cell lung cancer, adenocarcinoma of the lung, squamous carcinoma of the lung, cancer of the peritoneum, hepatocellular cancer,

gastrointestinal cancer, pancreatic cancer, glioblastoma, cervical cancer, ovarian cancer, liver cancer, bladder cancer, hepatoma, breast cancer, colon cancer, colorectal cancer, endometrial or
5 uterine carcinoma, salivary gland carcinoma, kidney cancer, prostate cancer, vulval cancer, thyroid cancer, hepatic carcinoma, leukemia, and other lymphoproliferative disorders, and various types of head and neck cancers. In the present invention, the
10 cancer is preferably prostate cancer, lung cancer or breast cancer.

The cosmetic composition containing an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) is an
15 external preparation composition for skin and may be characterized in that it is formulated into any one selected from the group consisting of softening lotion, astringent lotion, nourishing lotion, lotion, eye cream, nourishing cream, massage cream, cleansing
20 cream, cleansing foam, cleansing water, powder, essence and pack.

Further, the cosmetic composition according to the present invention may contain a supplementary agent commonly used in the field of cosmetology or
25 dermatology, for example, a lipid substance, an

organic solvent, a solubilizer, a concentrator, a gelation agent, a softener, an antioxidant, a suspending agent, a stabilizer, a foaming agent, an aromatic, a surfactant, water, an ionic or non-ionic emulsifier, a filler, a sequestrant, a chelating agent, a preservative, a vitamin, a blocker, a wetting agent, an essential oil, a dye, a pigment, a hydrophilic or lipophilic activator, a lipid vesicle, or other components typically used in cosmetics. The supplementary agent is introduced in an amount generally used in the fields of cosmetic or dermatology.

Further, the composition of the present invention may contain a skin absorption promoting substance to increase the skin improving effect.

In addition, the carrier useful for the cosmetic composition includes, for example, water, acetone, ethanol, ethylene glycol, propylene glycol, butane-1,3-diol, isopropyl myristate, isopropyl palmitate or mineral oil. The carrier may be a solution, a colloidal dispersant, an emulsion (oil-in-water or water-in-oil), a suspension, a cream, a lotion, a gel, a foam, a mousse, a spray and the like. Other ingredients that may be selected depending on the intended use of the carrier and/or combination may

also be included. The ingredients that can be added include water-soluble colorant (such as FD&C Blue #1); oil-soluble colorant (such as D&C Green #6); water-soluble sunscreen (such as Eusolex 232); oil-soluble
5 sunscreen (such as octyl methoxycinnamate); particulate sunscreen (such as zinc oxide); antioxidant (such as BHT); chelating agent (such as disodium EDTA); emulsion stabilizer (such as carbomer); preservative (such as methyl paraben);
10 perfume (such as pinene); flavoring agent (such as sorbitol); humectant (such as glycerin); waterproof agent (such as PVP/eicosene copolymer); water-soluble film forming agent (such as hydroxypropyl methylcellulose); oil-soluble film forming agent
15 (such as hydrogenated C-9 resin); cationic acid polymer (such as polyquaternium 10); anionic polymer (such as xanthan gum), vitamin (such as tocopherol) and the like, but the present invention is not limited thereto.

20 In the present invention, the term "functional food" or "functionality food" means a food, the functionality of which has been improved by adding an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3)
25 to a general food.

The functionality can be broadly divided into physical properties and physiological functionalities. When the extract of the present invention is added to a general food, physical properties and physiological functions of the general food will be improved, and the present invention generally defines such foods with improved functionality as "functional food (health functional food)" or "functionality food (health functionality food)".

In the present invention, the health functional food means foods manufactured with functional raw materials or ingredients beneficial to for the human body according to the Health Functional Foods Act No. 10219, and the functionality means controlling nutrients for the structure or functions of the human body or providing beneficial effects to health purposes, such as physiological effects.

The health functional food containing an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention may further include other ingredients that may impart a synergistic effect to main effects within a range that does not impair desired main effects. For example, in order to improve physical properties, it

may further include additives such as perfumes, pigments, fungicides, antioxidants, preservatives, moisturizers, thickeners, inorganic salts, emulsifiers and synthetic polymer materials. In addition, it may further include auxiliary components such as water-soluble vitamins, oil-soluble vitamins, polymer peptides, polymer polysaccharides and seaweed extract. The components may be appropriately selected and blended without difficulty by those skilled in the art according to the dosage form or purpose of use, and the addition amount thereof can be selected within a range that does not impair the object and effect of the present invention. Moreover, the composition itself of the present invention can be used in the form of additives for other foods.

The formulation of the health functional food containing an extract of *Camellia sinensis*, preferably an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention is not particularly limited, but may be formulated in various forms such as tablets, granules, drinks, beverages, solutions, emulsions, viscous mixtures, tablets, powders, liquids, teas, and the like, and a functional tea composition is preferred. In addition, the health functional food may be

administered by a variety of methods such as simple drinking, injection, spray or squeeze method.

BEST MODE FOR CARRYING OUT THE INVENTION

5 Hereinafter, the present invention will be described in more detail with reference to examples. These examples are only for illustrating the present invention, it will be apparent to those skilled in the art that the scope of the present invention is
10 not to be construed as being limited by these examples. Therefore, the substantial scope of the present invention may be defined by the appended claims and their equivalents.

15 **[Preparation Example] Breeding method to improve the tea plant varieties**

 Jangwon No. 3, which is a new cultivar of *Camellia sinensis* (L) disclosed herein, is a new variety in which hybrid breeding methods were
20 performed for *Camellia sinensis* (tea plant) genetic resources of native species and wild species, mother plants were selected through analytical evaluation of the chemical composition of *Camellia sinensis* (see Table 2 below) and the growth characteristic test
25 (see Table 3 below), the first tea crop (early May)

was grown through an asexual propagation process by cutting branches that were past their growth period, and excellent characteristics were stably maintained similar to the mother plant of *Camellia sinensis* (see Table 4 below). This new cultivar was developed by Sulloc Tea Research Institute located at 1241, Seogwangseo-ri, Andeok-myeon, Seogwipo-si, Jeju-do, South Korea.

On the basis of the above analysis results, the finally selected new cultivar of *Camellia sinensis* was named "Changwon No. 3". The new cultivar Changwon No. 3 has seed-deposited at the Korea Research Institute of Bioscience and Biotechnology (Seed Accession No.: KCTC (Korean Collection for Type Cultures) 12213BP (May 14, 2012)).

In this example, the cropping method and cultivation management were performed according to standard farming manual of the Rural Development Administration in South Korea.

Briefly explaining the cross-breeding method, the cross breeding was primarily conducted in which in particular, genetic resources containing a high content of 3"-O-Me-EGCG were selected among Korean native *Camellia sinensis* genetic resources, and then the above genetic resources were used as the mother

plants to cross-breed and obtain a seedling progeny of which were then grown to elite lines containing a high content of 3"-O-Me-EGCG.

Among the elite lines, *Camellia sinensis* with
5 excellent basic growth characteristics was finally made into a variety based on the following characteristics. Each of the following characteristics was preferably measured according to the International Union for the Protection of New
10 Varieties of Plants(UPOV) of Korea Seed & Variety Service.

(i) germination time and leaf characteristic (leaf shape, trichome, leaf color, leaf width, leaf length, leaf area, chlorophyll content, etc.);

15 (ii) sprout characteristics: sprout length and 100-bud weight;

(iii) branch characteristics: plant branch form, plant branch power, branch thickness and branch density;

20 (iv) flowering characteristics: flowering start time, full bloom start time, full bloom end time and flowering end time; and

(v) other characteristics: earliness, cold resistance, disease resistance and harvest time.

25 More specifically, the growth characteristics

assay was performed during the first tea crop period (April 24 to May 5) at the time of sprout opening 70% in which *Camellia sinensis* was placed on a 20cm x 20cm horizontal and vertical grid and all buds were collected up to one-core three-leaf moiety in the grid. The mean value of growth index such as earliness, leaf length, leaf width, sprout length, sprout weight, etc. was determined according to the International Union for the Protection of New Varieties of Plants (UPOV) from Korea Seed & Variety Service. The earliness examined and compared the germination time at which the ratio of the germinated sprout among total sprouts was 70%. For the sprout length, the leaf stem length was measured from the base of the sprout to the uppermost lobe. The sprout weight was evaluated as a 100-bud weight which is a weight of 100 sprouts. The leaf length, leaf width, and leaf area were examined from the third leaf from the top of the collected sprout. The leaf area was measured using a leaf area meter (LI-3100 Area Meter, LI-COR. Inc., Japan).

Table 1 below shows the agronomic characteristics, which are the selection criteria for new varieties of *Camellia sinensis*.

[Table 1]

Characteristics		Selection criteria
Germination time	Germination time	Late March (March 19 to March 29)
Leaf characteristic	Leaf shape	long elliptical
	Trichome density	medium
	Leaf color	green
	Leaf width (mm)	37~47
	Leaf length (mm)	85~95
	Leaf area (mm ²)	2200~3200
	chlorophyll content [SPAD]	55~75
Sprout characteristic	Sprout length (mm)	145.0~165.0
	100-bud weight (g/100 bud)	123.0~143.0
Branch characteristic	Plant form	Upright
	Plant power	Medium
	Branch thickness	Medium
	Branch density	Medium
Flowering characteristic	Flowering start	from September 17 to September 27
	full bloom start	from September 30 to October 10
	full bloom end	from October 14 to October 24
	flowering end	from November 15 to November 25
earliness		medium flowering
cold resistance		strong
disease resistance		severe
Harvest time		3 times a year (preferably May,

	July, October)
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Table 2 below shows the chemical component characteristics for the evaluation of chemical components, which is a selection criteria for a new cultivar of *Camellia sinensis*.

5 [Table 2]

Component Characteristics	Content	Content Range
3"-O-Me-EGCG (mg/g)		4.00 or more
Total amount of amino acid (TFAA) (wt%)		3.50 or more
Theanine content (wt%)		2.20 or more
Nitrogen content (wt%)		6.00 or more
Caffeine content (mg/g)		23.5 or less
Total catechin content (mg/g)		100.0 or less

The "SPAD" value described herein means a value measured by a non-destructive method in which the green level of a leaf was measured using a chlorophyll meter (SPAD-502, Minolta, Japan) to predicts the chlorophyll content or nitrogen content of the leaf. "SPAD (Soil & Plant analyzer development)" is a measuring instrument developed by Soil & Plant analyzer development (SPAD) in Japan Ministry of Agriculture, Forestry and Fisheries. The principle of this instrument is that light in the chlorophyll-sensitive wavelength band of 650nm and

insensitive wavelength band of 940 nm is generated using light emitting diodes, this light is passed through a 2*3mm window, then the light intensity that passed through a plant leaf within 1.2mm thickness is
5 measured with a silicon photodiode, and the chlorophyll content is expressed as a value between -9.9 and 99.9 using the difference between the two wavelength bands.

In addition, theanine, total amino acid (TFAA),
10 total nitrogen, caffeine, catechin components were analyzed using a near-infrared reflectance spectroscopy (NIRs) and a high performance liquid chromatography (HPLC). Analytical samples were collected 100g from the first to third upper leaves
15 of the new shoots on the basis the opening of 70% at the one-core five-leaf stage during the first tea crop time (early May), and steamed through a steamer (TERADA) for 40 seconds, dried in a dryer at 80°C, then subjected to a powder processing by a grinder,
20 and sieved by a 60 mesh sieve, and the resulting powder was used.

In the near infrared spectroscopy analysis, the NIR analyzer (NIRs-XDS, Foss) was used to measure the near-infrared absorption spectra (400 to 2500 nm) for
25 each sample, and individual contents were calculated.

Table 3 below shows the growth characteristics that are the selection criteria for a new cultivar of *Camellia sinensis*.

[Table 3]

Characteristics		Selection criteria
Germination time	Germination time	March 21 to March 27
Leaf characteristic	Leaf shape	long elliptical
	Trichome density	medium
	Leaf color	green
	Leaf width (mm)	39~44
	Leaf length (mm)	87~92
	Leaf area (mm ²)	2500~2800
	chlorophyll content [SPAD]	58~62
Sprout characteristic	Sprout length (mm)	150.0~160.0
	100-bud weight (g/100 bud)	128.0~138.0
Branch characteristic	Plant form	Upright
	Plant power	Medium
	Branch thickness	Medium
	Branch density	Medium
Flowering characteristic	Flowering start	from September 20 to September 24
	full bloom start	from October 3 to October 7
	full bloom end	from October 7 to October 21
	flowering end	from November 18 to November 22

earliness	medium flowering
cold resistance	Strong
disease resistance	Severe
Harvest time	May, July, October

New cultivar of *Camellia sinensis* "Jangwon No. 3" obtained by cross-breeding through the above selection criteria has the characteristics shown in Table 4 below.

5 [Table 4]

Characteristics		Jangwon No. 3 result
Germination time	Germination time	March 22
Leaf characteristic	Leaf shape	long elliptical
	Trichome density	medium
	Leaf color	green
	Leaf width (mm)	44.1
	Leaf length (mm)	94.2
	Leaf area (mm ²)	4154.2
	chlorophyll content [SPAD]	63.1
Sprout characteristic	Sprout length (mm)	163.5
	100-bud weight (g/100 bud)	138.3
Branch characteristic	Plant form	Upright
	Plant power	Strong
	Branch thickness	Medium
	Branch density	Medium
Flowering characteristic	Flowering start	September 20
	full bloom start	October 3
	full bloom end	October 20

	flowering end	November 26
earliness		Medium flowering
cold resistance		Strong
disease resistance		Severe
Harvest time		May, June, August, October

[Example 1] Preparation of Extract of New Cultivar of *Camellia Sinensis*

Jangwon No. 3, a new cultivar of *Camellia*
5 *sinensis*, selected by the breeding method mentioned
above, was collected from the first to third upper
leaves of new shoots on the basis the opening of 70%
at the one-core five-leaf stage during the first tea
crop time (early May), and steamed through a steamer
10 (TERADA) for 40 seconds, dried in a dryer at 80°C,
then subjected to a powder processing by a grinder,
and sieved by a 60 mesh sieve to make a powder. To
100 g of a pulverized sample of the new cultivar of
Camellia sinensis (Jangwon No. 3) produced in this
15 way, 1L of 70% (v/v) aqueous ethanol solution
(absolute ethanol 70%(v/v) + distilled water 30%(v/v))
was added and the mixture was extracted under reflux
and filtered. The filtrate was then concentrated
under reduced pressure at 40 to 45°C to finally
20 obtain 19.2 g of a dried leaf extract of the new

cultivar of *Camellia sinensis* (Jangwon No. 3)
(Example 1).

**[Comparative Example 1] Preparation of Extract
5 of Yabukida (Common Tea Plant Variety)**

The preparation process was performed in the
same manner as in Example 1, except that Yabukida, a
common tea plant-introduced variety, was used instead
of the new cultivar of *Camellia sinensis* (Jangwon No.
10 3) in Example 1, thereby finally obtaining 17.5 g of
a dried extract of Yabukida leaf.

**[Comparative Example 2] Preparation of Extract
of Kanayamidori (Common Tea Plant Variety)**

15 The preparation process was performed in the
same manner as in Example 1, except that Kanayamidori,
a common tea plant-introduced variety, was used
instead of the new cultivar of *Camellia sinensis*
(Jangwon No. 3) in Example 1, thereby finally
20 obtaining 17.1 g of a dried extract of Kanayamidori
leaf.

**[Comparative Example 3] Preparation of Extract
of Yutakamidori (Common Tea Plant Variety)**

25 The preparation process was performed in the

same manner as in Example 1, except that Yutakamidori, a common tea plant-introduced variety, was used instead of the new cultivar of *Camellia sinensis* (Jangwon No. 3) in Example 1, thereby finally
5 obtaining 18.3 g of a dried extract of Yutakamidori leaf.

[Example 2] Preparation of Extract of New Cultivar of *Camellia Sinensis*

Preparation of tea extract

10 Tea plant leaves of Jangwon No. 3, a new cultivar of *Camellia sinensis*, were collected by cultivation timing, and then various tea products were prepared according to a conventional processing method. Briefly explaining the process, tea plant
15 leaves of Jangwon No. 3, a new cultivar of *Camellia sinensis*, were put through the process of either steaming or roasting to inactivate the oxidase so as to prevent the fermentation process, thereby producing a green tea (non-fermented tea). According
20 to the fermentation progress (advanced state) of the green tea, oolong tea (semi-fermented tea), black tea (fermented tea), or post-fermented tea by microbial fermentation were prepared (see Formulation Example
10 below).

25

**[Comparative Example 4] Preparation of Extract
of Yabukida (Common Tea Plant Variety)**

Preparation of Tea Extract

The non-fermented tea, oolong tea (semi-
5 fermented tea), black tea (fermented tea), and post-
fermented tea were prepared in the same manner as in
Example 2, except that Yabukida, a common tea plant-
introduced variety, was used instead of the new
cultivar of *Camellia sinensis* (Jangwon No. 3) in
10 Example 2 (see Formulation Example 10 below).

**[Comparative Example 5] Preparation of Extract
of Okumidori (Common Tea Plant Variety)**

Preparation of Tea Extract

15 The non-fermented tea, oolong tea (semi-
fermented tea), black tea (fermented tea), and post-
fermented tea were prepared in the same manner as in
Example 2, except that Okumidori, a common tea plant-
introduced variety, was used instead of the new
20 cultivar of *Camellia sinensis* (Jangwon No. 3) in
Example 2 (see Formulation Example 10 below).

**[Test Example 1] Comparative Analysis of Extract
Components**

25 Catechin and caffeine components of each of an

extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) leaf prepared in Example 1, an extract of Yabukida leaf prepared in Comparative Example 1, an extract of Kanayamidori leaf prepared in Comparative Example 2, and an extract of Yutakamidori leaf prepared in Comparative Example 3 were analyzed.

First, for the catechin and caffeine component analysis, each of the above extracts was dissolved in 50% methanol to prepare a 10,000 ppm solution, and then subjected to component analysis (Waters, 2996 PDA detector) using High-Performance Liquid Chromatography (HPLC) (Waters). The stationary phase used Mightysil RP-18 GP 250*4.6 (5 µm) column from Kanto Chemical, and the mobile phase used a composition ratio as shown in Table 5 below. If necessary, catechin and caffeine component analysis can be performed by near infrared spectroscopy.

[Table 5]

Time (min)	A: water	B: acetonitrile
0	90	10
10	90	10
30	85	15
42	80	20

44	5	95
45	5	95
49	90	10
50	90	10

As a result, as shown in Table 6, the total content of catechin was confirmed to be 41.1 wt% in the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3), which was higher than the extract of Yabukida leaf (28.1 wt%), the extract of Kanayamidori leaf (26.7 wt%) and the extract of Yutakamidori leaf (26.4 wt%) which were common tea plant-introduced varieties.

In particular, the extract of the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) leaf was confirmed to contain epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) in an amount of 2.5 wt%, which was more than 10 times higher than common tea plant-introduced varieties.

Due to the difference in the total content of catechins and the content of epigallocatechin 3-O-(3-O-methyl)gallate, it can be predicted that the extracts derived from a new cultivar of *Camellia sinensis* (Jangwon No. 3) was more excellent in antioxidant, anti-aging and anti-inflammatory effects

compared to common tea plant variety extracts.

[Table 6]

Item	Extract of new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) [Example 1] [wt%]	extract of Yabukida [Comparati ve Example 1] [wt%]	extract of Kanayamido ri [Comparati ve Example 2] [wt%]	extract of Yutakamid ori [Comparat ive Example 3] [wt%]
[1]gallocatechin (GC)	0.5	0.4	0.2	0.4
[2]epigallocatech in (EGC)	12.7	7.7	7.6	8.4
[3]catechin (C)	0.5	0.2	0.3	0.4
[4]epicatechin (EC)	3.1	2.0	1.6	1.9
[5]epigallocatech in gallate (EGCG)	18.8	15.1	14.6	12.1
[6]gallocatechin gallate (GCG)	0.2	0.1	0.1	0.2
[7] epicatechin gallate (ECG)	5.3	2.6	2.3	3.0
[8] catechin gallate (CG)	N/D [not detected]	N/D	N/D	N/D
[1]~[8]: Total content of 8 catechins	41.1	28.1	26.7	26.4
Content of 3''-O-	2.5	0.2	0.1	0.2

Me-EGCG				
Content of caffeine	6.6	5.0	4.9	4.7

On the other hand, catechin and caffeine components of the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) leaf prepared in Example 2 and the extract of Yabukida leaf prepared in Comparative Example 4 were analyzed.

As a result, as shown in Table 7 below, the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) leaf of Example 2 exhibited a higher total catechin content than the extract of Yabukida of Comparative Example 4. At this point, the total content of catechin means the total content of gallic acid (GA), gallocatechin (GC), epigallocatechin (EGC), catechin (C), epigallocatechin gallate (EGCG), epicatechin (EC), gallocatechin gallate (GCG), epigallocatechin 3-O-(3-O-methyl) gallate (EGCG3''Me; 3''-O-Me-EGCG) and epicatechin gallate (ECG).

In addition, the content of 3''-O-Me-EGCG of the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) leaf of Example 2 was confirmed to be 4.7 mg·g⁻¹, 3.6 mg·g⁻¹ and 1.94 mg·g⁻¹ in green tea, oolong tea (semi-fermented tea) and black tea (fermented tea), respectively. In other words, 3''-O-Me-EGCG contained in the leaves of a new cultivar of

Camellia sinensis (Jangwon No. 3) was transformed into components such as theaflavin and thearubigin, which are catechin polymers, by oxidation reaction during processing as in other catechin compounds.

5 Thus, it was confirmed that the content of 3''-O-Me-EGCG contained in tea was decreased.

[Table 7]

Tea plant variety	Tea	GA	GC	EGC	C	EGC G	EC	GC G	3'' - O- Me - EG CG	ECG	Total con- tent (mg·g ⁻¹)
Yabukida (Comparative Example 4)	Non-fermented tea	2. 20	2. 70	21. 30	1. 20	59. 30	7. 78	3. 20	0. 00	12. 10	109.7 8
	Semi-fermented tea	1. 30	2. 10	13. 20	0. 90	34. 20	0. 58	0. 21	0. 00	7.5 0	59.99
	Fermented tea	1. 23	1. 90	1.4 4	0. 47	7.2 5	1. 16	1. 75	0. 00	7.9 0	23.1
new cultivar of <i>Camellia sinensis</i>	Non-fermented tea	3. 80	2. 90	22. 51	1. 00	66. 77	8. 06	2. 42	4. 70	14. 30	126.4 6
	Semi-	2.	1.	16.	0.	42.	1.	1.	3.	9.4	78.15

(Jangwon No. 3) [Example 1]	fermen ted tea	10	82	30	52	10	11	20	60	0	
	Fermen ted tea	1. 92	1. 20	1.0 5	0. 33	12. 94	5. 82	2. 86	1. 94	11. 75	39.81

[Text Example 2] Antioxidant Effect Test

(1) DPPH test

In order to confirm the antioxidant effect of each extract prepared in Example 1 and Comparative Examples 1 to 3, the DPPH oxidation inhibitory effect was comparatively measured through the change in absorbance produced by the reduction of free radical DPPH (1,1-diphenyl-2-picrylhydrazyl) (an antioxidant was oxidized), thereby evaluating the antioxidant capacity. That is, for each of the extracts prepared in Example 1 and Comparative Examples 1 to 3, the degree to which the oxidation of DPPH was inhibited and the absorbance was reduced compared to the control group was measured, and the concentration exhibiting an absorbance of 50% or less compared to the absorbance of the control group was evaluated as the effective antioxidant concentration.

First, 190 μl of 100 μM DPPH solution (using ethanol as a solvent), 10 μl of each of the extracts

prepared in Example 1 and Comparative Examples 1 to 3, and the positive control group were added to prepare a reaction solution, which was reacted at 37°C for 30 minutes. Then, the absorbance at 540 nm was measured. As a positive control, ascorbic acid (AsA, Vitamin C), which is a widely used antioxidant, was used. DPPH analysis results of each material are shown in Table 8 below. IC₅₀ means the concentration of the added sample required to decrease the absorbance by 50%.

[Table 8]

Test material	IC ₅₀ (ppm)
AsA(Vitamin C)	7.1
Extract of a new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1)	10.2
Extract of Yabukida (Comparative Example 1)	35.1
Extract of Kanayamidori (Comparative Example 2)	31.5
Extract of Yutakamidori (Comparative Example 3)	37.7

As shown in Table 8, the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) (Example 1) exhibited a similar antioxidant effect compared to ascorbic acid, which is an antioxidant used as a positive control, and it exhibited a

significantly higher antioxidant efficacy when compared with the extracts of common tea plant-introduced varieties Yabukida, Kanayamidori and Yutakamidori of Comparative Examples 1 to 3.

5

(2) Superoxide anion scavenging activity test

In order to confirm the superoxide anion scavenging activity of the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) (Example 1) and
10 the extract of Yabukida (Comparative Example 1), the superoxide anion scavenging activities of the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3), the extract of Yabukida and ascorbic acid (AsA, Vitamin C) which is a positive control group, were
15 measured and compared at a concentration of 10 μ M and 20 μ M using an ESR spectrophotometer.

As a result, as shown in FIG. 4, it was confirmed that the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) or the extract of
20 Yabukida exhibited a higher superoxide anion scavenging activity at a concentration of 10 μ M (or 20 μ M) than ascorbic acid which is a positive control group. That is, the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) exhibited the
25 scavenging activity of 54.8% at a concentration of

10µM and 76.3% at a concentration of 20µM, the extract of Yabukida exhibited the scavenging activity of 47.4% at a concentration of 10µM and 64.9% at a concentration of 20µM, and AsA exhibited the
5 scavenging activity of 21.2% at a concentration of 20 µM.

Through these results, DMPO-OOH signal generated without antioxidant treatment can be strongly eliminated. When calculated in terms of the number of
10 moles, the rate at which the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) (or 3"-O-Me-EGCG) reacts with a superoxide anion was about 10,000 times higher than the rate at which DMPO reacts with the superoxide anion.

15 The superoxide anion scavenging activity of the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) was higher than that of AsA, which is judged to be caused by a gallate functional group and an ortho-trihydroxy in the B ring that EGCG
20 (epigallocatechin gallate) and 3"-O-Me-EGCG, which are the main functional ingredients contained in the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3), have in common.

In addition, the reason why the extract of the
25 new cultivar of *Camellia sinensis* (Jangwon No. 3)

exhibits a higher superoxide anion scavenging activity than the extract of Yabukida extract is thought to be due to the synergistic effect of 3"-O-Me-EGCG which is a catechin component as well as a
5 EGCG component commonly contained in the tea plant leaves.

(3) Hydroxyl radical scavenging activity test

In order to confirm the hydroxyl radical
10 scavenging activities of the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) (Example 1) and the extract of Yabukida (Comparative Example 1), the hydroxyl radical scavenging activities of the extract of the new cultivar of
15 *Camellia sinensis* (Jangwon No. 3), the extract of Yabukida and ascorbic acid (AsA) which is a positive control group, were measured and compared at a concentration of 10 μ M, 25 μ M and 50 μ M using an ESR spectrophotometer.

20 As a result, as shown in FIG. 5, the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) exhibited a higher scavenging activity at a concentration of 10 μ M or 25 μ M than the extract of Yabukida. In contrast, at a concentration of 50 μ M or
25 more, the scavenging activity between the two

extracts was not significantly different, but the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) exhibited about 5 times higher level of hydroxyl radical scavenging activity than AsA.

Therefore, it was confirmed that the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention, and the composition comprising the same can provide an excellent antioxidant effect.

[Text Example 3] Measurement of Collagenase Inhibitory Activity

The collagenase inhibitory abilities of each extract prepared in Example 1 and Comparative Examples 1 to 3 were measured in comparison with tocopherol. Tocopherol is a representative antioxidant material and is known to have a function of preventing skin aging by regenerating epidermal cells of the skin.

In the test, human fibroblasts were placed in a 96-well microtiter plate containing Dulbecco's Modified Eagle's Media (DMEM) with 2.5% fetal calf serum at 5,000 cells/well and cultured until the cells grew to about 90%. After culturing in serum-free DMEM medium for 24 hours, the extract of each of

Preparation Example 1 and Comparative Examples 1 to 3 dissolved in serum-free DMEM medium was treated at a concentration of 50 ppm and tocopherol at 1×10^{-4} molar concentration for 24 hours. Then, the cell culture medium was collected.

The degree of collagenase production was measured for the collected cell culture medium using a commercially available collagenase measuring instrument (Amersham Pharmacia, USA). First, the collected cell culture medium was placed in a 96-well plate uniformly coated with primary collagenase antibody, and the antigen-antibody reaction was performed in a thermostat for 3 hours. After 3 hours, the secondary collagen antibody to which the chromophore was bound was placed in a 96-well plate and reacted again for 15 minutes. After 15 minutes, a color-inducing substance was added and allowed to induce a color development at room temperature for 15 minutes. When 1M sulfuric acid was added again to stop the reaction (color development), the color of the reaction solution was yellow, and the degree of yellow color appeared differently depending on the progress of the reaction.

The absorbance of a yellowish 96-well plate was measured at 405 nm using an absorbance meter. The

degree of synthesis of collagenase was calculated by Equation 1 below. At this time, the reaction absorbance of the collected cell culture medium of the group not treated with the composition was used as a control group. That is, the expression level of collagenase in the untreated group was 100. In contrast, the expression level of collagenase in the group treated with the test substance was determined, and the results are shown in Table 9 below.

[Equation 1]

$$\text{Expression Level of Collagenase (\%)} = \frac{\text{Absorbance of Substance-Treated Cell Group}}{\text{Absorbance of Control Group}} \times 100$$

[Table 9]

Test substance	Expression level of collagenase (%)
Untreated group	100
Tocopherol	63
Extract of a new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1)	51
Extract of Yabukida (Comparative Example 1)	69

Extract of Kanayamidori (Comparative Example 2)	74
Extract of Yutakamidori (Comparative Example 3)	76

As the expression level of collagenase is lower, the ability to inhibit the expression level of collagenase is higher, less collagen degradation in the skin occurs, the decrease in skin elasticity is inhibited, and thus, the amount of wrinkles produced is reduced. As shown in Table 9, it was confirmed that the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention (Example 1) effectively inhibited the expression of collagenase in vitro, and the ability to inhibit the expression of collagenase was superior to that of tocopherol which were used as a positive control group. In particular, the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention (Example 1) more effectively inhibited the expression of collagenase compared to the extracts of common tea plant-introduced varieties Yabukida, Kanayamidori and Yutakamidori of Comparative Examples 1 to 3, thereby inhibiting collagen breakdown in the skin and thus confirming excellent enhancing effect of skin

elasticity and reducing effect of wrinkles.

Therefore, it was confirmed that the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) according to the present invention and the
5 composition comprising the same can provide an excellent anti-aging effect.

[Test Example 4] Anti-inflammatory Effect Test

1. Inhibitory effect on prostaglandin production

10 The skin anti-inflammatory effect of each of the extracts prepared in Example 1 and Comparative Examples 1 to 3 was evaluated by an inhibitory effect on prostaglandin production. The anti-inflammatory activity in macrophages was measured using each of
15 the extracts. First, aspirin was added to macrophages taken from the abdominal cavity of mice so as to be a final concentration of 500 M, thereby irreversibly inhibiting cyclooxygenase (COX) activity remaining in the cells. Then, 100 μ l of the suspension was placed
20 in each well of a 96-well cell culture container, and cultured in 5% CO₂ incubator at 37°C for 2 hours, and macrophages were allowed to attach to the surface of the container. The attached macrophages were then washed three times with PBS and then used for the
25 anti-inflammatory effect test. RPMI medium containing

LPS (Lipopolysaccharides) at 1% (w/v) was added to the cultured macrophage (5×10^4 cells/ml) and cultured for 12 hours to induce the production of prostaglandins. Each of the extracts prepared in Example 1 and Comparative Examples 1 to 3 was treated with 100 μ l, and the free prostaglandins were quantified using enzyme immunoassay (ELISA). At this time, the prostaglandin production inhibitory activity (%) of each of the extracts prepared in Example 1 and Comparative Examples 1 to 3 is shown in Table 10 below.

[Table 10]

Test substance	Prostaglandin Inhibitory activity (%)
Untreated group (NT)	0
Control group (aspirin treated group)	58.6
Extract of a new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1)	56.9
Extract of Yabukida (Comparative Example 1)	37.5
Extract of Kanayamidori (Comparative Example 2)	27.4

Extract of Yutakamidori (Comparative Example 3)	33.8
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As shown in Table 10, it was found that the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) had a very high inhibitory effect on the production of prostaglandins as in the control group treated with aspirin. It was found that the inhibitory effect on the production of prostaglandins was remarkably high when compared with the extracts of common tea plant-introduced varieties Yabukida, Kanayamidori and Yutakamidori of Comparative Examples 1 to 3.

Therefore, it was confirmed that the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) and the composition comprising the same according to the present invention inhibits the expression of prostaglandin which is a skin inflammation factor and thus has an anti-inflammatory effect. Furthermore, it was confirmed that it can relieve skin troubles and improve skin acne and skin allergies.

2. Inhibitory Effect on IL-8 Production

Skin anti-inflammatory effect of each of the extracts prepared in Example 1 and Comparative Examples 1 to 3 was evaluated by the production

inhibitory effect of interleukin-8 (IL-8) which is an inflammatory factor. First, the normal human skin keratinocytes (NHEK, source:Lonza) one day before the experiment were dispensed to a 96-well plate at 5 5×10^4 cells/well and then cultured for 24 hours in a 37°C , 5% CO_2 incubator. After 24 hours, the cells were washed twice with PBS and changed to serum-free keratinocyte basement media (KBM). In each well, each of the extracts prepared in Example 1 and Comparative 10 Examples 1 to 3 was treated according to the concentration shown in Table 11, allowed to react for 30 minutes and then treated with PGSA ($10 \mu\text{g}/\text{mL}$), PGSA ($50 \mu\text{g}/\text{mL}$), PGSA ($50 \mu\text{g}/\text{mL}$) + LPS ($1 \mu\text{g}/\text{mL}$), respectively. Here, PGSA (peptidoglycan from S. 15 aureus) is a peptidoglycan extracted from Staphylococcus aureus. It is a major component of the cell walls of Gram-positive bacteria and the cell membrane components of the bacteria was known to induce inflammation. In particular, in Staphylococcus 20 aureus, about 90% of patients with atopic dermatitis have been reported to cause secondary infection. After culturing for 24 hours in a 37°C , 5% CO_2 incubator, the culture medium was taken and ELISA was performed for interleukin-8. The results are shown in 25 Table 11 below. ELISA used the experimental method of

the manufacturer (BD Science).

[Table 11]

Test substance	Secretion of IL-8 (pg/ml)
Untreated Group (NT)	935.12
PGSA 10 $\mu\text{g/ml}$	4725.64
PGSA 10 $\mu\text{g/ml}$ + extract of the new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1) 25ppm	1503.29
PGSA 10 $\mu\text{g/ml}$ + extract of the new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1) 50ppm	1002.57
PGSA 10 $\mu\text{g/ml}$ + Extract of Yabukida (Comparative Example 1) 25ppm	2765.42
PGSA 10 $\mu\text{g/ml}$ + Extract of Yabukida (Comparative Example 1) 50ppm	2185.22
PGSA 10 $\mu\text{g/ml}$ + Extract of Kanayamidori (Comparative Example 2) 25ppm	2864.77
PGSA 10 $\mu\text{g/ml}$ + Extract of Kanayamidori (Comparative Example 2) 50ppm	2186.59
PGSA 10 $\mu\text{g/ml}$ + Extract of Yutakamidori (Comparative Example 3) 25ppm	2869.10
PGSA 10 $\mu\text{g/ml}$ + Extract of Yutakamidori (Comparative Example 3) 50ppm	2105.73

As shown in Table 11, the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) (Example 1) was found to have a very high inhibitory effect of the secretion of IL-8 increased by PGSA, an inflammation-inducing stimulant. It was found that the secretion of IL-8 was significantly reduced and inhibited when compared with the extracts of common tea plant-introduced varieties Yabukida, Kanayamidori and Yutakamidori of Comparative Examples 1 to 3.

Therefore, it was confirmed that the extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) and the composition comprising the same according to the present invention inhibits the secretion of IL-8 and thus has an anti-inflammatory effect. Furthermore, it was confirmed that it can relieve skin troubles and improve skin acne and skin allergies.

[Test Example 5] Cancer cell line growth inhibition test

The extract of the new cultivar of *Camellia sinensis* (Jangwon No. 3) leaf (hereinafter referred to as an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3)), or 3"-O-Me-EGCG isolated from the extract was treated to a lung cancer cell

line (A549), a kidney cancer cell line (ACHN), a colon cancer cell line (HCT15), a prostate cancer cell line (LNCaP) and a breast cancer cell line (MCF-7) which are cancer cell lines, and then cultured in 5% CO₂ incubator at 37°C for 36 hours. After culturing for 36 hours, the effects of inhibiting cancer cell growth of an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) or 3"-O-Me-EGCG on the cell line was confirmed by MTT assay, and the relative cancer cell growth rate was measured based on a negative control treated with 0.1% DMSO.

As a result, as shown in Table 12 below,

(i) when an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) or 3"-O-Me-EGCG were treated to each cancer cell line at the concentration of 100 $\mu\text{g}\cdot\text{mL}^{-1}$, all cancer cell lines exhibited a cancer cell growth rate (survival rate) of less than 50%, and

when an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) was treated to each cancer cell line at a concentration of 200 $\mu\text{g}\cdot\text{mL}^{-1}$, it showed cancer cell growth rates of about 18%, 24% and 16% in the lung cancer cell line (A549), prostate cancer cell line (LNCaP) and breast cancer cell line (MCF-7), respectively, confirming that the extract of a new

cultivar of *Camellia sinensis* (Jangwon No. 3) had a cancer cell growth inhibitory effect.

(ii) further, when an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) or 3"-O-Me-EGCG was treated to each cancer cell line, it inhibited the cancer cell growth in a concentration dependent manner with respect to all cancer cell lines,

in particular, when a prostate cancer cell line (LNCaP) was treated with 3"-O-Me-EGCG derived from the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) at the concentrations of $50\mu\text{g}\cdot\text{mL}^{-1}$, $100\mu\text{g}\cdot\text{mL}^{-1}$ and $200\mu\text{g}\cdot\text{mL}^{-1}$, the prostate cancer cell line growth rate was about 46%, 37% and 20%, respectively, which showed high cancer cell growth inhibitory effect,

when a breast cancer cell line (MCF-7) was also treated with 3"-O-Me-EGCG derived from the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) under the same conditions, it showed a high cancer cell growth inhibitory effect, and

when a lung cancer cell line (A549) was treated with 3"-O-Me-EGCG derived from the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) at the concentrations of $50\mu\text{g}\cdot\text{mL}^{-1}$, $100\mu\text{g}\cdot\text{mL}^{-1}$ and $200\mu\text{g}\cdot\text{mL}^{-1}$, it showed the cancer cell line growth rates

of 41%, 20% and 16%, which showed a higher cancer cell growth inhibitory effect than a prostate cancer cell line (LNCaP) and a breast cancer cell line (MCF-7).

5 [Table 12]

Sample	Concentration [$\mu\text{g} \cdot \text{mL}^{-1}$]	Cancer cell growth rate[mean $\pm$ SD]				
		A549	ACHN	LNCaP	HCT15	MCF-7
Extract of a new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3)	200	18.0 $\pm$ 8.0	32.0 $\pm$ 4.0	24.0 $\pm$ 5.0	25.0 $\pm$ 4.0	16.0 $\pm$ 2.0
	100	21.0 $\pm$ 6.0	46.0 $\pm$ 6.0	35.0 $\pm$ 4.0	36.0 $\pm$ 2.0	29.0 $\pm$ 4.0
	50	54.0 $\pm$ 7.0	61.0 $\pm$ 6.0	41.0 $\pm$ 6.0	51.0 $\pm$ 4.0	58.0 $\pm$ 5.0
3"-O-Me-EGCG	200	16.0 $\pm$ 6.0	40.0 $\pm$ 3.0	20.0 $\pm$ 3.0	36.0 $\pm$ 2.0	18.0 $\pm$ 2.0
	100	20.0 $\pm$ 5.0	49.0 $\pm$ 5.0	37.0 $\pm$ 4.0	42.0 $\pm$ 1.0	31.0 $\pm$ 1.0
	50	41.0 $\pm$ 3.0	63.0 $\pm$ 3.0	46.0 $\pm$ 3.0	60.0 $\pm$ 3.0	62.0 $\pm$ 2.0

[Test Example 6] Sensory evaluation of the extracts prepared in Example 2 and Comparative

Examples 4 to 5

Green tea (non-fermented tea), oolong tea (semi-fermented tea), black tea (fermented tea), or black tea (post-fermented tea) has different characteristics in shape, color, aroma, water color, taste and the like. In particular, oolong tea (semi-fermented tea), black tea (fermented tea), or black tea (post-fermented tea) has a large change in palatability such as flavor, water color, taste, etc., and the contained ingredients are changed depending on the progress of fermentation. To compare changes in palatability and functionality by processing methods according to the degree of fermentation of tea leaves through extreme shading, that is, to confirm the palatability and functionality as teas with respect to the extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) of Example 2, the extract of Yabukida (Japanese variety) of Comparative Example 4 and the extract of Okumidori (Japanese variety) of Comparative Example 5, the appearance evaluation (shape, color; perfect score 40) and quality evaluation (aroma, water color, taste; perfect score 60) were performed.

As a result, as shown in Table 13 below, in the sensory evaluation, the extract of a new cultivar of

Camellia sinensis (Jangwon No. 3) showed a higher palatability in all semi-fermented tea, fermented tea, and post-fermented tea than Yabukida and Okumidori, regardless of the processing method. The extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) has excellent characteristics in the production of various kinds of tea, and so was evaluated as having a very high utilization rate.

[Table 13]

Product (processed form)	Variety	Appearance evaluation [score 40]		Quality evaluation [score 60]			Total [score 100]
		Shape	Color	Aroma	Water color	taste	
Green tea [non- fermented tea]	Yabukida	18	18	19	18	18	91
	Okumidori	17	18	18	18	18	89
	new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3)	18	19	18	18	19	92
Oolong tea (semi- fermented tea)	Yabukida	17	16	16	15	16	80
	Okumidori	17	17	16	17	16	83
	new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3)	18	18	19	19	19	93
Black tea	Yabukida	17	16	15	16	14	78

(fermented tea)	Okumidori	17	17	15	16	15	80
	new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3)	18	18	19	19	19	93
Black tea (post-fermented tea)	Yabukida	17	17	15	17	15	81
	Okumidori	17	16	15	16	14	78
	new cultivar of <i>Camellia sinensis</i> (Jangwon No. 3)	18	19	19	19	18	93

While the present invention has been described with respect to the specific embodiments, it will be apparent to those skilled in the art that the above embodiments are not limiting but illustrative and that the scope of the present invention is not limited thereby. Therefore, it should be understood that the actual scope of the present invention will be defined by the appended claims and their equivalents.

10 In addition, a formulation example including a composition containing an extract of a new cultivar of *Camellia sinensis* (Jangwon No. 3) will be described in more detail, but it will be obvious

that the scope of the present invention is not limited thereby.

5 [Formulation Example 1] Preparation of nourishing lotion

A nourishing lotion was prepared by a conventional manner according to the composition described in Table 14 (unit: wt%).

[Table 14]

Component	Content
Purified water	Balance
Glycerin	8.0
Butylene glycol	4.0
Hyaluronic acid extract	5.0
Beta-glucan	7.0
Carbomer	0.1
New cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1)	1.0
Caprylic/capric triglyceride	8.0
Squalane	5.0
Cetearyl glucoside	1.5
Sorbitan stearate	0.4

Cetearyl alcohol	1.0
Triethanolamine	0.1

[Formulation Example 2] Preparation of nourishing cream

A nourishing cream was prepared by a conventional manner according to the composition described in Table 15 (unit: wt%).

[Table 15]

Component	Content
Purified water	Balance
Glycerin	3.0
Butylene glycol	3.0
Liquid paraffin	7.0
Beta-glucan	7.0
Carbomer	0.1
New cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1)	5.0
Caprylic/capric triglyceride	3.0
Squalane	5.0

Cetearyl glucoside	1.5
Sorbitan stearate	0.4
Polysorbate 60	1.2
Triethanolamine	0.1

[Formulation Example 3] Preparation of massage cream

A massage cream was prepared by a conventional manner according to the composition described in Table 16 (unit: wt%).

[Table 16]

Component	Content
Purified water	Balance
Glycerin	8.0
Butylene glycol	4.0
Liquid paraffin	45.0
Beta-glucan	7.0
Carbomer	0.1
New cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1)	2.0
Caprylic/capric triglyceride	3.0
Beeswax	4.0
Cetearyl glucoside	1.5
Sesquioleic acid sorbitan	0.9

Vaseline	3.0
Paraffin	1.5

[Formulation Example 4] Preparation of pack

A pack was prepared by a conventional manner according to the composition described in Table 17 (unit: wt%).

[Table 17]

Component	Content
Purified water	Balance
Glycerin	4.0
Polyvinyl alcohol	15.0
Hyaluronic acid extract	5.0
Beta-glucan	7.0
Allantoin	0.1
New cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1)	0.5
Nonylphenyl ether	0.4
Polysorbate 60	1.2
Ethanol	6.0

[Formulation Example 5] Preparation of ointment

An ointment was prepared by a conventional manner according to the composition described in Table 18 (unit: wt%).

5 [Table 18]

Component	Content
Purified water	Balance
Glycerin	8.0
Butylene glycol	4.0
Liquid paraffin	15.0
Beta-glucan	7.0
Carbomer	0.1
New cultivar of <i>Camellia sinensis</i> (Jangwon No. 3) (Example 1)	1.0
Caprylic/capric triglyceride	3.0
Squalane	1.0
Cetearyl glucoside	1.5
Sorbitan stearate	0.4
Cetearyl alcohol	1.0
Beeswax	4.0

[Formulation Example 6] Preparation of soft capsule

80 mg of the extract of a new cultivar of
5 *Camellia sinensis* (Jangwon No. 3) (Example 1), 9 mg
of vitamin E, 9 mg of vitamin C, 2 mg of palm oil, 8
mg of vegetable hardened oil, 4 mg of yellow wax and
9 mg of lecithin were mixed according to a
conventional method to prepare a soft capsule filling
10 solution. Separately from the above, a soft capsule
sheet was prepared at a ratio of 66 parts by weight
of gelatin, 24 parts by weight of glycerin and 10
parts by weight of sorbitol solution, and filled with
a filling liquid to produce a soft capsule containing
15 400 mg of the composition according to the present
invention.

[Formulation Example 7] Preparation of Tablet

80 mg of the extract of a new cultivar of
20 *Camellia sinensis* (Jangwon No. 3) (Example 1), 9 mg
of vitamin E, 9 mg of vitamin C, 200 mg of
galactooligosaccharide, 60 mg of lactose and 140 mg
of maltose were mixed and granulated using a fluid
bed dryer and 6 mg of sugar ester was added thereto.
25 504 mg of these compositions were tableted in a

conventional manner to prepare a tablet.

[Formulation Example 8] Preparation of Drinks

80 mg of the extract of a new cultivar of
5 *Camellia sinensis* (Jangwon No. 3) (Example 1), 9 mg
of vitamin E, 9 mg of vitamin C, 10 g of glucose, 0.6
g of citric acid, and 25 g of liquid oligosaccharide
were mixed, and 300 ml of purified water was added
and 200 ml was filled in each bottle. After filling
10 the bottle, it was sterilized at 130 °C for 4 to 5
seconds to prepare a beverage.

[Formulation Example 9] Preparation of Granules

80 mg of the extract of a new cultivar of
15 *Camellia sinensis* (Jangwon No. 3) (Example 1), 9 mg
of vitamin E, 9 mg of vitamin C, 250 mg of anhydrous
crystalline glucose and 550 mg of starch were mixed
and formed into granules using a fluid bed granulator
and then filled into the fabric to prepare a granule.

20

**[Formulation Example 10] Preparation of tea
composition**

In order to inhibit the activity of polyphenol
oxidase, which has the function of decomposing
25 polyphenols from the tea leaves of a new cultivar of

Camellia sinensis (Jangwon No. 3), the temperature of the tea leaves used was maintained at 90°C for about 30 seconds using a steamer operated by a boiler. Thereafter, it was sufficiently dried so that the water content was 6% or less, and then ground to a particle size of 0.5 to 4 mm using a grinder to prepare a 1.0 g of tea bags.

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[CLAIMS]

[Claim 1]

An antioxidant composition comprising, as an active ingredient, an extract of *Camellia sinensis*
5 having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG).

[Claim 2]

The composition according to claim 1, wherein the extract includes 1.25% by weight or more of
10 epigallocatechin 3-O-(3-O-methyl)gallate.

[Claim 3]

The composition according to claim 1, wherein the extract further includes 6.35 to 25.4% by weight of epigallocatechin (EGC), 9.4 to 37.6% by weight of
15 epigallocatechin gallate (EGCG) and 2.65 to 10.6% by weight of epicatechin gallate (ECG).

[Claim 4]

The composition according to claim 1, wherein the extract is at one extract selected from the group
20 consisting of flower, leaf, fruit, stem or root of *Camellia sinensis*.

[Claim 5]

The composition according to claim 1, wherein the extract is contained in an amount of 0.01 to 20%
25 by weight based on the total weight of the

composition.

[Claim 6]

The composition according to any one of claims 1 to 5, wherein the composition is a pharmaceutical composition, a cosmetic composition or a health functional food composition.

[Claim 7]

An anti-inflammatory composition comprising, as an active ingredient, an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3"Me; 3"-O-Me-EGCG).

[Claim 8]

The composition according to claim 7, wherein the extract includes 1.25% by weight or more of epigallocatechin 3-O-(3-O-methyl)gallate.

[Claim 9]

The composition according to claim 7, wherein the extract further includes 6.35 to 25.4% by weight of epigallocatechin (EGC), 9.4 to 37.6% by weight of epigallocatechin gallate (EGCG) and 2.65 to 10.6% by weight of epicatechin gallate (ECG).

[Claim 10]

The composition according to claim 7, wherein the extract is at one extract selected from the group consisting of flower, leaf, fruit, stem or root of

Camellia sinensis.

[Claim 11]

The composition according to claim 7, wherein the extract is contained in an amount of 0.01 to 20%
5 by weight based on the total weight of the composition.

[Claim 12]

The composition according to any one of claims 7 to 11, wherein the composition is a pharmaceutical
10 composition, a cosmetic composition or a health functional food composition.

[Claim 13]

An anti-aging composition comprising, as an active ingredient, an extract of *Camellia sinensis*
15 having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG).

[Claim 14]

The composition according to claim 13, wherein the extract includes 1.25% by weight or more of
20 epigallocatechin 3-O-(3-O-methyl)gallate.

[Claim 15]

The composition according to claim 13, wherein the extract further includes 6.35 to 25.4% by weight of epigallocatechin (EGC), 9.4 to 37.6% by weight of
25 epigallocatechin gallate (EGCG) and 2.65 to 10.6% by

weight of epicatechin gallate (ECG).

[Claim 16]

The composition according to claim 13, wherein the extract is at one extract selected from the group consisting of flower, leaf, fruit, stem or root of *Camellia sinensis*.

[Claim 17]

The composition according to claim 13, wherein the extract is contained in an amount of 0.01 to 20% by weight based on the total weight of the composition.

[Claim 18]

The composition according to any one of claims 13 to 17, wherein the composition is a pharmaceutical composition, a cosmetic composition or a health functional food composition.

[Claim 19]

An anticancer composition comprising, as an active ingredient, an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG).

[Claim 20]

The composition according to claim 19, wherein the extract includes 1.25% by weight or more of epigallocatechin 3-O-(3-O-methyl)gallate.

[Claim 21]

The composition according to claim 19, wherein the extract further includes 6.35 to 25.4% by weight of epigallocatechin (EGC), 9.4 to 37.6% by weight of epigallocatechin gallate (EGCG) and 2.65 to 10.6% by weight of epicatechin gallate (ECG).

[Claim 22]

The composition according to claim 19, wherein the extract is at one extract selected from the group consisting of flower, leaf, fruit, stem or root of *Camellia sinensis*.

[Claim 23]

The composition according to claim 19, wherein the extract is contained in an amount of 0.01 to 20% by weight based on the total weight of the composition.

[Claim 24]

The composition according to any one of claims 19 to 23, wherein the composition is a pharmaceutical composition, a cosmetic composition or a health functional food composition.

[Claim 25]

Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an

antioxidant in the production of a pharmaceutical composition or medicament for the antioxidant.

[Claim 26]

5 Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an antioxidant in the production of a cosmetic composition for the antioxidant.

[Claim 27]

10 Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an antioxidant in the production of a health function food composition for the antioxidant.

15 **[Claim 28]**

Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an anti-inflammatory or anti-phlogistic agent in the
20 production of an anti-inflammatory or anti-phlogistic pharmaceutical composition or medicament.

[Claim 29]

Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-
25 methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an anti-

inflammatory or anti-phlogistic agent in the production of an anti-inflammatory or anti-phlogistic cosmetic composition.

[Claim 30]

5 Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an anti-inflammatory or anti-phlogistic agent in the production of a health functional food composition or
10 medicament.

[Claim 31]

 Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an anti-
15 aging agent in the production of an anti-aging pharmaceutical composition or medicament.

[Claim 32]

 Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an anti-
20 aging agent in the production of an anti-aging cosmetic composition.

[Claim 33]

 Use of an extract of *Camellia sinensis* having a
25 high content of epigallocatechin 3-O-(3-O-

methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an anti-aging agent in the production of an anti-aging health functional food composition.

[Claim 34]

5 Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an anticancer agent in the production of an anticancer pharmaceutical composition or medicament.

10 **[Claim 35]**

 Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an anticancer agent in the production of an anticancer
15 cosmetic composition.

[Claim 36]

 Use of an extract of *Camellia sinensis* having a high content of epigallocatechin 3-O-(3-O-methyl)gallate (EGCG3''Me; 3''-O-Me-EGCG) as an
20 anticancer agent in the production of an anticancer heal functional food composition.

25