Appeal decision

Appeal No. 2015-17056

USA
Appellant HILL'S PET NUTRITION, INC.

Osaka, Japan
Patent Attorney MURAI, Koji

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2013-543193, entitled "Pet Food Compositions for Inducing Satiety Response" [application published on June 28, 2012, WO2012/087486, and published nationally on January 30, 2014, National Publication of International Patent Application No. 2014-502165] has resulted in the following appeal decision:

Conclusion

The appeal of the case was groundless.

Reason

No. 1 History of the procedures

November 23, 2011 International Patent Application (priority claim under the Paris Convention: December 20, 2010, US)
June 5, 2014 Notice of reasons for refusal (date of dispatch: June 10, 2014)
September 10, 2014 Submission of written opinion and written amendment
May 12, 2015 Examiner's decision of refusal (date of delivery: May 19, 2015)
September 16, 2015 Submission of request for appeal and written amendment
February 22, 2016 Submission of written statement

No. 2 The Invention

The inventions according to Claims of the present application are acknowledged as specified by the matters described in Claims 1 to 6 according to the scope of claims amended by the written amendment submitted on September 16, 2015, and the invention according to Claim 2 (hereinafter referred to as "the Invention") is as follows:
"A method of controlling an amount of food intake by a dog, comprising feeding the

dog a pet food composition comprising a satiety inducing agent in an amount effective to modulate expression of one or more genes selected from NPY, NPY receptors, leptin, and leptin receptors,

wherein the satiety inducing agent is epigallocatechin gallate in an amount of 0.02 mg to 2.9 mg, the weight of the dog is 2 kg to 60 kg, and a starting point amount of the satiety inducing agent is 0.02 mg to 2.9 mg."

No. 3 Reasons for refusal stated in the examiner's decision

Reasons for refusal stated in the examiner's decision include the following reasons.

1 Violation of requirements for support

In the detailed description of the Invention, it is described that epigallocatechin gallate modulates expression of gene of NPY5 receptor in cells; however, it is not evidenced that the epigallocatechin gallate modulates expression of leptin, leptin receptors, and NPY. Thus, the invention according to Claim 2 is not described in the detailed description of the Invention, and the present application does not meet the requirement stipulated in Article 36(6)(i) of the Patent Act.

2 Lack of inventive step

The appellant should not be granted a patent for the invention according to Claim 2 of the present application in accordance with the provisions of Article 29(2) of the Patent Act, since the invention would have been easily made by a person skilled in the art, on the basis of an invention that was described in a distributed publication, Modulation of Endocrine Systems and Food Intake by Green Tea Epigallocatechin Gallate, Endocrinology, 2000, Vol. 141, No. 3, p. 980-987 (hereinafter referred to as the "Publication"), which was distributed prior to the priority date of the patent application.

No. 4 Judgment by the body

1 Regarding violation of requirements for support

(1) It is described in Claim 2 according to the scope of claims that "A method of controlling an amount of food intake by a dog, comprising feeding the dog a pet food composition comprising a satiety inducing agent in an amount effective to modulate expression of one or more genes selected from NPY, NPY receptors, leptin, and leptin receptors, wherein the satiety inducing agent is epigallocatechin gallate ....", and in light of the description, it is acknowledged that the Invention modulates expression of one or

more genes selected from NPY, NPY receptors, leptin, and leptin receptors with an effective amount of epigallocatechin gallate, thereby controlling an amount of food intake by a dog.

(2) On the other hand, in the description, effect on gene expression with epigallocatechin gallate is described in Example 1 (paragraphs [0029] to [0033], and Table 4).

It is described in paragraph [0033] of the description that "The effects of various test substances or ingredients on gene expression in four canine cell lines and appropriate controls are determined. Each ingredient was tested in two concentrations as illustrated for selected sample ingredients shown in Table 4." and "Gene expression was measured for the treatment cell lines and controls. The gene expression data was determined to be either 'up' or 'down' -regulated for any given treatment.", and it is indicated in Table 4 that when determining effect of epigallocatechin gallate in two concentrations, expression of gene of NPY5R (NPY receptor) was suppressed in all four canine cell lines.

However, no effect on expression of gene of NPY, leptin, or leptin receptors with epigallocatechin gallate is described in Example 1.

(3) In the written opinion submitted on September 10, 2014, the appellant alleges that "It has been publicly known that NYP is a subfamily of Y1, Y2 and Y5, and it was common general technical knowledge that these three kinds play a role of modulating food intake (see paragraphs [0005] and also [0006]). Thus, it is considered that only NPY5R used in Examples should not be noticed. Further, a link between the leptin receptor and NPY was common general technical knowledge (paragraph [0007]). On the basis of knowledge obtained from Examples, the inventors took these common general technical knowledges into consideration, understood the scope of the Invention that it is reasonably understood to solve the problem to be solved, described the content in the description of the present application (paragraph [0015]), and amended claims."

We will examine the above allegation. The description of paragraphs [0005] to [0007] of the description is as follows.

"[0005]

In a review by Kamiji and Inui ... the authors stated that NPY is a 36-amino acid neuropeptide member of the pancreatic polypeptide (PP) family. That includes Peptide YY (PYY) and PP. NPY is the most abundant and widely distributed peptide in the central nervous system of both rodents and humans. Within the hypothalamus, NPY

plays an essential role in the control of food intake and body weight. Centrally administered NPY causes robust increases in food intake and body weight and, with chronic administration, can eventually produce obesity.

[0006]

The biological actions of NPY are mediated by receptors derived from three Y receptor genes leading to the Y1, Y2 and Y5 subfamilies. All three play a role in the regulation of feeding behavior. Recent studies have shown that when NPY expression in the hypothalamus was inhibited, the treated animals released 50% less NPY, gained less weight, and ate less than the controls up to 50 days after treatment ....

[0007]

The most important factor that influences the hypothalamic content of NPY is food deprivation. Chronic food restriction induces similar changes, and refeeding rapidly returns the abundance of NPY in the hypothalamus to initial values. Blood glucose concentrations also influence the expression of NPY. Furthermore, decreasing leptin levels in the blood by fasting leads to an increase in NPY expression. Additionally, gene therapy that restores leptin receptor expression in a model rat leads to a significant reduction in NPY mRNA levels, pointing to a link between the leptin receptor and NPY expression ...."

According to the above the description, it is acknowledged that there is a body of common general technical knowledge regarding the mutual relation among NPY, NPY receptors, leptin and leptin receptors: the biological actions of NPY are mediated by receptors derived from three Y receptor genes leading to the Y1, Y2, and Y5 subfamilies; decreasing leptin levels in the blood by fasting leads to an increase in NPY expression; and gene therapy that restores leptin receptor expression leads to a significant reduction in NPY mRNA levels, pointing to a link between the leptin receptor and NPY expression.

However, this common general technical knowledge does not indicate effect on expression of gene of NPY, leptin, or leptin receptors with epigallocatechin gallate. Further, it is described in the Publication that when administering epigallocatechin gallate to a rat which is a mammal similar to a dog, an amount of food intake was decreased, there was no change in plasma level of neuropeptide Y (NPY), and blood level of leptin having effect for suppressing food intake was remarkably decreased (see 2(1)E and H below), and it is not said that it is described in the detailed description of the Invention of the present application that epigallocatechin gallate modulates expression of gene of NPY, leptin or leptin receptors, thereby controlling an amount of food intake by a dog, even in light of this common general technical knowledge.

(4) Therefore, the Invention is not described in the detailed description of the Invention, and the present application does not meet the requirement stipulated in Article 36(6)(i) of the Patent Act.

2 Regarding lack of inventive step

(1) Publication

There is the following description in the Publication (Underlines are added by the body).

A "Abstract

Green tea polyphenols, especially the catechin, (-)-epigallocatechin gallate (EGCG), have been proposed as a cancer chemopreventative based on a variety of laboratory studies. For clear assessment of the possible physiological effects of green tea consumption, we injected pure green tea catechins ip into rats and studied their acute effects on endocrine systems. We found that EGCG, but not related catechins, significantly reduced food intake; body weight; and blood levels of testosterone, estradiol, leptin, insulin, insulin-like growth factor I, LH, glucose, cholesterol, and triglyceride; as well as growth of the prostate, uterus, and ovary. Similar effects were observed in lean and obese male Zucker rats, suggesting that the effect of EGCG was independent of an intact leptin receptor. EGCG may interact specifically with a component of a leptin-independent appetite control pathway....." (line 1 in the upper left column to line 5 in the upper right column of page 980)

B "Materials and Methods

Animals

Adult Sprague Dawley (Harlan Sprague Dawley, Inc., Indianapolis, IN) rats (male BW,170-190g; female BW,125-145 g) and lean and obese Zucker (15)(Charles River Laboratories, Inc., Wilmington, MA) rats (lean male BW,240-260 g; obese male BW,420-440 g) were given free access to a standard rat chow diet and water unless indicated." (lines 16 to 22 in the lower left column of page 980)

C "In vivo treatment

EGCG and other catechins (more than 98% pure) were isolated from green tea (Camellia sinensis) in our laboratory as described previously (6). Catechins were dissolved in water for oral administration and in sterile PBS for ip injection. Rats in control groups received vehicle only. Testosterone propionate (TP) and 5α-

dihydrotestosterone propionate (DHTP) were dissolved in sesame oil, and 4 mg in 0.5 ml sesame oil (16 mg/kg BW) were injected sc daily when indicated.
Food-restricted, male Sprague Dawley rats were given 12 g rat chow daily, which was about 50% of the amount consumed daily by each control rat. The body weight and the amount of food and water consumed were monitored daily. Food consumption was monitored in rats caged in groups of three to five animals by weighing food pellets every 24 h. On the final day, rats were anesthetized with methoxyflurane, and blood was collected by heart puncture. Sera were collected after centrifugation (10,000 × g for 20 min at 4 degrees centigrade) for biochemical analysis." (lines 1 to 16 in the lower right column of page 980)

D "Results
Body weight
Intraperitoneal injection of EGCG, but not other structurally related green tea catechins, such as EC, EGC, and ECG (Fig. 1), caused acute body weight loss in Sprague Dawley male (Figs. 2A and 3A) and female (Fig. 4A) rats within 2-7 days of treatment. In male Sprague Dawley rats, the effect of EGCG on body weight was dose dependent (Fig. 2). Doses of 5 or 10 mg EGCG (26 and 53 mg/kg BW) injected daily were not effective or were less effective in reducing the body weight than were doses of 15 mg (~85 mg/kg BW). Male Sprague Dawley rats injected daily ip with 26 and 53 mg EGCG/kg BW gained body weight by 17-24% relative to their initial body weight, but lost 5-9% relative to the control animals after 7 days of treatment (Fig. 2A). Male Sprague Dawley rats daily injected ip with 85 mg EGCG/kg BW lost 15-21% of their body weight relative to their initial weight and 30-41% relative to the control weight after 7 days of treatment (Figs. 2A and 3A and Table 1). Control rats continued growth and increased their body weight by 25-34% relative to their initial weight (Figs. 2A,3A, and 4A and Table 1). Female Sprague Dawley rats injected daily ip with 12.5 mg EGCG (~92 mg/kg BW) lost 10% of their body weight relative to their initial weight and 29% relative to the control weight after 7 days of treatment (Fig. 4A).Therefore, an EGCG dose of 70-92 mg/kg BW was used in most experiments." (lines 7 to 32 in the lower right column of page 981)

E "Sex hormones, leptin, IGF-I, insulin, LH, and GH
Rats treated with EGCG had significant changes in various endocrine parameters. .....In both male and female Sprague Dawley rats, 7 days of EGCG treatment caused significant reduction in blood levels of leptin, IGF-I, and insulin (Fig. 5, A-D, and Table

1). Dose-dependent effects of EGCG in male Sprague Dawley rats were also observed on levels of serum testosterone, leptin, IGF-I, and insulin (Fig. 5A)." (lines 3 to 15 in the left column of page 983)

F "Effect of EGCG on food intake
We found that EGCG-treated Sprague Dawley male (Fig. 7, A and B) and female (Fig. 7C) rats consumed about 50-60% less food than control rats. Similar effects of EGCG on food intake were observed with obese male Zucker rats (Fig. 7D). Therefore, body weight loss was due to reduced intake of food. ..... These effects of EGCG, administered ip, were diminished or absent when EGCG was administered orally (Table 3)." (line 4 from the bottom in the right column of page 983 to line 8 in the right column of page 984)

G "The effects of EGCG on body weight loss, hormone level changes, and food intake depend on the route of administration. The effects of EGCG were not observed or were less when the same amount of EGCG was given to rats orally for 7 days. This may be due to inefficient absorption of EGCG (13, 18, 19) and suggests that the effects of EGCG administered ip were not caused by interaction of EGCG with food or by EGCG action inside the gastrointestinal tract." (line 8 from the bottom to the last line in the right column of page 984)

H "The effect of EGCG, but not those of other related catechins, on food intake is interesting. A 50% decrease in food intake was seen by the second day of treatment with 80 mg EGCG/kg BW. The EGCG effect on food intake was not dependent on an intact leptin receptor, as the leptin receptor-defective obese Zucker rats also responded to EGCG. EGCG may interact specifically with a component of a leptin receptor-independent appetite control pathway and reduce food intake. As food intake is regulated by a variety of peripheral factors and by central neuroendocrine systems (23,24), we measured plasma levels of peptides, such as ACTH, neuropeptide Y, CRF, urocortin, and galanin, in male Sprague Dawley rats after they were treated with 83 mg EGCG/kg BW for 2 days. EGCG did not change plasma levels of these neuropeptides (our unpublished observations). Whether hypothalamic neuropeptide gene expression is altered by EGCG is being investigated. Various hormones, including cholecystokinin, glucagon-like polypeptide-1, glucagon, substance P, somatostatin, and bombesin, have been reported to inhibit food intake (23,24).Further study is required to determine whether any of these components is responsible for the effect of EGCG on food intake."

(line 8 in the right column of page 985 to line 13 in the left column of page 986)

I "Male Sprague Dawley rats were given 15 mg EGCG/rat (orally, 81 mg/kg BW; ip, 85 mg/kg BW) daily for 7 days either orally or injected intraperitoneally." (lines 1 to 2 in the lower part outside Table 3 of page 985)

J According to Table 3 in light of "I" above, it can be said that comparing control rats, both Sprague Dawley rats in which EGCG is injected intraperitoneally, and Sprague Dawley rats in which EGCG is orally injected reduce an amount of food intake.

K According to "A" to "J" above (especially, "A", "C", "F", and "J"), it is acknowledged that the following invention (hereinafter referred to as "Invention described in Publication") is disclosed in the Publication.

"A method for reducing an amount of food intake of a rat by orally administering water in which epigallocatechin gallate is dissolved, wherein the amount of epigallocatechin gallate is 15 mg daily."

(2) Comparison

We will compare the Invention with the Invention described in the Publication.

A "Epigallocatechin gallate" of the Invention described in Publication corresponds to "epigallocatechin gallate" of the Invention. Further, since "epigallocatechin gallate" of the Invention described in Publication "reduces an amount of food intake by a rat", "epigallocatechin gallate" of the Invention described in Publication corresponds to "a satiety inducing agent" of the Invention.

B "A method of reducing an amount of food intake by a rat by orally administering to the rat water in which epigallocatechin gallate is dissolved" of the Invention described in Publication and "a method of controlling an amount of food intake by a dog, comprising feeding the dog a pet food composition comprising a satiety inducing agent being 'epigallocatechin gallate'" are common in "a method of controlling an amount of food intake of a mammal, comprising feeding the mammal a composition comprising a satiety inducing agent being 'epigallocatechin gallate'".

C Thus, the two inventions are in correspondence in the following points.
(Corresponding features)

"A method of controlling an amount of food intake of a mammal, comprising feeding the mammal a composition comprising a satiety inducing agent, wherein the satiety inducing agent is epigallocatechin gallate."

D Further, the two inventions are different in the following points.

(The different feature 1)

Regarding the kind of mammal to which epigallocatechin gallate is fed, and an amount of epigallocatechin gallate,

in the Invention, epigallocatechin gallate is fed to a dog, an amount of epigallocatechin gallate is the amount effective to modulate expression of one or more genes selected from NPY, NPY receptors, leptin, and leptin receptors, and is 0.02 mg to 2.9 mg with respect to the weight of a dog of 2 kg to 60 kg, and the amount of 0.02 mg to 2.9 mg is a starting point amount of the satiety inducing agent,

on the other hand, in the Invention described in Publication, epigallocatechin gallate is fed to a rat, an amount of epigallocatechin gallate is 15 mg daily, and it is unclear that this amount is the amount effective to modulate expression of one or more genes selected from NPY, NPY receptors, leptin, and leptin receptors.

(The different feature 2)

A composition comprising a satiety inducing agent of the Invention is a pet food composition; on the other hand, the composition of the Invention described in Publication is water.

(3) Judgment

A Regarding the different feature 1

(a) As animal testing using a rat is generally performed to test efficacy and side effects of a medicine, a person skilled in the art naturally can predict that the effect of epigallocatechin gallate effective for a rat is also effective for a dog, which is a mammal similar to the rat. Further, since it is a well-known problem to limit food of an obese dog, it could be made as appropriate by a person skilled in the art that in the Invention described in Publication, a target for feeding epigallocatechin gallate is a dog.

(b) Similar to the Invention, in light of reduction of an amount of food intake by administering epigallocatechin gallate in the Invention described in Publication, it is acknowledged that similar to Example 1 of the description of the present application, gene expression of NPY5R (NPY receptor) is suppressed in the Invention described in

Publication.

(c) Regarding an amount of epigallocatechin gallate in the Invention, taking paragraph [0023] and [Example 1] of the description of the present application into consideration, it is acknowledged that an amount of epigallocatechin gallate of 0.02 mg to 2.9 mg of the Invention is calculated based on data on screening of a cell line.

On the other hand, when orally administering a medical substance, it is common general technical knowledge that concentration of the medical substance is higher than that which exhibit effects in a cell, due to reduction in an amount of absorption into the body, compared to injection, etc., in consideration of factors such as solubility, chemical stability in the stomach and permeability to the intestine, and metabolism in the body. It is described in Publication that "The effects of EGCG on ... food intake depend on the route of administration. The effects of EGCG were not observed or were less when the same amount of EGCG was given to rats orally for 7 days." (see (1)G above), and it is not acknowledged that there is special technical significance in the Invention of an amount of epigallocatechin gallate of 0.02 mg to 2.9 mg in controlling an amount of food intake.

The weight of 2 kg to 60 kg is only to specify a general numerical range in a dog.

Further, it is generally considered that optimizing an amount of administration of an active ingredient to solve a problem is only to show normal ability, for a person skilled in the art. It is described in Publication that "In male Sprague Dawley rats, the effect of EGCG on body weight was dose dependent" (see (1)D above), and it could be made as appropriate by a person skilled in the art that in the Invention described in Publication, an amount of epigallocatechin gallate is changed to set a range of number similar to the Invention regarding the above the different feature 1, taking into consideration an amount of reduction in weight and food intake.

(d) According to Claim 2 of the present application, "a starting point amount of the satiety inducing agent" is not necessarily clear; however, it is thought that, as alleged by the appellant in the written opinion submitted on September 10, 2014, this amount means an amount of a starting point of experiment to set an appropriate amount of epigallocatechin gallate without excessive burden. However, regarding the Invention of "a method of controlling an amount of food intake", it is not acknowledged that specifying an amount of epigallocatechin gallate at a starting point of experiment to set an appropriate amount is of particular technical significance. Further, it is natural that an experiment is carried out to set an appropriate amount of epigallocatechin gallate at a

starting point of experiment, and this is only a design variation that a person skilled in the art can set as appropriate. Thus, it could be made as appropriate by a person skilled in the art that an amount of epigallocatechin gallate of the Invention described in Publication is changed to a numerical range of the Invention regarding the above different feature 1.

(e) As described above, it could be made as appropriate by a person skilled in the art that the configuration of the Invention regarding the different feature 1 above is adopted in the Invention described in Publication.

B Regarding the different feature 2

As means for feeding to an animal an active ingredient having specific action, mixing the active ingredient with feed is only a commonly used art, and it could be made as appropriate by a person skilled in the art that in the Invention described in Publication, epigallocatechin gallate is included in pet food, instead of in water; namely, adopting a constituent component of the Invention regarding the different feature 2.

C Effect of the Invention

A person skilled in the art can predict overall effect achieved by the Invention naturally from the Invention described in Publication, and the effect cannot be regarded as a particularly distinguished feature.

(4) Summary

Therefore, since the Invention would have been provided easily by a person skilled in the art on the basis of the Invention described in Publication, the appellant should not be granted a patent for the Invention (invention according to Claim 2 of the present application) in accordance with the provisions of Article 29(2) of the Patent Act.

3 Allegation in written statement

The appellant submitted a written statement on February 22, 2016, indicates the following draft amendment regarding Claim 2, and requests the chance of amendment.

"A method of controlling an amount of food intake by a dog, comprising feeding the dog a pet food composition comprising a satiety inducing agent in an amount effective to modulate expression of one or more genes selected from NPY, NPY receptors, leptin, and leptin receptors,

wherein the satiety inducing agent is epigallocatechin gallate in an amount of

0.02 mg to 2.9 mg, the weight of the dog is 2 kg to 60 kg, and the amount is effective to reduce expression of one or more genes selected from NPY and NPY receptors."

However, as described in "1" above, it cannot be said that it is described in the detailed description of the Invention of the present application that epigallocatechin gallate gallate modulates expression of gene of leptin or leptin receptors, thereby controlling an amount of food intake by a dog, and for the reason similar to examination in "2" above, the invention according to Claim 2 proposed above could have been provided easily by a person skilled in the art on the basis of the Invention described in Publication.

Therefore, in view of limiting the chance of amendment, necessity for noticing reasons for refusal is not recognized.

No. 5 Closing

As described above, the Invention (invention according to Claim 2 of the present application) is not described in the detailed description of the Invention, and the present application does not meet the requirement stipulated in Article 36(6)(i) of the Patent Act.

Further, since the Invention could have been provided easily by a person skilled in the art on the basis of the Invention described in Publication, the appellant should not be granted a patent for the Invention (invention according to Claim 2 of the present application) in accordance with the provisions of Article 29(2) of the Patent Act.

Thus, the present application should be rejected without examining inventions according to Claims 1, and 3 to 6.

Therefore, the appeal decision shall be made as described in the conclusion.

May 9, 2016

Chief administrative judge: AKAGI, Keiji
Administrative judge: NAKADA, Makoto
Administrative judge: SUMIDA, Hidehiro