| Date | June 8, 2017 | Court | Intellectual Property High Court, Second Division |
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| Case number | 2016 (Gyo-Ke) 10147 | | |
| – A case in which the court rescinded a JPO decision concerning a trial for patent invalidation (dismissed) for a patent related to an invention titled "tomato drink and production method thereof, and acidity reduction method for the tomato drink," by holding that there was an error in determination regarding the support requirements. | | | |

References: Article 36, paragraph (6), item (i) of the Patent Act

Numbers of related rights, etc.: Invalidation Trial No. 2015-800008, Patent No. 5189667

Summary of the Judgment

1. In order to obtain a patent for an invention stated in the scope of claims, the detailed explanation of the invention needs to be stated in a way that a person ordinarily skilled in the art can recognize that the invention can solve the problem. The constituent feature of the invention in question (the "Invention") is a matter determined by the numerical ranges of three technical parameters that indicate characteristic values. That is, the Invention is what is called a "parameter invention." With such invention, it is appropriate to construe that the statements in the scope of claims are deemed to fulfill the support requirements for the description when [i] the detailed explanation of the invention is stated to an extent that a person ordinarily skilled in the art can understand the technological significance of the relationship between the achieved effects (performance) and the numerical ranges of parameters, without the disclosure of specific examples, at the time of filing of the patent application, or [ii] specific examples are disclosed and stated to an extent that a person ordinarily skilled in the art can recognize that the desired effects (performance) can be obtained within the numerical ranges of parameters, in light of common technical knowledge at the time of filing of the patent application (see Judgment of the Intellectual Property High Court of November 11, 2005, 2005 (Gyo-Ke) 10042, *Hanrei Jiho* No. 1911, at 48).

2. Therefore, the court examines whether the statements of the description in question (the "Description") fulfill the above criteria and meet the support requirements for the description in relation to Inventions 1, 8, and 11.

(1) The detailed explanation of the invention contained in the Description states that the numerical ranges of sugar content, sugar acid ratio, and glutamic acid content stated in the descriptions of Inventions 1, 8, and 11 (sugar content is "from 9.4 to 10.0," sugar acid ratio "from 19.0 to 30.0," and glutamic acid content "from 0.36 to 0.42 weight percent") are adopted as a means to provide a new tomato drink that has a

thick and rich flavor with sweetness like fruit tomatoes (meaning high sugar content tomatoes) and a less acidic tomato taste, as well as a production method thereof and an acidity reduction method for the tomato drink.

Working Examples 1 to 3, Comparison Examples 1 and 2, and Reference Examples 1 to 10 ([0088] to [0090], [Table 1]), which should be deemed as specific examples disclosed in the detailed explanation of the invention in the Description, state that all or part of the components and physical properties of the tomato drinks respectively stated in those working examples, comparison examples, and reference examples (pH, Brix, acidity, sugar acid ratio, acidity/total amino acid, viscosity, total amino acid content, glutamic acid content, aspartic acid content, and citric acid) were measured and that flavor evaluation tests to examine the "sweetness," "acidity," and "thickness" of said tomato drinks were conducted.

(2) Generally, the flavor of food and drinks is influenced by many factors that include not only sweetness and acidity but also saltiness, bitterness, flavorfulness, spiciness, astringency, richness, and aroma, as well as viscosity and other physical textures. Therefore, it was common technical knowledge at the time of filing of the patent application in question (the "Patent Application") that the flavor of food and drinks is affected by various components contained in the food and drinks and the physical property of the food and drinks that have impact on the aforementioned factors. In addition, it was also common technical knowledge at the time of filing of the Patent Application that tomato drinks contain various components. Therefore, it is found that a person ordinarily skilled in the art would normally consider that components and physical properties other than those measured in the flavor evaluation tests stated in the detailed explanation of the invention in the Description would also influence the flavor of the tomato drink of the Invention. Accordingly, when carrying out a flavor evaluation test for "sweetness," "acidity," and "thickness" to measure the relationship between the flavor and the numerical ranges of said three factors, using varied sugar content, sugar acid ratio, and glutamic acid content, at least one of the following methods needs to be taken: [i] if the flavors of "sweetness," "acidity," and "thickness" are recognizably affected only by said three factors or when there are other factors that have impact on these flavors but there is no need to define them, explanation to such effect is to be given from a technical perspective before carrying out the flavor evaluation test using varied figures for said three factors; or [ii] if there are other factors that have recognizable impact on the flavors of "sweetness," "acidity," and "thickness," in addition to said three factors, and it cannot be said that there is no need to define them, said other factors are to be set unchanged at a certain value before

carrying out the flavor evaluation test using varied figures for said three factors.

The detailed explanation of the invention in the Description states that acidity of tomatoes can be reduced while maintaining thick and rich taste and sweetness like fruit tomatoes by defining sugar content and sugar acid ratio, although the details of mechanisms for such effects are yet unknown. It also states that, by defining the glutamic acid content, the acidity of tomatoes can be reduced without excessively degrading the taste (flavorfulness) of tomato drinks, while the original sweetness of tomatoes tends to stand out even more. However, it does not include any statement to the effect that the sugar content, sugar acid ratio and glutamic acid content are the only factors that have recognizable impact on the flavors of "sweetness," "acidity," and "thickness." It is also not stated that conditions concerning components and physical properties other than the sugar content, sugar acid ratio and glutamic acid content are standardized among the working examples, comparison examples and reference examples, nor is it stated that such components and physical properties have no recognizable impact on the flavors of "sweetness," "acidity," and "thickness" or that they have such impact but there is no need to standardize the conditions. As such, it cannot be said that a person ordinarily skilled in the art can understand that it only requires the definition of the ranges of sugar content, sugar acid ratio, and glutamic acid content to obtain thick and rich flavor with sweetness like fruit tomatoes and less acidic tomato taste, and that there is no need to specify other components and physical properties. It cannot be said that a person ordinarily skilled in the art can immediately understand the technical significance of the relationship between the ranges defined for sugar content, sugar acid ratio, and glutamic acid content, and the achieved effects, namely the thick and rich flavor with sweetness like fruit tomatoes and less acidic tomato taste, from the results of the flavor evaluation tests stated in the detailed explanation of the invention in the Description.

(3) As for the methods for the flavor evaluation tests stated in the detailed explanation of the invention in the Description, the criteria for zero point, "don't feel it or can't tell," can be defined by showing a standard tomato juice; however, it is not stated that there was a step to standardize among the panelists the level of intensity of "sweetness," "acidity," and "thickness" required to raise the evaluation by one point, nor are the points given by individual panelists provided. Therefore, it cannot be denied that there is a possibility that some panelists could have raised or reduced points significantly for only minor changes in the flavor, while others could have raised or reduced fewer points even for larger changes in the flavor. It is difficult to find that the flavors were evaluated objectively and accurately simply because the

average evaluation points among all panelists are provided for each drink. Moreover, since "sweetness," "acidity," and "thickness" are different flavors, some kind of evaluation criteria needs to be provided in order to capture equally changes in each flavor and ranges of point addition and reduction. However, there is no statement to the effect that such step was taken. Then, it is found that a person ordinarily skilled in the art would not be able to estimate that it was reasonable to use the flavor evaluation method that generally evaluates the flavors of "sweetness," "acidity," and "thickness" by simply summing the average evaluation points given by the panelists for each flavor, assuming that each of these three flavors makes an equal level of contribution to the solution of the problem of the invention.

According to the findings mentioned above, it cannot be said that a person ordinarily skilled in the art can understand that the thick and rich flavor with sweetness like fruit tomatoes and less acidic tomato taste was obtained in relation to tomato drinks in Working Examples 1 to 3 based on these flavor evaluation tests.

(4) If the sugar content and glutamic acid content were set at "9.4" and "0.42" respectively in accordance with Working Example 1 described in [0090] [Table 1] of the detailed explanation of the invention in the Description, and the sugar acid ratio was set at the minimum value of the scope of claims in question, namely "19.0," the acidity would be "approximately 0.49." Therefore, it is likely that the evaluation point for acidity for this case would be lower than that for Working Example 1 (acidity is approximately 0.34). If the evaluation point for acidity becomes "-0.6," the total evaluation points would be "2.4," as the evaluation points for sweetness and thickness are "0.8" and "1.0" respectively (evaluation for Working Example 1). If the evaluation point for acidity becomes "-0.5," the total evaluation points would be "2.3"; if the evaluation point for acidity becomes "-0.4," the total evaluation points would be "2.2." However, it is unclear whether such evaluation points show the effects of the Invention in overall evaluations (the total evaluation points for Reference Example 1 stated in [0090] [Table 1] in the detailed explanation of the invention in the Description is "2.4" and it is given "×" for the overall evaluation).

(5) Therefore, it is not found that a person ordinarily skilled in the art can understand from the statements in the detailed explanation of the invention in the Description that it is proven that the thick and rich flavor with sweetness like fruit tomatoes and less acidic tomato taste can be obtained because the sugar content, sugar acid ratio, and glutamic acid content fall within the numerical ranges of the Invention, even when the technical knowledge as of the time of filing of Patent Application is taken into account. Thus, it cannot be said that the statements in Claims 1, 8, and 11 in the scope of claims

in the Description meet the support requirements for the description.

Judgement rendered on June 8, 2017
2016 (Gyo-Ke) 10147 Case of Seeking Rescission of JPO Decision
Date of conclusion of oral argument: March 2, 2017

Judgment

Plaintiff: Kagome Co., Ltd.

Defendant: Ito En, Ltd.

Main Text

1. The JPO decision made on May 19, 2016, concerning Invalidation Trial No. 2015-800008 shall be rescinded.

2. The defendant shall bear the court costs.

Facts and reasons

No. 1 Objects of claims

The same as the main text.

No. 2 Outline of the case

This case is an action to seek rescission of a JPO decision that dismissed a request for an invalidation trial against a patent. The issues are [i] whether the determination concerning fulfillment of the requirements for correction is appropriate, [ii] whether the determination concerning fulfillment of the enablement requirement is appropriate, [iii] whether the determination concerning application of a violation of the support requirements is appropriate, and [iv] whether the finding and determination concerning loss of novelty due to public working are appropriate.

1. Developments in procedures at the JPO

The defendant filed a patent application for an invention titled "tomato drink and production method thereof, and acid taste reduction method for the tomato drink" on April 20, 2011 (hereinafter referred to as the "Filing Date"), and received the registration of establishment of a patent right therefor (Patent No. 5189667; hereinafter referred to as the "Patent") on February 1, 2013 (Exhibit Ko 1).

The plaintiff filed a request for an invalidation trial against the Patent (Invalidation Trial No. 2015-800008) on January 9, 2015 (Exhibit Ko 55). In response, the defendant filed a request for correction on January 5, 2016 (Exhibit Ko 53; hereinafter referred to as the "Correction"). On May 19, 2016, the JPO rendered a decision to the effect that "It shall be permitted to correct the scope of claims of Patent No. 5189667 as indicated in the corrected scope of claims attached to the written request for correction in relation to Claims [1-7], [8-10], and 11 after the correction.

The request for this trial shall be dismissed." A certified copy of said JPO decision was served to the plaintiff on the 27th of the same month.

2. Gist of the inventions

The gist of the inventions stated in Claims 1 to 11 in the scope of claims of the Patent after the Correction (each of them is referred to as "Invention 1," "Invention 2," etc., and they are correctively referred to as the "Inventions" in some cases) is as follows (the underlined parts are the corrected parts).

"[Claim 1]

A tomato drink which is characterized in that its sugar content is from 9.4 to 10.0, its sugar acid ratio is from 19.0 to 30.0, and the total of its glutamic acid content and aspartic acid content is from 0.36 to 0.42 weight percent.

[Claim 2]

A tomato drink stated in Claim 1

whose viscosity is from 350 to 1,000 cP.

[Claim 3]

A tomato drink stated in Claim 1 or 2

whose total content of fruit juice and vegetable juice other than tomato juice is from 0.0 to 5.0 weight percent.

[Claim 4]

A tomato drink stated in any one of Claims 1 to 3

which contains at least tomato paste (A) and clear tomato juice (B).

[Claim 5]

A tomato drink stated in any one of Claims 1 to 4

which contains soda (C).

[Claim 6]

A tomato drink stated in any one of Claims 1 to 5

which contains at least tomato paste (A), clear tomato juice (B), and deacidified tomato juice (D).

[Claim 7]

A tomato drink stated in any one of Claims 1 to 6

whose pH is from 4.4 to 4.8.

[Claim 8]

A production method of a tomato drink

which is characterized in that said sugar content, sugar acid ratio, glutamic acid content and aspartic acid content are adjusted by mixing at least tomato paste (A) and clear tomato juice (B) so that the sugar content is from 9.4 to 10.0, the sugar acid ratio is from 19.0 to 30.0, and the

total of glutamic acid content and aspartic acid content is from 0.36 to 0.42 weight percent.

[Claim 9]

A production method of a tomato drink stated in Claim 8

which is characterized in that said sugar content and sugar acid ratio are adjusted by mixing at least soda (C).

[Claim 10]

A production method of a tomato drink stated in Claim 8 or 9

which is characterized in that said sugar content and sugar acid ratio are adjusted by mixing at least tomato paste (A), clear tomato juice (B), and deacidified tomato juice (D).

[Claim 11]

An acid taste reduction method for a tomato drink

which is characterized in that said sugar content, sugar acid ratio, glutamic acid content and aspartic acid content are adjusted by mixing at least tomato paste (A) and clear tomato juice (B) so that the sugar content is from 9.4 to 10.0, the sugar acid ratio is from 19.0 to 30.0, and the total of glutamic acid content and aspartic acid content is from 0.36 to 0.42 weight percent.

3. Gist of the reasons given in the JPO decision

(1) Request for correction

A. Specific matters corrected by the Correction are as follows.

(Corrected Matter 1)

As a correction pertaining to a group of claims consisting of Claims 1 to 7, Claim 1 in the scope of claims is corrected as follows.

"[Claim 1]

A tomato drink

which is characterized in that its sugar content is from 9.4 to 10.0, its sugar acid ratio is from 19.0 to 30.0, and the total of its glutamic acid content and aspartic acid content is from 0.36 to 0.42 weight percent."

(Corrected Matter 2)

As a correction pertaining to a group of claims consisting of Claims 8 to 10, Claim 8 in the scope of claims is corrected as follows.

"[Claim 8]

A production method of a tomato drink

which is characterized in that said sugar content, sugar acid ratio, glutamic acid content and aspartic acid content are adjusted by mixing at least tomato paste (A) and clear tomato juice (B) so that the sugar content is from 9.4 to 10.0, the sugar acid ratio is from 19.0 to 30.0, and the total of glutamic acid content and aspartic acid content is from 0.36 to 0.42 weight percent."

(Corrected Matter 3)

As a correction pertaining to Claim 11, Claim 11 in the scope of claims is corrected as follows.

"[Claim 11]

An acid taste reduction method for a tomato drink

which is characterized in that said sugar content, sugar acid ratio, glutamic acid content and aspartic acid content are adjusted by mixing at least tomato paste (A) and clear tomato juice (B) so that the sugar content is from 9.4 to 10.0, the sugar acid ratio is from 19.0 to 30.0, and the total of glutamic acid content and aspartic acid content is from 0.36 to 0.42 weight percent."

B. Appropriateness of correction

Corrected Matters 1 to 3 limit the statement about sugar content "from 7.0 to 13.0" and the statement about the total of glutamic acid content and aspartic acid content (hereinafter referred to as the "content of glutamic acid, etc.") "from 0.25 to 0.60 weight percent" to "from 9.4 to 10.0" and "from 0.36 to 0.42 weight percent," respectively. Therefore, these corrections are for the purpose of the restriction of the scope of claims and do not substantially enlarge or alter the scope of claims.

Moreover, Table 1 in the description as of the registration of establishment of the Patent (the same even after the Correction; hereinafter referred to as the "Description" without distinguishing the descriptions before and after the Correction) states numerical values, "9.4" and "0.42", "10.0" and "0.37," and "9.5" and "0.36," as the sugar content (Brix) value and the total of the content of glutamic acid, etc., respectively, in relation to the tomato drinks of Working Examples 1 to 3. Therefore, the Correction is within the scope of the matters stated in the description, scope of claims, or drawings attached to the application.

Consequently, the Correction is for the purpose of correcting the matter set forth in Article 134-2, paragraph (1), item (i) of the Patent Act and also complies with the provisions of Article 126, paragraphs (5) and (6) of said Act, as applied mutatis mutandis pursuant to Article 134-2, paragraph 9 of said Act. Therefore, the Correction is accepted in relation to Claims 1 to 7, 8 to 10, and 11 after the correction.

(2) Gist of the grounds for invalidation alleged by the plaintiff

A. Ground for Invalidation 1 (enablement requirement)

The statement of the detailed explanation of the invention of the Patent is neither clear nor sufficient as to enable any person ordinarily skilled in the art to which the invention pertains to work the invention in accordance with Ordinance of the Ministry of Economy, Trade and Industry due to the facts that [i] the substantial relationship between the problem and the numerical provisions is hard to understand and that [ii] any embodiment other than Working Examples 1 to 3 is hard to reproduce. Therefore, the statement of the detailed explanation of the invention does not comply with the requirement provided in Article 36, paragraph (4), item (i)

of the Patent Act, and the patent for the inventions claimed in Claims 1 to 11 falls under Article 123, paragraph (1), item (iv) of said Act and should be invalidated.

B. Ground for Invalidation 2 (violation of the support requirements)

Inventions 1 to 11 are not those stated in the detailed explanation of the invention due to the fact that [i] they are hard to be enlarged or generalized up to the scope of the physical property values specified in the scope of claims and that [ii] they are hard to be enlarged or generalized up to the raw materials and mixing specified in the scope of claims. Therefore, the statement of the scope of claims does not comply with the requirement provided in Article 36, paragraph (6), item (i) of the Patent Act, and the Patent falls under Article 123, paragraph (1), item (iv) of said Act and should be invalidated.

C. Ground for Invalidation 3 (loss of novelty due to public working)

Inventions 1 and 3 are those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (1), item (ii) of the Patent Act because they are the inventions pertaining to "Celeb De TOMATO: tomato juice aiko (large)" (hereinafter referred to as "Product 1") or "SWEET RUBY (produced by Kagome Co., Ltd.; indication on the cap: 11.2.10)" (hereinafter referred to as "Product 2") (hereinafter referred to as "Publicly Used Invention 1" and "Publicly Used Invention 2," respectively), both of which were publicly worked in Japan prior to the filing of the patent application therefor. Therefore, the patent for Inventions 1 to 3 falls under Article 123, paragraph (1), item (ii) of said Act and should be invalidated.

D. Ground for Invalidation 4 (loss of novelty as a result of becoming publicly known by a publication, etc.)

Inventions 1 to 4, 7, 8, and 11 are those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (1), item (iii) of the Patent Act because they are inventions that were described in a distributed publication (Publication of Unexamined Patent Application No. 2006-187233; Exhibit Ko 19) in Japan or [in] a foreign country prior to the filing of the patent application therefor. Therefore, the patent for Inventions 1 to 4, 7, 8, and 11 falls under Article 123, paragraph (1), item (ii) of said Act and should be invalidated.

In addition, as a preliminary allegation, Inventions 1 to 4, 7, 8, and 11 are those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (2) of said Act because they are inventions that a person ordinarily skilled in the art would have been able to easily make based on Exhibit Ko 19 Invention and well-known art. The patent for Inventions 1 to 4, 7, 8, and 11 should be invalidated pursuant to Article 123, paragraph (1), item (ii) of said Act.

E. Ground for Invalidation 5 (lack of an inventive step)

Inventions 5, 6, 9, and 10 are those for which a patent shall not be granted pursuant to the

provisions of Article 29, paragraph (2) of the Patent Act because they are inventions that a person ordinarily skilled in the art would have been able to easily make based on Exhibit Ko 19 Invention and well-known art. The patent for Inventions 5, 6, 9, and 10 falls under Article 123, paragraph (1), item (ii) of said Act and should be invalidated.

(3) Determinations in the JPO decision

A. Regarding Ground for Invalidation 1 (enablement requirement)

(A) The demandant (plaintiff) alleges as follows: The detailed explanation of the Inventions states that the problem to be solved by the Inventions is to provide a tomato drink that has a thick and rich flavor with sweetness like fruit tomatoes (meaning high sugar content tomatoes; the same applies hereinafter) and a less acidic tomato taste without mixing fruit juice and vegetable juice other than tomato juice, which is the main raw material ([0008]); however, the substantial relationship with the numerical limitations, "its sugar content is from 7.0 to 13.0 and its sugar acid ratio is from 19.0 to 30.0" ([0042]) and "the total of glutamic acid content and aspartic acid content is from 0.25 to 0.60 weight percent" ([0043]), which constitute the means for solving the problem, is unclear because [i] the evaluation "Rather weak" is allocated to evaluation points "1" and "-1" in paragraph [0088] in the Description, [ii] the method of calculating the total points for flavors is unclear, and the technical significance of the total points is also unclear, and [iii] [Table 1] in paragraph [0090] in the Description includes the statements, "Not conducted" and "Not measured," in the columns concerning physical property values and flavor evaluation; therefore, the relevant statement of the detailed explanation of the invention does not comply with the provision that requires to state the problem to be solved by the invention, the means for solving it, and other matters necessary for a person ordinarily skilled in the art to understand the technical significance of the invention (Article 24-2 of the Regulation for Enforcement of the Patent Act).

However, the relevant statement of the detailed explanation of the invention cannot be considered as not complying with the provision that requires to state the problem to be solved by the invention, the means for solving it, and other matters necessary for a person ordinarily skilled in the art of the invention to understand the technical significance of the invention (Article 24-2 of the Regulation for Enforcement of the Patent Act), taking into account the following facts: [i] The evaluation "Rather weak" allocated to evaluation point "1" is an erroneous description, and correctly, "Rather strong" should be allocated thereto; [ii] It is reasonable to figure out the total points by adding negative values for acid taste to the evaluation totals for sweetness and thickness and by reducing positive values for acid taste from the evaluation totals for sweetness and thickness, and the evaluation totals calculated on that premise conform to the values indicated in [Table 1]; [iii] The relationship between the problem to be solved by the Inventions and the numerical limitations cannot be considered as

incomprehensible even if "Not measured" or "Not conducted" is stated for some items in relation to the comparison examples and reference examples, in light of the fact that for those of Working Examples 1, 2, and 3, which are "tomato drinks" within the numerical provisions of Inventions 1 to 11, acid taste is reduced (negative evaluation) and sweetness and thickness are increased (positive evaluation), the total points are from 2.5 to 3.9, and the comprehensive evaluation is "Good," while, for Comparison Examples 1 and 2 and Reference Examples 3 and 7 to 10, which are outside said numerical provisions, the totals are stated and the comprehensive evaluation is "Bad."

(B) The demandant (plaintiff) alleges as follows: There can be a wide variety of "drinks containing tomato," which is a more specific concept that is included in the tomato drinks of Inventions 1 to 11 whose sugar content is from 7.0 to 13.0, sugar acid ratio is from 19.0 to 30.0, and content of glutamic acid, etc. is from 0.25 to 0.60 weight percent, in addition to those prepared by the mixing of Working Examples 1 to 3. Therefore, embodiments other than Working Examples 1 to 3 are hard to reproduce.

However, the mixing methods when working the Inventions are stated in paragraphs [0044], [0060], and [0061] in the detailed explanation of the Inventions, and specific Working Examples 1 to 3 are also indicated in paragraphs [0067] to [0069]. Referring to the sugar content, sugar acid ratio, and total of the content of glutamic acid, etc. obtained in Working Examples 1 to 3, it cannot be said that a person ordinarily skilled in the art is required to go through an excessive trial and error process in order to adjust the concentration and mixing of tomato paste and clear concentrated tomato juice to be used in the production process to make them within the scope of the Inventions by adding acidulant and amino acids as appropriate or by adding water as stated in paragraph [0058].

In that case, it cannot be said that the Inventions cannot be worked even if an excessive trial and error process is unavoidable to obtain the Inventions on the assumption of an invention that is equivalent to a more specific concept with a limitation, which is not a matter to specify [the invention of] the Inventions, as alleged by the demandant (plaintiff). Therefore, in this regard, the allegation of the demandant (plaintiff) is also unacceptable.

(C) On these bases, the statement of the detailed explanation of the invention of the Patent fulfills the requirement provided in Article 36, paragraph (4), item (i) of the Patent Act. Therefore, the patent for Inventions 1 to 11 does not fall under Article 123, paragraph (1), item (iv) of said Act.

B. Ground for Invalidation 2 (violation of the support requirements)

The demandant (plaintiff) alleges that the Inventions are hard to be enlarged or generalized up to the scope of the physical property values specified in the scope of claims. Therefore, this point is considered below.

The detailed explanation of the invention indicates the experimental data for Working Examples 1 to 3 indicating that the result of sensory evaluation was good for the combination of the physical property values of Inventions 1 to 7 wherein "sugar content is from 9.4 to 10.0, sugar acid ratio is from 19.0 to 30.0, and the total of glutamic acid content and aspartic acid content is from 0.36 to 0.42 weight percent" and those of Inventions 8 to 11 wherein "said sugar content, sugar acid ratio, glutamic acid content and aspartic acid content are adjusted so that the sugar content is from 9.4 to 10.0, the sugar acid ratio is from 19.0 to 30.0, and the total of glutamic acid content and aspartic acid content is from 0.36 to 0.42 weight percent."

Then, regarding the sugar acid ratio, which is a ratio of sugar content to acid degree, it is possible to understand a rough trend, that is, the taste of a drink changes in the direction that sweetness becomes relatively stronger to acid taste if sugar acid ratio is increased because sugar content contributes to sweetness and acidity contributes to acid taste. Therefore, a person ordinarily skilled in the art can assume that a "new tomato drink that has a thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste without mixing fruit juice and vegetable juice other than tomato juice, which is the main raw material," which is the problem to be solved by the Inventions, can be provided even if sugar acid ratio is "from 19.0 to 30.0" in relation to a tomato drink whose sugar content is within the range "from 9.4 to 10.0" and the content of glutamic acid, etc. is within the range "from 0.36 to 0.42 weight percent."

In addition, even if a wide variety of conditions, such as temperature and viscosity, in addition to sugar content and sugar acid ratio, contribute to the "thick and rich flavor" of a tomato drink as alleged by the demandant (plaintiff), it is clear that sugar content and sugar acid ratio significantly affect the flavor of a tomato drink, and it is not that the problem to be solved by the Inventions cannot be solved without individually specifying all of the wide variety of conditions, such as temperature and viscosity. Therefore, there is no reason for setting said wide variety of conditions, such as temperature and viscosity, as the matters to specify the invention.

On these bases, the matters specified by the Inventions, "sugar content is from 9.4 to 10.0," "sugar acid ratio is from 19.0 to 30.0," and the "content of glutamic acid, etc. is from 0.36 to 0.42 weight percent," are supported by Working Examples 1 to 3, and cannot be considered as exceeding the scope that is stated in the detailed explanation of the invention so that a person ordinarily skilled in the art can recognize that the problem to be solved by the Inventions can be solved.

Therefore, Inventions 1 to 11 are those stated in the detailed explanation of the invention, and the statement of the scope of claims fulfills the requirement provided in Article 36, paragraph (6), item (i) of the Patent Act. Consequently, the Patent does not fall under Article 123, paragraph (1), item (iv) of said Act and cannot be invalidated.

C. Ground for Invalidation 3 (loss of novelty due to public working)

(A) Regarding Ground for Invalidation 3 based on Product 1

a. Product 1 is recognized as having been publicly assigned prior to the filing of the patent application in question.

"Product 1" is recognized as having the following matters.

"Tomato juice whose sugar content is 9.4, sugar acid ratio is 26.7, and content of glutamic acid, etc. is 0.249 weight percent" (Publicly Used Invention 1)

b. Comparison and determination

(Regarding Invention 1)

The statements in the Publicly Used Invention 1, "sugar content is 9.4," "sugar acid ratio is 26.7," and "tomato juice" are equivalent to the statements in Invention 1, "sugar content is from 9.4 to 10.0," "sugar acid ratio is from 19.0 to 30.0," and "tomato drink," respectively.

However, regarding the statement in Publicly Used Invention 1, "content of glutamic acid, etc. is 0.249 weight percent," the specification in Publicly Used Invention 1 is to mean that the "content of glutamic acid, etc. is at least 0.25 weight percent" in the case of rounding the figure to two significant figures in order to compare it with the statement in Invention 1, "content of glutamic acid, etc. is from 0.36 to 0.42 weight percent." This differs from the statement in Invention 1, "content of glutamic acid, etc. is from 0.36 to 0.42 weight percent" (Difference 1).

Therefore, these inventions are not identical with each other.

(Regarding Invention 3)

In addition to the matter considered above in relation to Invention 1 cited by Invention 3, it is clear that neither vegetable juice other than tomato juice nor fruit juice is added to the "tomato juice" of Publicly Used Invention 1. Therefore, the statement in Publicly Used Invention 1, "tomato juice," is equivalent to the statement in Invention 3, "total content of fruit juice and vegetable juice other than tomato juice is from 0.0 to 5.0 weight percent."

However, these inventions have Difference 1, and are not identical with each other.

c. Therefore, Inventions 1 and 3 are not Publicly Used Invention 1, which was publicly worked in Japan prior to the filing of the patent application therefor, and they are thus not those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (1), item (ii) of the Patent Act. Consequently, the patent for these inventions does not fall under Article 123, paragraph (1), item (ii) of said Act and cannot be invalidated.

(B) Regarding Ground for Invalidation 3 based on Product 2

a. Product 2 is recognized as having been publicly worked prior to the Filing Date.

"Product 2" is recognized as having the following matters.

"Juice whose sugar content is 11.0, sugar acid ratio is 18.97, and content of glutamic acid, etc. is from 0.546 to 0.573 weight percent and which was produced for drinking purpose, whose raw material is tomato and product name is tomato puree." (Publicly Used Invention 2)

b. Comparison and determination

(Regarding Invention 1)

The "juice produced for drinking purpose, whose raw material is tomato and product name is tomato puree" of Publicly Used Invention 2 is equivalent to the "tomato drink" of Invention 1.

In addition, regarding the statement in Publicly Used Invention 2, "sugar acid ratio is 18.97," the aforementioned specification in Publicly Used Invention 2 is to mean that "sugar acid ratio is 19.0" in the case of rounding the figure to three significant figures in order to compare it with the statement in Invention 1, "sugar acid ratio is from 19.0 to 30.0." Therefore, said statement in Publicly Used Invention 2 is equivalent to the statement in Invention 1, "sugar acid ratio is from 19.0 to 30.0."

However, the statements in Publicly Used Invention 2, "sugar content is 11.0" and "content of glutamic acid, etc. is from 0.546 to 0.573 weight percent," differ from the statements in Invention 1, "sugar content is from 9.4 to 10.0" and "content of glutamic acid, etc. is from 0.36 to 0.42 weight percent" (Difference 2).

Therefore, these inventions are not identical with each other.

(Regarding Invention 3)

The statement in Publicly Used Invention 2, "juice produced for drinking purpose whose raw material is tomato and product name is tomato puree," is equivalent to the statement in Invention 3, "total content of fruit juice and vegetable juice other than tomato juice is from 0.0 to 5.0 weight percent" because neither vegetable juice other than tomato juice nor fruit juice is added thereto.

However, these inventions have Difference 2.

Therefore, these inventions are not identical with each other.

c. Therefore, Inventions 1 and 3 are not Publicly Used Invention 2, which was publicly worked in Japan prior to the filing of the patent application therefor, and they are thus not those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (1), item (ii) of the Patent Act. Consequently, the patent for these inventions does not fall under Article 123, paragraph (1), item (ii) of said Act and cannot be invalidated.

D. Ground for Invalidation 4 (loss of novelty as a result of becoming publicly known by a publication, etc.)

(A) Exhibit Ko 19 Invention

"An enzyme-treated tomato separation liquid whose aroma component is increased as a result of liberation of organic acid that is an aroma substance, which uses commercially available fresh tomatoes (*Momotarō* T-93 produced in Niigata) and treats them with esterase, whose refraction sugar content (Bx) and content of glutamic acid, etc. are any of the combinations 8.21° and 328.9 (mg/100g), 8.41° and 336.7 (mg/100g), 8.47° and 330.4

(mg/100g), or 8.98° and 338.8 (mg/100g), and which is mixed in juice and vegetable drinks together with optional components that are ordinarily used in food."

(B) Comparison between Invention 1 and Exhibit Ko 19 Invention and determination

(Common feature)

They are both a "tomato drink."

(Difference 3)

The "refraction sugar content (Bx)" of Exhibit Ko 19 Invention is "8.21°," "8.41°," "8.47°," or "8.98°." On the other hand, in Invention 1, "sugar content is from 9.4 to 10.0."

(Difference 4)

In Exhibit Ko 19 Invention, the "content of glutamic acid, etc." is "0.3289 weight percent," "0.3367 weight percent," "0.3304 weight percent," or "0.3388 weight percent." On the other hand, in Invention 1, the "content of glutamic acid, etc. is from 0.36 to 0.42 weight percent."

(Difference 5)

In Invention 1, "sugar acid ratio is from 19.0 to 30.0." On the other hand, sugar acid ratio is not specified in such manner in Exhibit Ko 19 Invention.

Therefore, Invention 1 and Exhibit Ko 19 Invention are not identical with each other.

(C) Regarding Difference 5

The demandant (plaintiff) alleges as the common general technical knowledge as of the Filing Date that the acidity of the tomato fruits of domestic varieties is around 0.40, and also alleges that the acidity of *Momotarō Tomatoes* which are generally used as a raw material for tomato drinks is from around 0.30 to 0.40.

However, the tomato treatment liquid of Exhibit Ko 19 Invention is obtained through the following processes: washing *Momotarō* T-93 produced in Niigata with water; steaming /them for 40 minutes; cooling /them down to 40°C; grinding them with a blender to obtain 1,195g heated tomato homogenate; sterilizing this homogenate at 90°C; cooling it down to 40°C; adding 0.01g esterase from porcine pancreas (produced by Sigma) to it; making it undergo reaction by leaving it to stand at 40°C for 16 hours; sterilizing it at 90°C; cooling it down to 35°C; and removing solids with a 40-mesh wire cloth. In that case, even if the acidity of the tomato fruit is around 0.40, it cannot be said that the acidity of the tomato treatment liquid is also around 0.40 after going through the aforementioned processes, including 40-minute boiling, 90°C sterilization, and enzyme treatment by adding esterase.

According to Exhibit Ko 20, acidity of tomatoes ranges from 0.3 to 0.6% among cultivated varieties, and the acidity of "*Momotarō* T-93" is described as 0.61 in Exhibit Ko 48. Therefore, it cannot be said that the acidity of tomatoes used in Exhibit Ko 19 Invention is necessarily from around 0.30 to 0.40.

Moreover, there is no motivation to adjust the acidity in Exhibit Ko 19 Invention to from

around 0.30 to 0.40.

In that case, it is impossible to determine that the sugar acid ratio of the tomato separation liquid of Exhibit Ko 19 Invention is from 19.0 to 30.0 by considering the acidity thereof as from 0.3 to 0.4 and dividing the refraction sugar content (Bx) of Exhibit Ko 19 Invention (from 8.21° to 8.98°) by it. Consequently, it cannot be said that a person ordinarily skilled in the art would have been able to easily obtain the structure of Invention 1 pertaining to the aforementioned Difference 5.

Therefore, Invention 1 cannot be considered to be Exhibit Ko 19 Invention and does not fall under Article 29, paragraph (1), item (iii) of the Patent Act. In addition, it cannot be said that Invention 1 is one which a person ordinarily skilled in the art would have been able to easily make based on Exhibit Ko 19 Invention and well-known art (preliminary allegation). Consequently, Invention 1 is not an invention for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (2) of said Act.

(D) Regarding Inventions 2 to 4, 7, 8, and 11

Inventions 2 to 4 and 7 cite Claim 1 and add further limitations to Invention 1. Therefore, Inventions 2 to 4 and 7 can also not be considered to be Exhibit Ko 19 Invention in the same manner as Invention 1. Consequently, these inventions do not fall under Article 29, paragraph (1), item (iii) of the Patent Act. In addition, these inventions are not those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (2) of said Act because they cannot be considered to be those which a person ordinarily skilled in the art would have been able to easily make based on Exhibit Ko 19 Invention and well-known art.

Inventions 8 and 11 are inventions concerning a "production method of a tomato drink" and an "acid taste reduction method for a tomato drink." However, the aforementioned Differences 3, 4, and 5 are also differences between Inventions 8 and 11 and Exhibit Ko 19 Invention. Therefore, both Inventions 8 and 11 cannot be considered to be Exhibit Ko 19 Invention in the same manner as Invention 1 and do not fall under Article 29, paragraph (1), item (iii) of the Patent Act. In addition, these inventions cannot be considered to be those which a person ordinarily skilled in the art would have been able to easily make based on Exhibit Ko 19 Invention and well-known art. Therefore, they are not those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (2) of said Act.

(E) Summary

Therefore, Inventions 1 to 4, 7, 8, and 11 are not Exhibit Ko 19 Invention, and thus do not fall under Article 29, paragraph (1), item (iii) of the Patent Act. Consequently, the patent therefor does not fall under Article 123, paragraph (1), item (ii) of said Act and cannot be invalidated.

Moreover, Inventions 1 to 4, 7, 8, and 11 are neither those which a person ordinarily skilled

in the art would have been able to easily make based on Exhibit Ko 19 Invention and well-known art nor are those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (2) of said Act. Therefore, the patent therefor does not fall under Article 123, paragraph (1), item (ii) of said Act and cannot be invalidated.

E. Ground for Invalidation 5 (lack of an inventive step)

Inventions 5 and 6 cite Claim 1 and add further limitations to Invention 1. Therefore, Inventions 5 and 6 can also not be considered to be those which a person ordinarily skilled in the art would have been able to easily make based on Exhibit Ko 19 Invention and well-known art in the same manner as Invention 1. Consequently, these inventions are not those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (2) of the Patent Act.

Inventions 9 and 10 cite Claim 8 and add further limitations to Invention 8. Therefore, Inventions 9 and 10 can also not be considered to be those which a person ordinarily skilled in the art would have been able to easily make based on Exhibit Ko 19 Invention and well-known art in the same manner as Invention 8. Consequently, these inventions are not those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (2) of said Act.

Therefore, Inventions 5, 6, 9, and 10 are not those for which a patent shall not be granted pursuant to the provisions of Article 29, paragraph (2) of said Act because they are not those which a person ordinarily skilled in the art would have been able to easily make based on Exhibit Ko 19 Invention and well-known art. Consequently, the patent therefor does not fall under Article 123, paragraph (1), item (i) of said Act and cannot be invalidated.

(omitted)

No. 5 Court decision

1. Regarding Ground for Rescission 1 (error in the determination concerning fulfillment of the requirements for correction)

(1) Regarding the statement of the detailed explanation of the invention in the Description

The Description contains the following statements (Exhibit Ko 45).

[Technical field] [0001] This invention concerns a tomato drink and a production method thereof, and an acid taste reduction method for a tomato drink.

[Background art] [0002] The tomato juice designated by the JAS Standard … is habitually drunk by many people, irrespective of the time, place, age, and gender, as it reproduces the original flavor of tomatoes. However, the tomato juice designated by the JAS Standard is originally of high viscosity as it contains a lot of water-insoluble solid content, such as dietary fiber, and therefore, it has the disadvantage of being relatively hard to drink. Furthermore, the

market therefor has actually been gradually shrinking in combination with recent changes in consumers' preference.

[0003] On the other hand, a variety of tomato mixed drinks have been developed by adding fruit juice and carrot or other vegetable juice to tomato juice, which is the main raw material. In tomato mixed drinks of this kind, the viscosity can be decreased through mixing of fruit juice and vegetable juice, and the acid taste of tomatoes can be hidden by the sweetness of fruit juice, etc. Therefore, such drinks tend to be easier to drink. However, tomato mixed drinks of this kind are rather closer to fruit juice drinks or vegetable juice drinks, and consequently, they lacked appeal to consumers as tomato drinks.

[0004] In the meantime, other methods to decrease the viscosity of a tomato drink have been considered in order to make it easier to drink without mixing fruit juice and vegetable juice. For example, Patent Document 1 describes a production method of low-viscosity tomato juice which is characterized in that a plant tissue breakdown enzyme is added to raw tomato juice whose viscosity is adjusted within the range from 250 to 3,000 mPa•s in advance and the tomato juice is treated within the shear velocity range of $10^3$ to $10^6$1/s.

[Prior art document] [Patent document] [Patent Document 1] Publication of Unexamined Patent Application No. 2009-011287

[Outline of the invention] [Problem to be solved by the invention] [0006] Patent Document 1 states that a decrease in viscosity is promoted along with solubilization of water-insoluble solid content, and tomato juice with improved texture can thereby be obtained. However, in said method of Patent Document 1 … treatment is cumbersome and is not simple. In addition, there is the problem that deterioration of flavor or cooked odor, etc. can occur along with heat treatment.

[0007] Moreover, the low-viscosity tomato juice of said Patent Document 1 is described as one whose texture is improved owing to a decrease in viscosity. However, there is no statement about the flavor of tomatoes, in particular, adjustment between sweetness and acid taste. Therefore, said tomato juice can hardly be said to be easy to drink for those who do not like the acid taste of tomatoes, in the same manner as the tomato juice designated by the JAS Standard.

[0008] This invention was made in consideration of such actual circumstances. The purpose thereof is to provide a new tomato drink that has a thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste without mixing fruit juice and vegetable juice other than tomato juice, which is the main raw material and a production method thereof, and an acid taste reduction method for a tomato drink.

[Means for solving the problem] [0009] As a result of a series of hard research, the inventors of this invention found that the aforementioned problem can be solved by adjusting the sugar content and sugar acid ratio of a tomato drink within a specific range that extends beyond those

of conventional tomato drinks, and came to complete this invention.

[0010] That is, this invention provides (1) to (24) below.

(1) A tomato drink

which is characterized in that its sugar content is from 7.0 to 13.0 and its sugar acid ratio is from 19.0 to 30.0.

[0011] (2) A tomato drink stated in (1) above

whose total of glutamic acid content and aspartic acid content is from 0.25 to 0.60 weight percent.

[0018] (9) A production method of a tomato drink

which is characterized in that said sugar content and sugar acid content are adjusted so that the sugar content is from 7.0 to 13.0 and the sugar acid ratio is from 19.0 to 30.0.

[0022] (13) A production method of a tomato drink stated any one of (9) to (12) above

wherein the total of glutamic acid content and aspartic acid content is adjusted to from 0.25 to 0.60 weight percent.

[0026] (17) An acid taste reduction method for a tomato drink

which is characterized in that said sugar content and sugar acid ratio are adjusted so that the sugar content is from 7.0 to 13.0 and the sugar acid ratio is from 19.0 to 30.0.

[0030] (21) An acid taste reduction method for a tomato drink stated in any one of (17) to (20) above

wherein the total of glutamic acid content and aspartic acid content is adjusted to from 0.25 to 0.60 weight percent.

[Effect of the invention] [0034] This invention realizes a new tomato drink that has a thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste without mixing fruit juice and vegetable juice other than tomato juice, which is the main raw material, and a production method thereof. In addition, the acid taste of a tomato drink is effectively reduced by other embodiment of this invention.

[0035] An embodiment of this invention that is substantially free of fruit juice and/or vegetable juice other than tomato juice creates a new market category of a tomato drink, which differs from all of the aforementioned conventional tomato drink that is of high viscosity and is hard to drink, the aforementioned conventional tomato drink that has strong acid taste and is hard to drink, the aforementioned conventional tomato drink that is close to fruit juice drink or vegetable juice drink, and the tomato drink stated in the aforementioned Patented Document 1 that is of low viscosity and has strong acid taste, that is, a new market category of a pure tomato drink that has a thick and rich flavor with the original sweetness of tomatoes standing out and acid taste being reduced and furthermore tastes good in terms of the form of drink. Therefore, it is possible to meet the recent diversification of consumers' preference.

[Embodiments of the invention] [0036] The embodiments of this invention are explained below. The following embodiments are examples indicated to explain this invention, and this invention is not limited to those embodiments.

[0037] A tomato drink of this embodiment is a drink containing materials derived from tomato fruit as the main raw material and is characterized in that its sugar content is from 7.0 to 13.0 and sugar acid ratio is from 19.0 to 30.0.

[0038] Here, in this description, the term "materials derived from tomato fruit" means tomato squeeze obtained by crushing and squeezing or pureeing tomatoes and removing peels and seeds, etc. and concentrate thereof (concentrated tomato) (including those obtained by diluting and reducing them), and it is a concept including tomato juice, tomato puree, tomato paste, and concentrated tomato, etc. designated by the JAS Standard. These materials may also contain other components (for example, a small amount of salt, spices, and food additives). The properties of said materials derived from tomato fruit are not especially limited, and for example, the materials can be in a liquid, gel, paste (quasi-solid), semisolid, or solid form. Incidentally, the term "main raw material" means a material that accounts for over 50 weight percent to the total amount of a tomato drink.

[0039] In addition, in this description, the term "sugar content" means the Brix value. Here, the Brix value is a unit to measure the gram quantity of soluble solid content (sugars, etc.) contained in 100 g solution. The Brix value can be measured by using a commercially available refractometer or sugar content measurement equipment.

[0040] Furthermore, in this description, the term "sugar acid ratio" means sugar content/acidity. Here, sugar content is as stated above, and the term "acidity" means concentration (%) in terms of citric acid, which is calculated by the potentiometric titration using 0.1 mol/L of sodium hydroxide standard solution.

[0041] When the inventors of this invention prepared a tomato drink with the aforementioned structure, it was ascertained that a tomato drink that has a thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste and is very easy to drink can be easily realized with good reproducibility. The details of the mechanism for such effects are yet unknown. However, for example, the mechanism is presumed as follows.

That is, it is considered to be appropriate to merely increase sugar content (Brix), for example, by using highly-concentrated tomato squeeze (concentrated tomato) in order to make the acid taste of a tomato drink less recognizable. However, in this case, viscosity becomes very high, and the tomato drink becomes unfit for drinking. Therefore, as mentioned above, it is considered that, in conventional art, a tomato drink that has a thick and rich flavor with sweetness like fruit tomatoes was realized only as a high-Brix tomato drink that is of high viscosity and is hard to drink or a tomato mixed drink to which fruit juice or vegetable juice

other than tomato juice is mixed (the aforementioned conventional tomato mixed drink that is close to fruit juice drink or vegetable juice drink). On the other hand, in the tomato drink of this embodiment, sugar acid ratio, as well as sugar content, is adjusted within a specific range, and therefore, it is possible to restrain a significant increase in viscosity when adjusting said sugar content and sugar acid ratio. In addition, the acid taste of tomatoes can be hidden by the sweetness of tomatoes through adjustment of sugar acid ratio. Therefore, the acid taste of the obtained tomato drink is reduced and the original sweetness of tomatoes stands out, thereby making the drink more drinkable. As a result of combination of these functions, the tomato drink with the aforementioned structure has a thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste. However, the functions are not limited to these functions.

[0042] The tomato drink of this embodiment is required to have a sugar content of 7.0 to 13.0 and a sugar acid ratio of 19.0 to 30.0. A tomato drink whose sugar content is less than 7.0 and sugar acid ratio is over 30.0 tends to be of relatively low viscosity, but it is hard to drink due to excessively faint taste. In addition, a tomato drink whose sugar content is less than 7.0 and sugar acid ratio is less than 19.0 tends to be of relatively low viscosity, but it is hard to drink as it lacks sweetness and has strong acid taste. On the other hand, a tomato drink whose sugar content is over 13.0 and sugar acid ratio is over 30.0 tends to have strong sweetness, but it is hard to drink as it is of relatively high viscosity and its taste is excessively faint. In addition, a tomato drink whose sugar content is over 13.0 and sugar acid ratio is less than 19.0 tends to have strong sweetness, but it is hard to drink as it is of relatively high viscosity and has strong acid taste. It is desired that the sugar content of a tomato drink is from 9.0 to 13.0 and the sugar acid ratio thereof is from 19.0 to 30.0 from the perspective of further enhancing the balance among sweetness, acid taste, and thick and rich flavor of tomatoes.

[0043] The tomato drink of this embodiment may contain amino acid. When amino acid content is high, the taste (flavorfulness) of the tomato drink tends to increase. In this case, it is more preferable that the total of glutamic acid content and aspartic acid content is from 0.25 to 0.60 weight percent (g/100g). This level of low total of glutamic acid content and aspartic acid content contributes to reducing the acid taste of tomatoes without excessively degrading the taste (flavorfulness) of the tomato drink, while the original sweetness of tomatoes tends to stand out even more.

[0044] The tomato drink of this embodiment preferably contains tomato paste (A) and clear tomato juice (B) as materials derived from tomato fruit. A tomato drink that satisfies the aforementioned relationship between sugar content and sugar acid ratio can be easily obtained with good reproducibility by having it contain tomato paste (A) and clear tomato juice (B).

[0052] The tomato drink of this embodiment preferably contains a pH adjuster. The mixing of a

pH adjuster restrains the enhancement of acid taste caused by the pH of a tomato drink becoming acidic, and tends to make the tomato drink more drinkable. Soda (C) is preferable as such pH adjuster. In addition to the aforementioned pH adjustment function, soda (C) adopted as a pH adjuster functions to alleviate the harsh taste (raw smell, etc.) of tomatoes and thereby tends to make the tomato drink more drinkable.

[0054] In addition, the tomato drink of this embodiment preferably contains deacidified tomato juice (D). Here, deacidified tomato juice (D) means juice obtained by applying deacidification treatment to the aforementioned clear tomato juice and its concentrate. Moreover, deacidification treatment means treatment to remove or reduce hydroxy acids, such as citric acid, which can be contained in clear tomato juice. As hydroxy acids can function as acidic components in a tomato drink, the ratio of acidic component content to the total amount of a tomato drink becomes lower by inclusion of deacidified tomato juice (D) whose hydroxyl acids are removed or reduced. As a result, the acid taste of tomatoes is reduced while the original sweetness of tomatoes tends to stand out even more. Incidentally, regarding deacidified tomato juice (D), one kind thereof can be independently used, or two or more kinds thereof can be used in combination.

[0056] For the aforementioned tomato drink of this embodiment, viscosity is preferably adjusted from 350 to 1,000 cP, more preferably, from 350 to 600 cP. This level of low viscosity tends to make the drink more drinkable.

[0057] For the tomato drink of this embodiment, pH is preferably adjusted from 4.4 to 4.8, more preferably, from 4.5 to 4.6. The tomato drink of this embodiment whose pH is within this range particularly has a thick and rich flavor with the original sweetness of tomatoes standing out, and tastes good in the form of drink. Incidentally, a tomato drink with an excessively high pH tends to require strong sterilization treatment from a hygiene perspective. Therefore, such drink is not preferable from the productivity and economic perspectives, and burnt deposit, cooked odor, and burning odor tend to become stronger along with this sterilization treatment. Consequently, from these perspectives, pH of the tomato drink of this embodiment is preferably adjusted from 4.4 to 4.8.

[0058] Incidentally, the aforementioned tomato drink of this embodiment may contain other components that are publicly known in the industry of the invention, in addition to the aforementioned components (A) to (D). Such other components include, for example, salt, tomato squeeze or concentrated tomato (for example, tomato juice, tomato puree, etc. based on the JAS Standard) other than the aforementioned tomato paste (A), clear tomato juice (B), and deacidified tomato juice (D), fruit juice and vegetable juice other than tomato juice, and fruit pulp. In addition, components permitted by the JAS Standard include, for example, vitamins, toughening agents, including zinc, calcium, iron, copper, magnesium, and other minerals, or

their salt, sugar, honey, and natural fragrance. In addition, other components also include acidulants such as citric acid and citric acid Na, amino acids, pH adjusters, antioxidants, enzymes, and stabilizers such as pectine, sugar groups other than sugar, colorings such as natural pigments and synthetic pigments, fragrance such as natural fragrance and synthetic fragrance, and carbon dioxide, although these components are additives outside the JAS Standard. Such other components that can be added are also described in *Shokuhin Hyōji Manyuaru* (Food Labeling Manual) (Society for Food Labeling, ed., Chuohoki Publishing Co., Ltd., revised in February 1989). For these components, one of them can be independently used, or two or more of them can be used in combination.

[0059] From the perspective of restraining the degrading of the original flavor of tomatoes and having the original flavor of tomatoes stand out even more, the aforementioned tomato drink of this embodiment is preferably substantially free of fruit juice and/or vegetable juice other than tomato juice. … A tomato drink substantially free of fruit juice and/or vegetable juice other than tomato juice falls under a new market category of pure tomato drinks that have a thick and rich flavor with the original sweetness of tomatoes standing out and taste good in the form of drink, and it has excellent appeal to consumers.

[0060] Then, the tomato drink of this embodiment can be obtained by adjusting its sugar content and sugar acid ratio within the ranges from 7.0 to 13.0 and from 19.0 to 30.0, respectively. The method of adjusting sugar content and sugar acid ratio is not especially limited, and an optional method can be adopted. For example, sugar content and sugar acid ratio can be adjusted by adjusting the kind and mixed amount of materials derived from tomato fruit that are used as the main raw materials as appropriate. In addition, sugar content and sugar acid ratio can also be adjusted by mixing the aforementioned other components. In the case of using other components in such manner, it is only necessary to adjust the kind and mixed amount of said other components as appropriate. The method of mixing components can be set as appropriate according to the kind, property, and mix ratio, etc. of the used components, and is not especially limited. The pH and viscosity of the obtained tomato drink can be adjusted by the kind, property, and mix ratio of the used components.

[0061] From the perspective of easily producing the tomato drink of this embodiment with good reproducibility, it is preferable to adjust sugar content and sugar acid ratio by any one of or combination of (I) mixing of tomato paste (A) and clear tomato juice (B), (II) mixing of soda (C), (III) mixing of tomato paste (A), clear tomato juice (B), and deacidified tomato juice (D).

[Working examples] [0067] (Working Example 1)

First, commercially available tomato paste (Brix: 28; acidity: 1.60; pH: 4.10; viscosity when Brix is adjusted to 4.5: 108cP) and commercially available clear concentrated tomato juice (Clear Tomato Concentrate 60° Brix, produced by Lycored; Brix: 60; acidity: 3.64; pH: 4.15)

were prepared.

Next, the aforementioned clear concentrated tomato juice was diluted and reduced about four times with ion exchange water, and thereby, clear tomato juice (Brix: 14.6; acidity: 0.86; pH: 4.2; viscosity when Brix is adjusted to 4.5: 1.36 cP) was prepared. After that, strong base anion exchange resin (produced by Mitsubishi Chemical Corporation; PA316) was filled in a tank, and aqueous solution of 3% NaOH was passed through it, and ion exchange water, aqueous solution of 3% NaOH, and ion exchange water were passed through it in series to carry out substitution of bicarbonate. Then, the obtained clear tomato juice was passed through anion exchange resin subjected to substitution of bicarbonate several times by an upflow method, and after that, it was filtered with a 100 mesh filter. Thereby, deacidified tomato juice X (Brix: 12.4; acidity: 0.21; pH: 6.0) was prepared.

Then, the aforementioned tomato paste and deacidified tomato juice X were mixed at the weight percent as described in Table 1 (incidentally, in Table 1, for all of the tomato paste, clear tomato juice, deacidified tomato juice X, and deacidified tomato juice Y, the mixed amount was calculated in terms of tomato straight Brix 4.5), and the mixture was filtered with a mesh having around 0.5 to 1.0 mm mesh openings to remove foreign materials. Thereby, the tomato drink of Working Example 1 was produced.

The obtained tomato drink of Working Example 1 was subjected to heat sterilization, cooled, and enclosed in a paper package. Thereby, the tomato drink packed in a paper container of Working Example 1 was produced.

[0068] (Working Example 2)

First, clear tomato juice obtained by diluting and reconstituting the clear concentrated tomato juice used in Working Example 1 to the level that the Brix is 19.8 (Brix: 19.8; acidity: 1.18; pH: 4.2; viscosity when the Brix is adjusted to 4.5: 1.36 cP) was warmed to 80°C. After that, calcium carbonate was mixed at the ratio of 0.95 weight percent to the total amount of the aforementioned clear tomato juice in terms of solid content. The obtained mixture was stirred for 60 minutes, and thereby, carbon dioxide gas was released. The tank was cooled to 20°C, and after that, it was subjected to centrifugal separation and was filtered with commercially available diatomite. Furthermore, it was filtered with a 5 μm filter to remove solid content. Thereby, deacidified tomato juice Y (Brix: 14.8; acidity: 0.24; pH: 5.4) was prepared.

Next, the same treatment as in Working Example 1 was conducted, except for using the aforementioned clear tomato juice and deacidified tomato juice Y in place of deacidified tomato juice X used in Working Example 1, mixing them at the weight percent as described in Table 1 together with tomato paste, and furthermore, mixing solution, which was obtained by solving soda in warm water thereto, in the amount of 1.8 g/L in terms of solid content of soda. Thereby, the tomato drink of Working Example 2 and the tomato drink packed in a paper container of

Working Example 2 were produced.

[0069] (Working Example 3)

The same treatment as in Working Example 2 was conducted, except for omitting the mixing of deacidified tomato juice Y and changing the mixed amount of clear tomato juice and soda as described in Table 1. Thereby, the tomato drink of Working Example 3 and the tomato drink packed in a paper container of Working Example 3 were produced.

[0070] (Comparison Example 1)

The same treatment as in Working Example 3 was conducted except for omitting the mixing of clear tomato juice and soda and changing the mixed amount of tomato paste as described in Table 1. Thereby, the tomato drink of Comparison Example 1 and the tomato drink packed in a PET container of Comparison Example 1 were produced.

[0071] (Comparison Example 2)

The same treatment as in Working Example 3 was conducted except for omitting the mixing of soda and changing the mixed amount of clear tomato juice as described in Table 1. Thereby, the tomato drink of Comparison Example 2 and the tomato drink packed in a PET container of Comparison Example 2 were produced.

[0072] (Reference Example 1)

Commercially available tomato juice packed in a small-sized PET container (100% tomato; salt-added tomato juice designated by the JAS Standard) was used as a reference.

[0073] (Reference Example 2)

Commercially available tomato juice packed in a large-sized PET container (100% tomato; salt-added tomato juice designated by the JAS Standard) was used as a reference.

[0074] (Reference Example 3)

Commercially available tomato juice packed in a large-sized PET container (100% tomato; salt-free tomato juice designated by the JAS Standard) was used as a reference.

[0075] (Reference Example 4)

Commercially available tomato juice packed in a paper container (100% tomato; salt-added tomato juice designated by the JAS Standard) was used as a reference.

[0076] (Reference Example 5)

Commercially available domestic tomato juice packed in a medium-sized can (100% tomato; salt-added tomato juice designated by the JAS Standard) was used as a reference.

[0077] (Reference Example 6)

Commercially available domestic tomato juice packed in a small-sized can (100% tomato; salt-free tomato juice designated by the JAS Standard) was used as a reference.

[0078] (Reference Example 7)

Commercially available tomato mixed juice packed in a paper container (50% tomato and

50% fruit juice; salt-free tomato mixed juice designated by the JAS Standard) was used as a reference.

[0079] (Reference Example 8)

Commercially available tomato juice packed in a large-sized PET container (100% tomato; salt-free tomato juice designated by the JAS Standard) was used as a reference.

[0080] (Reference Example 9)

Commercially available tomato juice packed in a large-sized PET container (100% tomato; product obtained by diluting and reconstituting tomato paste; salt-free tomato juice designated by the JAS Standard) was used as a reference.

[0081] (Reference Example 10)

Tomato squeeze obtained by crushing and squeezing or pureeing commercially available fresh tomatoes (medium-sized) and removing peels and seeds, etc. was used as a reference.

[0082] Incidentally, measurement methods and evaluation methods are as follows.

[0083] <Brix>

The Brix was measured by using an optical refractometer (manufactured by Atago Co., Ltd.; Digital Refractometers; RX5000α-Bev).

[0084] <Acidity>

Acidity was calculated by using an automatic titrator (manufactured by Hiranuma Sangyo Co., Ltd.; COM-1750) in terms of citric acid based on the potentiometric titration using 0.1 mol/L of sodium hydroxide standard solution.

[0085] <Viscosity>

Viscosity was measured by using a TVB-10 viscometer (manufactured by Toki Sangyo Co., Ltd.) under the conditions of 60 rpm rotational speed and 30 seconds (the numerical values in the table indicate the average of three measurements). Incidentally, the viscosity of Comparison Example 1 was excessively high and was measured by reducing the rotational speed to 12 rpm. In addition, the viscosity of clear tomato juice was excessively low and was measured by changing the rotor to a special rotor L/Adp.

[0086] <Citric acid>

The citric acid content (weight percent (g/100g)) was measured by using CAPI-3300 (manufactured by Otsuka Electronics Co., Ltd.) based on the capillary electrophoresis.

Sample preparation method:

The appropriate amount of sample was measured and suspended in distilled water, and after that, it was filtered and was provided for analysis.

Conditions for the capillary electrophoresis measurement:

Capillary size: 75 μm x 800 mm

Injection method: Dropping method (ΔH = 25 mm; 90 sec)

Voltage: -15 kv (constant voltage)

Temperature: 25°C

Detection wavelength: 265 nm

Migration solution: 20 mM quinolinic acid; 0.25 mM; TTAB-2 (pH: 6.0)

[0087] <Amino acid>

The amino acid content (weight percent (g/100g)) was measured by using the Alliance System (manufactured by Waters Corporation) based on the HPLC method (fluorescence detection).

Sample preparation method:

The appropriate amount of sample was measured and suspended in distilled water, and after that, it was filtered and was provided for analysis.

Conditions for the HPLC measurement:

Column: XBridge Shield RP18 3.0 x 100 mm

Temperature: 40°C

Injected amount: 5 μm

Mobile Phase A: 50 mM sodium acetate buffer (pH 6.0)

Mobile Phase B: Acetonitrile

Detector: Waters 2475 Multiwavelength fluorescence detector

Detection wavelength: Excitation: 335 nm; Emission: 450 nm

[0088] <Flavors>

The flavor evaluation tests of the tomato drinks were conducted through entrustment to 12 panelists, and the strength of the flavors was evaluated on a scale of one to seven based on the standards indicated below. Here, the numerical values in the table indicate the average of evaluation points given by the 12 panelists.

3 points: Very strong

2 points: Considerably strong

1 point: Slightly weak (note in this judgment: this is recognized as an erroneous description, and correctly, "slightly strong")

0 point: Don't feel it or can't tell

-1 point: Slightly weak

-2 points: Considerably weak

-3 points: Very weak

[0089] Table 1 indicates the composition of the tomato drinks of Working Examples 1 to 3, Comparison Examples 1 and 2, and Reference Examples 1 to 10. In addition, the properties and evaluation results of these drinks are also indicated in Table 1.

[0090] [Table 1]

| | Working Example 1 | Working Example 2 | Working Example 3 | Comparative Example 1 | Comparative Example 2 | Reference Example 1 | Reference Example 2 | Reference Example 3 | Reference Example 4 | Reference Example 5 | Reference Example 6 | Reference Example 7 | Reference Example 8 | Reference Example 9 | Reference Example 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total amount of materials derived from tomato fruit | 210.8 | 220.0 | 220.0 | 200.0 | 210.0 | 100% tomato juice | 100% tomato juice | 100% tomato juice | 100% tomato juice | 100% tomato juice | 100% tomato juice | 50% tomato mixed juice | 100% tomato juice | 100% tomato juice | Fresh tomato juice |
| Tomato paste (parts by weight) | 137.0 | 168.0 | 168.0 | 200.0 | 168.0 | | | | | | | | | | |
| Clear tomato juice (parts by weight) | - | 25.3 | 52.0 | - | 42.0 | | | | | | | | | | |
| Deacidified tomato juice X (parts by weight) | 73.8 | - | - | - | - | | | | | | | | | | |
| Deacidified tomato juice Y (parts by weight) | - | 26.7 | - | - | - | | | | | | | | | | |
| Soda (g/L) | - | 1.8 | 2.2 | - | - | | | | | | | | | | |
| (A)/(B) | 1.9 | 3.2 | 3.2 | - | 4.0 | - | - | - | - | - | - | - | - | - | - |
| pH | 4.7 | 4.6 | 4.6 | 4.4 | 4.3 | 4.2 | 4.2 | 4.2 | 4.2 | 4.1 | 4.3 | 3.7 | 4.3 | 4.3 | 4.3 |
| Brix | 9.4 | 10.0 | 9.5 | 9.0 | 9.4 | 5.2 | 5.4 | 5.2 | 5.3 | 5.2 | 5.1 | 8.9 | 5.5 | 4.9 | 6.1 |
| Acidity | 0.34 | 0.45 | 0.44 | 0.51 | 0.57 | 0.41 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.33 | 0.40 | 0.27 | 0.37 |
| Sugar acid ratio | 27.3 | 22.3 | 21.3 | 17.6 | 16.4 | 12.7 | 12.6 | 12.1 | 12.3 | 12.1 | 11.9 | 27.0 | 13.8 | 18.1 | 16.5 |
| Acidity/Total amino acid | 0.82 | 1.22 | 1.24 | 0.97 | 1.74 | 1.66 | 1.73 | 1.66 | 1.42 | 1.78 | 1.47 | 3.28 | 1.43 | 1.47 | - |
| Viscosity (cP) | 405 | 388 | 543 | 1800 | Not measured | Not measured | Not measured | 254 | Not measured | Not measured | Not measured | 43 | 259 | 195 | Not measured |
| Total amino acid (weight %) | 0.42 | 0.37 | 0.36 | 0.53 | 0.33 | 0.25 | 0.25 | 0.26 | 0.30 | 0.24 | 0.29 | 0.10 | 0.28 | 0.18 | Not measured |
| Glutamic acid (weight %) | 0.268 | 0.242 | 0.235 | 0.367 | 0.231 | 0.187 | 0.189 | 0.197 | 0.229 | 0.172 | 0.208 | 0.071 | 0.196 | 0.125 | Not measured |
| Aspartic acid (weight %) | 0.149 | 0.125 | 0.123 | 0.159 | 0.100 | 0.060 | 0.060 | 0.063 | 0.075 | 0.070 | 0.085 | 0.030 | 0.084 | 0.058 | Not measured |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Citric acid (weight %) | 0.29 | 0.51 | 0.44 | Not measured | Not measured | Not measured | Not measured | Not measured | Not measured | Not measured | Not measured | Not measured | Not measured | Not measured | Not measured | Not measured |
| Flavors | | | | | | | | | | | | | | | | |
| Acid taste | -0.7 | -0.3 | -0.6 | -0.1 | 0.1 | Not conducted | Not conducted | 0.8 | Not conducted | Not conducted | Not conducted | -0.8 | 0.6 | 0.1 | 0.0 | |
| Sweetness | 0.8 | 1.4 | 1.5 | 0.9 | 0.3 | Not conducted | Not conducted | -1.4 | Not conducted | Not conducted | Not conducted | 2.4 | -1.3 | -0.9 | -0.6 | |
| Thick and rich taste | 1.0 | 1.5 | 1.8 | 1.2 | 1.8 | Not conducted | Not conducted | -1.3 | Not conducted | Not conducted | Not conducted | -0.8 | -1.3 | -1.5 | -0.9 | |
| Total | 2.5 | 3.2 | 3.9 | 2.2 | 2.0 | Not conducted | Not conducted | -3.5 | Not conducted | Not conducted | Not conducted | 2.4 | -3.2 | -2.5 | -1.5 | |
| Comprehensive evaluation | ○ | ○ | ○ | ×× Excessively high viscosity | × | × | × | × | × | × | × | × | × | × | × | × |

[0091] Incidentally, as mentioned above, this invention is not limited to the aforementioned embodiments and working examples, and changes can be made on this invention as appropriate within the scope that does not extend beyond the gist thereof.

[Industrial applicability] [0092] As explained above, this invention creates a new market category of pure tomato drinks that have a thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste and taste good in the form of drink, and thereby, it can meet the recent diversification of consumers' preference. Therefore, this invention is widely and effectively applicable in the food industry, in particular, in the drink industry.

(2) Regarding the propriety of the Correction

As mentioned in No. 2, 3.(1) above, Corrected Matters 1 to 3 by the Correction are intended to correct the statement concerning sugar content from "7.0 to 13.0" to "9.4 to 10.0" and the statement concerning the content of glutamic acid, etc. from "0.25 to 0.60 weight percent" to "0.36 to 0.42 weight percent." The numerical ranges after these corrections are narrower than those before the corrections. Therefore, Corrected Matters 1 to 3 are intended to restrict the scope of claims, and are recognized as those that neither substantially enlarge nor alter the scope of claims.

Moreover, as mentioned in (1) above, Working Examples 1 to 3 for the tomato drinks corresponding to the Inventions are stated in [Table 1] ([0090]) in the detailed explanation of the invention in the Description, and these working examples are those for which the Brix value is "9.4" or "10.0" and the total amino acid is "0.36 weight percent" or "0.42 weight percent." Then, it is clear from the statement in [0037] in the detailed explanation of the invention in the Description that the "Brix value" means "sugar content." In addition, although the "total amino acid" is neither defined nor explained in the detailed explanation of the invention in the Description, it is clear from the statement in [Table 1] that the "total amino acid" is obtained by rounding off the total value of the content of "glutamic acid" and "aspartic acid" to two decimal places and that the "total amino acid" means the "content of glutamic acid, etc." In that case, the numerical values for sugar content, "9.4" and "10.0," and the numerical values for the content of glutamic acid, etc., "0.36 weight percent" and "0.42 weight percent," which specify the lower and upper limits of the numerical ranges after the Correction, are specifically indicated in the working examples for the tomato drinks corresponding to the Inventions in the detailed explanation of the invention in the Description, and the numerical ranges after the Correction can be considered to be within the scope of the matters stated in the detailed explanation of the invention in the Description. Therefore, Corrected Matters 1 to 3 can be considered to be corrections made within the scope of the matters stated in the description, scope of claims or drawings attached to the application.

On these bases, the Correction should be considered to correspond to the purpose set forth in

Article 134-2, paragraph (1), item (i) of the Patent Act and comply with the provisions of Article 126, paragraphs (5) and (6) of said Act, as applied mutatis mutandis pursuant to Article 134-2, paragraph (9) of said Act.

(3) Regarding the allegations of the plaintiff

A. The plaintiff alleges as follows: It is impossible to understand when seeing the statements in Working Examples 1 to 3 that served as grounds for the Correction that the effect of the Inventions is achieved within the numerical ranges of the Inventions after the Correction, and the Inventions are hardly considered to realize the same flavor as that of Working Examples 1 to 3 because the numerical range of acid taste is wide, from 0.31 to 0.63%.

However, the aforementioned matter alleged by the plaintiff should be questioned in terms of the description requirements for the scope of claims (Article 36, paragraph (6) of the Patent Act) and does not affect the determination mentioned in (2) above.

B. The plaintiff alleges as follows: The Description states nothing about a combination of the numerical ranges after the Correction, and it cannot be considered to be just like stating such combination; in addition, the Correction is intended to set the ranges of the maximum and minimum values for each factor after breaking the working examples down to constituent factors.

However, the minimum and maximum values for the numerical ranges of sugar content and the content of glutamic acid, etc. after the Correction are, as indicated in (2) above, those that are specifically indicated in the working examples for the tomato drinks corresponding to the Inventions in the detailed explanation of the invention in the Description. Therefore, the numerical ranges after the Correction should be considered to be within the scope of the matters stated in the detailed explanation of the invention in the Description, and the Correction cannot be considered to introduce a new technical matter.

C. The plaintiff alleges that it is clear from the statements in the Description that a combination of the numerical ranges of sugar content, sugar acid ratio, and the content of glutamic acid, etc. after the Correction does not produce the effect of the Inventions.

However, the aforementioned matter alleged by the plaintiff should be questioned in terms of the description requirements for the scope of claims (Article 36, paragraph (6) of the Patent Act) and does not affect the determination mentioned in (2) above.

(4) Summary

Therefore, the Correction should be considered to correspond to the purpose set forth in Article 134-2, paragraph (1), item (i) of the Patent Act and comply with the provisions of Article 126, paragraphs (5) and (6) of said Act, as applied mutatis mutandis pursuant to Article 134-2, paragraph (9) of said Act.

2. Regarding Ground for Rescission 3 (error in the determination concerning fulfillment of the

support requirements)

(1) The plaintiff alleges that the statement of the scope of claims pertaining to the Inventions does not fulfill the support requirements for the description set forth in Article 36, paragraph (6), item (i) of the Patent Act. However, whether the statement of the scope of claims fulfills the support requirements for the description should be determined by considering whether the invention stated in the scope of claims is the invention stated in the detailed explanation of the invention and is within the scope in which a person ordinarily skilled in the art can recognize that the invention can solve the problem based on the statement of the detailed explanation of the invention through comparison between the statement of the scope of claims and that of the detailed explanation of the invention, as well as whether the invention stated in the scope of claims is within the scope in which a person ordinarily skilled in the art can recognize that the invention can solve the problem in light of the common general technical knowledge as of the filing date without the statement and suggestion of the detailed explanation of the invention. It is reasonable to understand that the patentee bears the burden of proof in relation to the fulfillment of the support requirements for the description (see the judgment of the Intellectual Property High Court of November 11, 2005, 2005 (Gyo-Ke) 10042, *Hanrei Jihō*, No. 1911, at 48).

This case is considered below from the aforementioned perspective.

(2) Regarding the statement of the scope of claims in the Description

A tomato drink that is characterized in that sugar content, sugar acid ratio, and content of glutamic acid, etc. are set to be within certain numerical ranges is stated in Claim 1 pertaining to Invention 1. Claim 1 is cited in all of Claims 2 to 7 in the scope of claims pertaining to Inventions 2 to 7.

A tomato drink that is characterized in that sugar content, sugar acid ratio, and content of glutamic acid, etc. are adjusted to be within certain numerical ranges by mixing at least tomato paste and clear tomato juice is stated in Claim 8 pertaining to Invention 8. Claim 8 is cited in both Claims 9 and 10 in the scope of claims pertaining to Inventions 9 and 10.

An acid taste reduction method for a tomato drink that is characterized in that sugar content, sugar acid ratio, and content of glutamic acid, etc. are adjusted to be within certain numerical ranges by mixing at least tomato paste and clear tomato juice is stated in Claim 11 pertaining to Invention 11.

All the numerical ranges of sugar content, sugar acid ratio, and content of glutamic acid, etc. stated in Claims 1, 8 and 11 are from 9.4 to 10.0, from 19.0 to 30.0, and from 0.36 to 0.42 weight percent, respectively.

(3) Regarding the statement of the detailed explanation of the invention in the Description

According to the statements in the Description as determined in 1.(1) above, the following

content is recognized as being stated in the detailed explanation of the invention in the Description.

There was the following problem: Conventional tomato juice designated by the JAS Standard is of high viscosity and is hard to drink; a drink to which fruit juice and vegetable juice are mixed to reduce viscosity and hide the acid taste of tomatoes lacks appeal to consumers as a tomato drink; and a low-viscosity tomato juice whose texture is improved is also not easy to drink for those who do not like the acid taste of tomatoes ([0002] to [0004], [0006], and [0007]). In consideration of the existence of such problem in prior art, the inventors aimed at providing a new tomato drink that has a thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste without mixing fruit juice and vegetable juice other than tomato juice, which is the main raw material, and a production method thereof, and an acid taste reduction method for a tomato drink ([0008]) and finally found a tomato drink whose sugar content, sugar acid ratio, and content of glutamic acid, etc. are within the numerical ranges as stated in Claims 1, 8, and 11 in the scope of claims, and a production method thereof, and an acid taste reduction method for a tomato drink ([0009] to [0011], [0018], [0022], [0026], and [0030]).

The details of the mechanism for producing this effect are as yet unknown, but a considerable increase in viscosity can be restrained by defining sugar content and sugar acid ratio, and the acid taste of tomatoes can be hidden by the sweetness of tomatoes by adjusting sugar acid ratio. Therefore, the acid taste of the obtained tomato drink can be reduced, and the original sweetness of tomatoes stands out, thereby making the drink more drinkable. It is presumed that a combination of these functions makes the tomato juice be one that has a thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste ([0041]). In addition, the acidic taste of tomatoes is reduced by defining the content of glutamic acid, etc. without excessively degrading the taste (flavorfulness) of the tomato drink, while the original sweetness of tomatoes tends to stand out even more ([0043]).

In the flavor evaluation tests indicating that Working Examples 1 to 3, which are tomato drinks within the numerical ranges of the sugar content, sugar acid ratio, and content of glutamic acid, etc. of the Inventions, solve the problem of the Inventions in comparison with Comparison Examples 1 and 2 in which any or all of sugar content, sugar acid ratio, and content of glutamic acid, etc. are not within the numerical ranges of the Inventions, [i] sugar acid ratio was calculated after measuring the sugar content and acidity of the prepared tomato drinks, and furthermore, the content of glutamic acid, etc. and viscosity were measured, [ii] 12 panelists evaluated the flavors of each tomato drink in terms of "acid taste," "sweetness," and "thickness" on a scale of one to seven, specifically, "Very strong," "Considerably strong," "Slightly strong," "Don't feel it or can't tell," "Slightly weak," "Considerably weak," and "Very weak," [iii] the average of the evaluation points given by the 12 panelists was calculated for each of the flavors,

"acid taste," "sweetness," and "thickness," [iv] the average value for each flavor was summed up after reversing positive points for acid taste to negative and vice versa, and [v] Working Examples 1 to 3, for which the total value was 2.5, 3.2, and 3.9, respectively, were determined to have produced an excellent result while Comparison Examples 1 and 2, for which the total value was 2.2 and 2.0, respectively, were determined not to have produced an excellent result ([0083] to [0090] and [Table 1]).

(4) Comparison between the invention stated in the detailed explanation of the invention and the invention stated in the scope of claims

A. As instructed in (1) above, in order to obtain a patent for an invention stated in the scope of claims, the detailed explanation of the invention needs to be stated in a way that a person ordinarily skilled in the art can recognize that the invention can solve the problem. The constituent feature of the Inventions is a matter determined by the numerical ranges of three technical parameters that indicate characteristic values as mentioned in (2) above. That is, the Inventions are what is called "parameter inventions." With such invention, it is appropriate to construe that the statements in the scope of claims are deemed to fulfill the support requirements for the description when [i] the detailed explanation of the invention is stated to an extent that a person ordinarily skilled in the art can understand the technological significance of the relationship between the achieved effects (performance) and the numerical ranges of parameters, without the disclosure of specific examples, at the time of filing of the patent application, or [ii] specific examples are disclosed and stated to an extent that a person ordinarily skilled in the art can recognize that the desired effects (performance) can be achieved within the numerical ranges of parameters, in light of common technical knowledge at the time of filing of the patent application (see the judgment of the Intellectual Property High Court of November 11, 2005, 2005 (Gyo-Ke) 10042, *Hanrei Jiho* No. 1911, at 48).

B. Therefore, the court examines whether the statements in the Description fulfill the above criteria and meet the support requirements for the description in relation to Inventions 1, 8, and 11.

(A) As examined in (3) above, the detailed explanation of the invention in the Description states that the numerical ranges of sugar content, sugar acid ratio, and content of glutamic acid, etc. stated in the descriptions of Inventions 1, 8, and 11 (sugar content is "from 9.4 to 10.0," sugar acid ratio "from 19.0 to 30.0," and the content of glutamic acid, etc. "from 0.36 to 0.42 weight percent") were adopted as a means to provide a new tomato drink that has a thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste, and a production method thereof, and an acid taste reduction method for a tomato drink.

Working Examples 1 to 3, Comparison Examples 1 and 2, and Reference Examples 1 to 10 ([0088] to [0090] and [Table 1]), which should be deemed as specific examples disclosed in the

detailed explanation of the invention in the Description, state that all or part of the components and physical properties of the tomato drinks respectively stated in those working examples, comparison examples, and reference examples (pH, Brix, acidity, sugar acid ratio, acidity/total amino acid, viscosity, total amino acid content, glutamic acid content, aspartic acid content, and citric acid content) were measured and that flavor evaluation tests to examine the "sweetness," "acid taste," and "thickness" of said tomato drinks were conducted.

(B) Generally, the flavor of food and drinks is influenced by many factors that include not only sweetness and acid taste but also saltiness, bitterness, flavorfulness, spiciness, astringency, richness, and aroma, as well as viscosity and other physical textures (Exhibits Ko 3, 4, and 62). Therefore, it was common general technical knowledge as of the Filing Date that the flavor of food and drinks is affected by various components contained in the food and drinks and the physical properties of the food and drinks that have impact on the aforementioned factors. In addition, it was also common general technical knowledge as of the Filing Date that tomato drinks contain various components (see Table 5-196 on page 193 of Exhibit Ko 25). Therefore, it is found that a person ordinarily skilled in the art would normally consider that components and physical properties other than those measured in the flavor evaluation tests stated in the detailed explanation of the invention in the Description would also influence the flavor of the tomato drinks of the Inventions. Accordingly, when carrying out a flavor evaluation test for "sweetness," "acid taste," and "thickness" to measure the relationship between the flavor and the numerical ranges of said three factors, using varied sugar content, sugar acid ratio, and content of glutamic acid, etc., at least either of the following methods needs to be taken: [i] if the flavors of "sweetness," "acid taste," and "thickness" are recognizably affected only by said three factors or when there are other factors that have impact on these flavors but there is no need to standardize their conditions, explanation to such effect is to be given from a technical perspective before carrying out the flavor evaluation test using varied figures for said three factors; or [ii] if there are other factors that have recognizable impact on the flavors of "sweetness," "acid taste," and "thickness," in addition to said three factors, and it cannot be said that there is no need to standardize their conditions, said other factors are to be standardized at a certain value before carrying out the flavor evaluation test using varied figures for said three factors.

As mentioned in (3) above, the detailed explanation of the invention in the Description states that the acid taste of tomatoes can be reduced while maintaining thick and rich taste and sweetness like fruit tomatoes by defining sugar content and sugar acid ratio, although the details of mechanisms for such effects are yet unknown. It also states that, by defining the content of glutamic acid, etc., the acid taste of tomatoes can be reduced without excessively degrading the taste (flavorfulness) of tomato drinks, while the original sweetness of tomatoes tends to stand

out even more. However, it does not include any statement to the effect that the sugar content, sugar acid ratio, and the content of glutamic acid, etc. are the only factors that have recognizable impact on the flavors of "sweetness," "acid taste," and "thickness." It is also not stated that conditions concerning components and physical properties other than the sugar content, sugar acid ratio, and the content of glutamic acid, etc. are standardized among the working examples, comparison examples, and reference examples, nor is it stated that such components and physical properties have no recognizable impact on the flavors of "sweetness," "acid taste," and "thickness" or that they have such impact but there is no need to standardize their conditions. As such, it cannot be said that a person ordinarily skilled in the art can understand that it only requires the definition of the ranges of sugar content, sugar acid ratio, and the content of glutamic acid, etc. to obtain thick and rich flavor with sweetness like fruit tomatoes and less acidic tomato taste, and that there is no need to specify other components and physical properties. It cannot also be said that a person ordinarily skilled in the art can immediately understand the technical significance of the relationship between the ranges defined for sugar content, sugar acid ratio, and the content of glutamic acid, etc., and the achieved effects, namely the thick and rich flavor with sweetness like fruit tomatoes and less acidic tomato taste, from the results of the flavor evaluation tests stated in the detailed explanation of the invention in the Description.

(C) The method for the flavor evaluation tests stated in the detailed explanation of the invention in the Description is as stated in (3) above. The criteria for zero points, "Don't feel it or can't tell," can be defined by showing a standard tomato juice; however, it is not stated whether any step was taken to have the panelists share the standards to raise the evaluation by one point regarding the flavors of "sweetness," "acid taste," and "thickness", nor are the points given by individual panelists provided specifically. Therefore, it cannot be denied that there is a possibility that some panelists could have raised or reduced points significantly for only minor changes in the flavor, while others could have raised or reduced fewer points even for larger changes in the flavor. It is difficult to find that the flavors were evaluated objectively and accurately simply because the average evaluation points among all panelists are provided for each drink. Moreover, since "sweetness," "acid taste," and "thickness" are different flavors, some kind of evaluation criteria needs to be provided in order to equally capture changes in each flavor and ranges of point addition and reduction. However, there is no statement to the effect that such step was taken. Then, it is found that a person ordinarily skilled in the art would not be able to estimate that it was reasonable to use the flavor evaluation method mentioned in (3) above that generally evaluates the flavors of "sweetness," "acid taste," and "thickness" by simply summing up the average evaluation points given by the panelists for each flavor, assuming that each of these three flavors makes an equal level of contribution to the solution of

the problem of the Inventions.

According to the findings mentioned above, it cannot be said that a person ordinarily skilled in the art can understand that the thick and rich flavor with sweetness like fruit tomatoes and less acidic tomato taste was actually obtained in relation to tomato drinks in Working Examples 1 to 3 based on these flavor evaluation tests.

(D) If the sugar content and the content of glutamic acid, etc. were set at "9.4" and "0.42," respectively, in accordance with Working Example 1 described in [Table 1] in [0090] in the detailed explanation of the invention in the Description, and the sugar acid ratio was set at the minimum value stated in the scope of claims in question, namely "19.0," the acidity would be "approximately 0.49." Therefore, it is likely that the evaluation point for acid taste for this case would be lower than that for Working Example 1 (acidity is approximately 0.34). If the evaluation point for acid taste becomes "-0.6," the total evaluation points would be "2.4," as the evaluation points for sweetness and thickness are "0.8" and "1.0," respectively (evaluation for Working Example 1). If the evaluation point for acid taste becomes "-0.5," the total evaluation points would be "2.3"; if the evaluation point for acid taste becomes "-0.4," the total evaluation points would be "2.2." However, it is unclear whether such evaluation points show the effect of the Inventions in overall evaluations (the total evaluation points for Reference Example 1 stated in [Table 1] in [0090] in the detailed explanation of the invention in the Description are "2.4" and it is given "Bad" for the overall evaluation).

(E) Therefore, it is not found that a person ordinarily skilled in the art can understand from the statement of the detailed explanation of the invention in the Description that it is proven that the thick and rich flavor with sweetness like fruit tomatoes and less acidic tomato taste can be obtained because the sugar content, sugar acid ratio, and content of glutamic acid, etc. fall within the numerical ranges of the Inventions, even when the technical knowledge as of the Filing Date is taken into account. Thus, it cannot be said that the statements in Claims 1, 8, and 11 in the scope of claims in the Description meet the support requirements for the description.

(5) Regarding the allegations of the defendant

A. The defendant makes allegations (A) to (C) below in relation to the aforementioned determination.

(A) The detailed explanation of the invention in the Description states specific working examples that correspond to the numerical ranges of the Inventions as Working Examples 1 to 3. The specific examples are stated to the extent that a person ordinarily skilled in the art can recognize that the Inventions can solve the problem stated in the detailed explanation of the invention in the Description if the numerical values are within the numerical ranges of the Inventions in consideration of the numerical values of Working Examples 1 to 3 and Comparison Examples 1 and 2 in light of the common general technical knowledge as of the

Filing Date, in addition to these statements. Therefore, it is clear that the content disclosed in the detailed explanation of the invention can be enlarged or generalized within the numerical ranges of the Inventions.

(B) The Inventions are based on the finding that it is important to make sugar content, sugar acid ratio, and content of glutamic acid, etc. be within prescribed numerical ranges in order to produce the effect of making a tomato drink have the flavor stated in the detailed explanation of the invention in the Description. The Inventions do not state that the achievement of said effect is not influenced by any other factors. In addition, in patent practice in the food field, it is not that the problem of a patented invention can be solved only if all of a wide variety of conditions, such as temperature and viscosity, are individually specified. Therefore, there is no reason for setting a wide variety of conditions, such as temperature and viscosity, as the matters to specify the Inventions.

(C) The common general technical knowledge must also be taken into account in interpreting the scope of claims. Taking into account that the Inventions are intended to obtain a tomato drink that has a certain flavor, it is natural as the common general technical knowledge of a person ordinarily skilled in the art that the viscosity of the tomato drink is within the range that generally makes a drink be a tomato drink, and all degrees of viscosity are not included.

B. Regarding (A) above

As held in (4) above, the allegation mentioned in (A) above is unacceptable.

C. Regarding (B) above

In order to understand that the Inventions are based on the finding that it is important to make sugar content, sugar acid ratio, and content of glutamic acid, etc. be within prescribed numerical ranges in order to produce the effect of the Inventions, the detailed explanation of the invention in the Description needs to contain at least a statement sufficient to understand the existence or absence of other components and physical properties that have recognizable impact on the flavors of "sweetness," "acid taste," and "thickness," which were examined in the flavor evaluation tests, as held in (4) above. In addition, even if there are the cases where the problem of a patented invention can be solved even without individually specifying all of a wide variety of conditions in patent practice in the food field, it is at least necessary, as held in (4) above, that the detailed explanation of the invention in the Description contains a statement sufficient to understand that there is no component or physical property that has recognizable impact on the flavors of "sweetness," "acid taste," and "thickness," which are the evaluated flavors, or that even if there is such component or physical property, there is no need to standardize the conditions for them in flavor evaluation tests, or a statement to the effect that flavor evaluation tests were conducted after standardizing them at a certain value, in order to say that the effect of the Inventions is produced with sugar content, sugar acid ratio, and content of glutamic acid, etc.

within prescribed numerical ranges, which are the matters to specify the Inventions.

However, there is no statement as mentioned above, as held in (4) above.

D. Regarding (C) above

As the Inventions relate to a tomato drink, the viscosity thereof is ordinarily within the range that generally makes a drink be a tomato drink, and all degrees of viscosity are not included. Then, the detailed explanation of the invention in the Description contains a statement that "For the tomato drink of this embodiment, viscosity is preferably adjusted from 350 to 1,000 cP, more preferably, from 350 to 600 cP" ([0056]). Therefore, it can be said that a person ordinarily skilled in the art can understand the range of possible viscosity of the tomato drinks of the Inventions.

However, although viscosity can also be considered to affect flavors as held in (4) above, the detailed explanation of the invention in the Description neither states that viscosity has no recognizable impact on the flavors of "sweetness," "acid taste," and "thickness" within the range of possible viscosity of the tomato drinks of the Inventions nor states that there is no need to standardize the conditions in flavor evaluation tests, nor describes flavor evaluation tests conducted uniformly at a certain viscosity.

Therefore, even on the premise that viscosity is within the range that generally makes a drink be a tomato drink, it cannot be said that a person ordinarily skilled in the art can understand the technical significance of the relationship between the range defined in relation to sugar content, sugar acid ratio and content of glutamic acid, etc. and the thick and rich flavor with sweetness like fruit tomatoes and a less acidic tomato taste, which should be considered to be the achieved effect, from the statement of the detailed explanation of the invention in the Description.

(6) Regarding Inventions 2 to 7, 9, and 10

A. Claim 1 is cited in all of Claims 2 to 7 pertaining to Inventions 2 to 7 in the scope of claims after the Correction. The "tomato drink" of Invention 1 is further specified by the point that "viscosity is from 350 to 1,000 cP" in Invention 2, by the point that "total content of fruit juice and vegetable juice other than tomato juice is from 0.0 to 5.0 weight percent" in Invention 3, by the point that the tomato drink "contains at least tomato paste (A) and clear tomato juice (B)" in Invention 4, by the point that the tomato drink "contains soda (C)" in Invention 5, by the point that the tomato drink "contains at least tomato paste (A), clear tomato juice (B), and deacidified tomato juice (D)" in Invention 6, and by the point that "pH is from 4.4 to 4.8" in Invention 7.

As mentioned above, Inventions 2 to 7 cite Claim 1; therefore, according to the holding in (4) above, a person ordinarily skilled in the art cannot understand from the statement of the detailed explanation of the invention in the Description that the effect of the Inventions can be achieved by the tomato drinks of Inventions 2 to 7.

Consequently, it should be said that the statements in Claims 2 to 7 in the scope of claims in the Description cannot be considered to fulfill the support requirements for the description.

B. Claim 8 is cited in both Claims 9 and 10 pertaining to Inventions 9 and 10 in the scope of claims after the Correction. The "production method for a tomato drink" of Invention 8 is further specified by the point that "said sugar content and sugar acid ratio are adjusted by mixing at least soda (C)" in Invention 9 and by the point that "said sugar content and sugar acid ratio are adjusted by mixing at least tomato paste (A), clear tomato juice (B), and deacidified tomato juice (D)" in Invention 10.

As mentioned above, Inventions 9 and 10 cite Claim 8; therefore, according to the holding in (4) above, a person ordinarily skilled in the art cannot understand from the statement of the detailed explanation of the invention in the Description that the tomato drinks produced by Inventions 9 and 10 produce the effect of the Inventions.

Consequently, it should be said that the statements in Claims 9 and 10 in the scope of claims in the Description cannot be considered to fulfill the support requirements for the description.

(7) Summary

Therefore, it cannot be said that the statements in Claims 1 to 11 in the scope of claims in the Description fulfill the support requirements for the description.

No. 6 Conclusion

On these bases, there is a reason for the plaintiff's claim. Therefore, the JPO decision shall be rescinded, and the judgment shall be rendered in the form of the main text.

Intellectual Property High Court, Second Division

Presiding judge: MORI Yoshiyuki

Judge: KATAOKA Sanae

Judge: FURUSHOU Ken