

BEVERAGE COMPOSITION CONTAINING PERSIMMON VINEGAR

BACKGROUND OF THE INVENTION

1. Field of the invention

The present invention relates to a beverage.

2. Background Art

Vinegar was first prepared by accidental conversion of wine during its storage and is one of the first seasoning materials prepared and used by man. Therefore, it can be considered that vinegar has a history from ancient times like wine which may be regarded as the origin of vinegar.

Traditionally, vinegar has been widely used for the purpose of sterilization, health and beauty as well as seasoning. For example, Hippocrates, considered the father of western medical science, suggested that vinegar be used for sterilizing the wound site after blood sucking therapy. It is also known that in the age of the Roman Empire, many nobles, including Cleopatra, had frequently taken vinegar for health and beauty. In addition, foods preserved with vinegar and stored for long periods, have served as an

important source of nutritional elements for man.

Therefore, it is considered that vinegar has played an important role in ancient diets.

In Korea, it is believed that vinegar has been used since the Shilla period. However, in view of the fact that old Chinese books have recorded the use of vinegar in a cooking method of tangle in the Koryo period and a book on Chinese medicine during the Koryo period has recorded the use of vinegar for the purpose of medicine, it is presumed that vinegar has been practically and widely used for the purpose of food and medicine since the age of Koryo.

Vinegar has some useful physiological effects. Firstly, organic acids present in vinegar, for example, citric acid, acetic acid, etc., decompose lactic acid, the originator of fatigue, to water and carbon dioxide through the citric acid pathway and therefore, vinegar stimulates the relief of fatigue. Secondly, vinegar makes the muscle more smooth. Thirdly, vinegar stabilizes blood pressure and prevents arteriosclerosis. Fourthly, vinegar stimulates the consumption of nutritional substances in a living body to induce the decomposition of excessive sugar and glycogen.

In addition, vinegar promotes digestion of food, improves the state of constipation and helps the production of bile juice and adrenocortical hormones. Such actions of vinegar are closely related to diabetes mellitus. Further, vinegar increases the affinity of hemoglobin for oxygen and is also effective in the secretion of waste materials in the body, maintenance of weak alkaline physical constitution and beauty of skin.

Vinegar mainly comprises at least 60 kinds of organic acids including acetic acid, citric acid, succinic acid, tartaric acid, etc. In Table 1, other general constituents of typical vinegars are described [see, table of food constituents, the Training Institute of Improvement of Rural nutrition, the Office of Rural Development, 1991].

Table 1. General constituents of vinegar

Kinds Constituents	Brewed vinegar	Apple vinegar	Rice vinegar
Water (%)	92.2	92.1	89.6
Protein (%)	0.2	0.1	0.2
Fat (%)	0	0	0
Carbohydrate (%)	0.3	2.6	5.0
Ashes (%)	0.1	0.2	0.7
Ca (mg)	-	2	2
P (mg)	-	6	4
Na (mg)	5	50	290
K (mg)	74	55	6

Additionally, many people frequently drink high-grade vinegar such as persimmon vinegar, whole-rice vinegar, grape vinegar, etc., as a health food. Particularly, persimmon vinegar is one of the health foods, which is prepared by spontaneous aging of pollution-free natural persimmon and fermentation for one year or more, and is largely used for the prevention of diseases in adults. Since persimmon vinegar is abundant in minerals and various organic acids peculiar to fruit vinegar and contains a large quantity of vitamins and tannin components originated from persimmon, it is more advantageous to health.

Although vinegar has been regarded as being useful for health, as mentioned

above, it could not be used for purposes than the seasoning of food, for example, as the drinking beverage, due to its excessively strong taste and flavour.

Thus, the present inventors have wished to develop a beverage composition of vinegar suitable for people's taste so that vinegar useful for health can be largely and frequently taken. As a result, the inventors have invented a beverage composition containing vinegar which is suitable for drinking. Considering that the kinds and amounts of supplements added to the beverage composition vary depending on the kind of vinegar used therein, the present invention uses persimmon vinegar which is particularly useful for the human body.

Accordingly, the invention provides a functional health beverage composition containing persimmon vinegar.

The invention further provides a beverage composition containing persimmon vinegar, a sweetening agent and a souring agent.

The invention still further provides a beverage composition containing 0.5 to 8.0% by weight of persimmon vinegar; 10 to 20% by weight of one or more

sweetening agent selected from the group consisting of high fructose corn syrup, crystalline fructose, sugar, oligosaccharide glucose, honey and starch syrup; and 0.01 to 1% by weight of one or more souring agent selected from the group consisting of anhydrous citric acid, hydrated citric acid and vitamin C, with respect to the total weight of the composition.

The foregoing has outlined some of the more pertinent features of the present invention. These features should be construed to be merely illustrative of some of the more pertinent features and applications of the invention. Many other beneficial results can be obtained by applying the disclosed invention in a different manner or modifying the invention within the scope of the disclosure. Accordingly, other features and a more thorough understanding of the invention may be obtained by referring to the disclosure of invention, in addition to the scope of the invention defined by the claims.

DISCLOSURE OF INVENTION

The present invention relates to a functional health beverage composition containing persimmon vinegar.

In the composition of the present invention, the suitable amount of persimmon vinegar is 0.5 to 8.0% by weight, preferably 2.0 to 5.0% by weight, with respect to the total weight of the composition.

If the amount of persimmon vinegar is lower than 0.5% by weight, the taste and flavour unique to persimmon vinegar cannot be obtained, and if persimmon vinegar is in excess of 8.0% by weight, the beverage composition is difficult to drink due to an excessively strong sour taste and pungency.

The composition of the present invention additionally contains a sweetening agent. For this purpose, one or more sweetening agent selected from the group consisting of high fructose corn syrup, crystalline fructose, sugar, oligosaccharide, glucose, honey and starch syrup can be used in a suitable amount. Although the amount of sweetening agent can be selected depending on individual taste, it is generally suitable to add the sweetening agent in an amount of 10 to 20% by weight, preferably 12 to 15% by weight, with respect to the total weight of the composition.

In addition, the beverage composition of the present invention contains a suitable edible souring agent. For this purpose, one or more souring agent selected from anhydrous citric acid, hydrated citric acid and ascorbic acid

(vitamin C) can be preferably used in a suitable amount although any other edible souring agent may be used. Although the amount of souring agent can be selected depending on individual taste, it is generally suitable to add the souring agent in an amount of 0.01 to 1% by weight, preferably 0.04 to 0.2% by weight, with respect to the total weight of the composition.

In the composition of the present invention, if necessary, any other vinegar component, for example, one or more vinegars selected from the group consisting of rice vinegar, grape vinegar, apple vinegar, whole-rice vinegar, malt vinegar and vinegar made from residue left after wine is drained, can be additionally combined. Further, any edible additives conventionally used in the beverage composition can also be added to the composition of the present invention.

The beverage composition of persimmon vinegar as combined above can be manufactured in the product form according to a conventional manner, for example, by sterilization at high temperature, filling in a suitable container, sealing and then cooling.

The present invention will be more specifically illustrated by the following examples. However, it should be understood that the technical scope of the

present invention is not limited to these examples in any manner.

Preparation Example: Preparation of persimmon vinegar

Persimmon was washed with water, and then fresh persimmon having no bruise was selected. Selected persimmon was filled in a fermenter and then allowed to spontaneously ferment for 6 months or more under natural conditions. Then, the fermented persimmon was filtered to obtain the filtrate, which was then subjected to second fermentation and aging under natural conditions for 6 months or more to obtain the desired persimmon vinegar. The obtained persimmon vinegar was used in the following Examples 1 to 5.

Examples 1 to 5

The components were combined in the ration described in the following Table 2 to prepare 1000ml of the desired composition. Thereafter, the prepared composition of persimmon vinegar was sterilized at 95°C for about 30 seconds by means of a heat exchanger and filled in a 190ml can.

The can was sealed and then cooled down to prepare the finished beverage

composition of persimmon vinegar according to the present invention.

Table 2. Combination ratio of beverage composition (%)

Example No.	Example	Example	Example	Example	Example
Constituent	1	2	3	4	5
Persimmon vinegar	0.5	1.5	3.0	5.0	8.0
Liquid fructose	12.0	12.0	12.0	12.0	12.0
Sodium citrate	0.02	0.02	0.02	0.02	0.02
Vitamin C	0.02	0.02	0.02	0.02	0.02
Anhydrous citric acid	0.10	0.08	0.04	0.02	0.01
Fruit flavour	0.1	0.1	0.1	0.1	0.1
Purified water	87.26	86.28	84.82	82.84	79.85
Total	100	100	100	100	100

Example 6: Sensory Test

To identify the taste of the composition of the present invention the beverage compositions prepared in Examples 1 to 5 above were subjected to a sensory test with 25 trained examiners, according to a five scored measuring method

under the standard described in Table 3. The results are described in Table 4.

Table 3. Standard of sensory test

	Estimated Result
5	Very good (Very strong)
4	Good (Strong)
3	Ordinary (Suitable)
2	Bad (Weak)
1	Very bad (Very weak)

Table 4. Result of sensory test

	Whole taste	Strength of souring taste	Preference of souring taste
Example 1	3.9	3.0	4.0
Example 2	4.1	3.3	4.4
Example 3	4.2	3.7	4.6
Example 4	4.0	3.9	4.3
Example 5	3.0	4.2	3.9

As can be seen from the result described in Table 4, the composition of the present invention is good in view of whole taste and preference of souring taste, and the strength of souring taste is strong in proportion to the amount of vinegar.

Example 7: Assay for functionality of the beverage composition containing persimmon vinegar

The functionality of the beverage composition containing persimmon vinegar according to the present invention was examined with the composition prepared in Example 3 above. In this test, a commercial ionic beverage (sugar 4.0483%, isomaltoligosaccharide 3%, glucose 2%, anhydrous citric acid 0.24%, sodium citrate 0.075%, vitamin C 0.05%, sodium chloride 0.062%, potassium chloride 0.04%, magnesium chloride 0.006%, calcium lactate 0.018%, fruit flavour 0.1%, purified water 90.3607%) was used as the control. For the test, each of the beverage compositions of Example 3 and the control commercial ionic beverage was administered to eight university sportsmen in an amount of 190ml before 30 minutes from the beginning of exercise and just after exercise, respectively, and then the blood concentration of lactic acid and hematocrit value were measured before exercise and after submaximum exercise 75% (the exercise which shows 75% oxygen absorption with respect to the maximum oxygen absorption as previously measured). Table 5 describes a recovery rate calculated from the blood concentration of lactic before and after exercise using the following equation, and Table 6 describes a change of hematocrit value in blood of veins under the stabilization and recovery stage after maximum exercise.

$$\text{Recovery rate(\%)} = (B-C)/(B-A) \times 100$$

In the above equation, A denotes the blood lactic acid concentration under stabilization, B denotes the blood lactic acid concentration at submaximum exercise 75%, and C denotes the blood lactic acid concentration at recovery stage.

Table 5. Recovery rate of blood lactic acid concentration under recovery stage after submaximum exercise.

Type of beverage	15 min. recovery	30 min. recovery	60 min. recovery
Control	52.98	50.10	50.91
Example 3	62.77	60.71	62.26
F value	1.21	2.98	3.14

Table 6. Change of hematocrit value in venous blood during recovery stage under stabilization and submaximum exercise

Type of beverage	Stabilization	Just after exercise	30 min. recovery	60 min. recovery
Control	44.63	46.50	44.13	44.13
Example 3	45.25	47.13	44.75	45.38
F value	0.54	0.39	0.29	0.87

As can be seen from the result described in Table 5, the beverage composition of Example 3 exhibits a higher recovery rate of blood concentration of lactic acid, which is a factor of fatigue, than that of the

control group to which the commercial ionic beverage was administered, throughout the recovery stage. Accordingly, it can be identified that the recovery effect from fatigue of the beverage composition containing persimmon vinegar according to Example 3 is superior to that of the control group. In addition, the change of hematocrit value with the composition of Example 3 is not significantly different from that of the control group. Therefore, it is determined that there is no difference between the water absorption degrees of the composition of the present invention and the commercial ionic beverage in the body.

From the results obtained in the above examples, it can be anticipated that the beverage composition containing persimmon vinegar according to the present invention is very useful as a natural health beverage.

WHAT IS CLAIMED IS :

1. A beverage composition containing 0.5 to 8.0% by weight of persimmon vinegar; 10 to 20% by weight of one or more sweetening agent selected from the group consisting of high fructose corn syrup, crystalline fructose, sugar, oligosaccharide, glucose, honey and starch syrup; and 0.01 to 1% by weight of one or more souring agent selected from the group consisting of anhydrous citric acid, hydrated citric acid and vitamin C, with respect to the total weight of the composition.
2. The beverage composition as defined in claim 1, which contains 2.0 to 5.0% by weight of persimmon vinegar, 12 to 15% by weight of the sweetening agent and 0.04 to 0.2% by weight of the souring agent.
3. The beverage composition as defined in claim 1, which contains high fructose corn syrup as the sweetening agent.

