

## Appeal decision

Appeal No. 2018-16824

Appellant                                      SUNSTAR INC.

Patent Attorney                              Saegusa and Partners.

The case of appeal against the Examiner's decision of refusal of Japanese Patent Application No. 22017-98990, entitled "Liquid Food Composition" (the application published on August 10, 2017, Japanese Unexamined Patent Application Publication No. 2017-136095) has resulted in the following appeal decision:

### Conclusion

The appeal of the case was groundless.

### Reason

#### No. 1 History of the procedures

The present application, which is a divisional application filed on May 18, 2017 from Japanese Unexamined Patent Application No. 2013-67285 filed on March 27, 2013 (Priority Date: March 30, 2012), received a notice of reasons for refusal dated May 15, 2018. Then, a written opinion and a written amendment were submitted on July 17, 2018, but an examiner's decision of refusal was issued on November 28, 2018. For this, an appeal against the examiner's decision of refusal was requested on December 18, 2018, but a notice of reasons for refusal was issued on July 31, 2019. Then, a written opinion and a written amendment were submitted on October 4, 2019.

#### No. 2 The Invention

The invention claimed in Claim 1 of the present application is specified by matters recited in Claim 1 of the Scope of Claims, which has been amended by the procedures of amendment dated October 4, 2019 as follows:

"[Claim 1]

A liquid food composition comprising fish-derived materials including citronellol and citronellal (except for a composition containing coconut oil, palm oil, palm kernel oil, linseed oil, camellia oil, brown rice germ oil, rapeseed oil, rice oil, peanut oil, olive oil,

corn oil, wheat germ oil, soybean oil, perilla oil, cottonseed oil, sunflower seed oil, kapok oil, evening primrose oil, shea butter, monkey butter, cocoa butter, mango oil, illipe oil, sesame oil, safflower oil, beef tallow, milk fat, pork fat, or processed fats and oils thereof, or medium chain fatty acid triglyceride (MCT), long chain fatty acid triglyceride, or partial glyceride of fatty acid; a composition containing beeswax, Japan wax, candelilla wax, rice bran wax, carnauba wax, snow wax, shellac wax, or jojoba wax; and a composition containing caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, oleic acid, behenic acid, or esters thereof)" (hereinafter, referred to as "the Invention").

#### No. 3 Reasons for refusal

The reasons for refusal notified by the body dated July 31, 2019 are recognized as follows:

Inventions according to Claims 1 to 7 of the present application could have been easily made by a person who had ordinary skill in the art belonging to the Invention before the priority date, based on the invention disclosed in Document 1 or 2 below that had been distributed in Japan or a foreign country or an invention that had become available to the public through electric communication lines prior to the priority date. Therefore, the patent should not be granted under the provisions of Article 29 (2) of the Patent Act.

#### Note

Publication 1: Japanese Unexamined Patent Application Publication No. 2011-4640

Publication 2: International Publication No. WO 2011/143242 (Cited Document 2 cited in the examiner's decision)

Note that Publication 2 is a document indicating the common general knowledge as of the priority date of the present application.

#### No. 4 Judgment by the body

The body determines that Invention could have been easily invented by a person skilled in the art on the basis of the invention disclosed in Publication 1 and the common general knowledge described in Publication 2, which were distributed in Japan or a foreign country before the priority date of the application, and thus the appellant should not be granted a patent for it independently at the time of patent application

under the provisions of Article 29(2) of the Patent Act.

The reasons are follows:

Publication 1: Japanese Unexamined Patent Application Publication No. 2011-4640

Publication 2: International Publication No. WO 2011/143242

Publication 3: Japanese Unexamined Patent Application Publication No. 6-70746  
(Patent Document 3 described as a prior art document in Publication 1)

Note that Publications 2 and 3 are documents indicating the common general knowledge as of the priority date of the present application.

## 1 Descriptions in cited publications

### (1) Descriptions in Publication 1

Publication 1 distributed before the priority date of the present application describes as follows:

#### (1a) "[Claim 1]

A purification method for a seafood extract comprising the steps of: removing odorous components derived from a fishery product by azeotropic distillation with water; and adding an oily component and a deodorizing substance to mask the odor.

...

#### [Claim 4]

The purification method according to any one of Claims 1 to 3, wherein terpenes are used as the deodorizing substance to be added.

#### [Claim 5]

The purification method according to any one of Claims 1 to 3, wherein a plant essential oil extracted from at least one kind of plant selected from the group consisting of ginger, lemon, orange, lime, perilla, coriander, sage, and clove is used as a deodorizing substance to be added.

#### [Claim 6]

A seafood extract-containing S/O type microcapsule wherein odorous components derived from a fishery product are masked by a deodorizing substance and solid fat.

#### [Claim 7]

A method for producing the S/O type microcapsule according to Claim 6, the method comprising the steps of removing odorous components derived from a fishery product by azeotropic distillation with water and masking an odor by adding an oily component and a deodorizing substance.

[Detailed Description of the Invention]

[Technical field]

[0001]

The present invention relates to a purification method for a seafood extract. More specifically, the present invention relates to a purification method for a seafood extract for the purpose of reducing the odor derived from the fishery product contained in the seafood extract." (underlined by the body, the same applies below.)

(1b) "[0006]

Conventionally, as means for removing or masking these peculiar unpleasant odors, methods such as masking using a flavor and purification by steam distillation have been found. Proposed examples of masking using a flavor include a method in which a fat-soluble ginger flavor is present in an oral product containing a lipid with a highly unsaturated fatty acid (Patent Document 1), a method using a dairy flavor such as yogurt flavor, milk flavor, or fermented milk flavor (Patent Document 2), and a method using processed materials of citrus fruit juices, such as orange, lemon, sudachi, lemon lime, and kabosu, when added to vinegar, and fruit juices, such as apple-F, lemon lime-F, orange oil, and lemon oil (Patent Document 3). Studies have also been conducted on flavor compounds having high masking effects on fishy odors. There is also a report that alcohol-based and aldehyde-based monoterpene flavor compounds exhibit extremely high masking power (Non-patent Document 1). However, these flavor-based methods do not eliminate or reduce the substances causing unpleasant odors. Therefore, even if the masking effect is high at the beginning of adding flavor, the masking effect is deteriorated with time, and there is a problem of the original unpleasant odor returning.

...

[Citation list]

[Patent Literature]

[0008]

...

[Patent literature 3] Japanese Unexamined Patent Application Publication No. 6-70746

(1b) "[Advantage of the Invention]

[0014]

The purified seafood extract obtained by the purification method of the present invention is a product from which most of the odorous components that cause

unpleasant odors are removed by azeotropic distillation, and is subjected to addition of an oily component that prevents residual fish odor from spreading and to masking with a flavor, thereby retaining a masking effect for a long period of time, which has been difficult with the conventional masking and deodorizing methods of seafood extracts, and being able to be used without an unpleasant odor when taken orally. Therefore, the purified seafood extract obtained by the purification method of the present invention can be applied to a wide range of fields and applications, such as foods, functional foods, pharmaceuticals, quasi-pharmaceutical products, and cosmetics.

...

[0019]

A seafood extract as a target of the purification method of the present invention is an extract obtained by extracting a fishery product by a process of hot water extraction, solvent extraction, or supercritical extraction, or a purified or processed product thereof. The type of the fishery product used as a raw material of the seafood extract is not particularly limited and can be appropriately selected according to the target extraction component and functional material. For example, for obtaining an extract containing highly unsaturated fatty acids, such as DHA and EPA, it is preferable to use bonito, tuna, buri, yellow tail, salmon, trout, or cod as a raw material fishery product and particularly preferable to use bonito and tuna. In addition, for obtaining an extract containing anserine, carnosine, and the like, bonito, tuna, salmon, shark, or the like is preferably used as a raw material fishery product, and bonito, tuna, and salmon are particularly preferably used."

(1d) "[0028]

In the purification method of the present invention, as the oily component used together with the deodorizing substance for masking, any oily component in solid or liquid form at room temperature can be used. For carrying out microencapsulation described later, one in solid form at room temperature can be preferably used. As the preferable main component of the oily component, there can be used, for example, fats and oils, such as natural fats from animals and plants, synthetic fats, and processed oils, and, more preferably, one acceptable for foods, cosmetics, or pharmaceuticals.

[0029]

Examples of the oily component that can be used in the purification method of the present invention include oils and fats, waxes, and fatty acids.

[0030]

Examples of the oils and fats may include: vegetable fats and oils, such as palm

oil, palm oil, palm kernel oil, linseed oil, camellia oil, brown rice germ oil, rapeseed oil, rice oil, peanut oil, olive oil, corn oil, wheat germ oil, soybean oil, perilla oil, cottonseed oil, sunflower seed oil, kapok oil, evening primrose oil, shea butter, sal butter, cocoa butter, mango fat, illipe fat, sesame oil, safflower oil, and olive oil; animal fats and oils, such as fish oil, beef fat, milk fat, and lard; and processed fats and oils obtained by subjecting fats and oils to fractionation, hydrogenation, transesterification, and the like. Needless to say, medium-chain fatty acid triglycerides (MCTs), long-chain fatty acid triglycerides, partial glyceride of fatty acid, and the like can also be used. Among these oils and fats, from the viewpoint of being easily available and easily handled in production, it is preferable to use saturated long-chain fatty acid triglycerides, such as tristearin and tripalmitin, natural solid oils and fats, such as cocoa butter and shea butter, liquid oils and fats, such as palm oil, and fractionated oils and fats thereof.

[0031]

The above waxes include, for example, edible waxes, such as beeswax, Japan wax, candelilla wax, rice bran wax, carnauba wax, snow wax, shellac wax, and jojoba wax.

[0032]

The above fatty acids include, for example, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, oleic acid, behenic acid, and esters thereof."

(1e) "[0035]

The deodorizing substance added in the masking step of the purification method of the present invention may be any of those generally used as deodorant components, preferably, for example, terpenes, and especially preferably monoterpene hydrocarbons, monoterpene alcohols, monoterpene aldehydes, and the like.

[0036]

The above monoterpene hydrocarbons include, for example, pinene, sabinene, limonene ocimene, myrcene, cymene, terpinene, ferrandrene, terpinolene, paracimene, himacarene, tricyclene, and cararene.

[0037]

Examples of the monoterpene alcohols include citronellol, linalool, geraniol, terpineol, borneol, menthol, nerolidol, isopulegol, and the like.

[0038]

Examples of the monoterpene aldehydes include, for example, citral and citronellal.

[0039]

Further, in the present invention, as a deodorizing substance, there can also be used a plant essential oil, which is obtained from any of plants, such as ginger, lemon, orange, lime, perilla, coriander, sage, and clove, by any of various extraction methods, such as a solvent extraction method, a steam distillation method, and a supercritical extraction method, as well as fats and oils containing these vegetable essential oils. Incidentally, the above terpenes may be contained as one component in the components of these plant essential oils."

(1f) "[Example 1]

[0047]

A 1000-g aqueous solution of seafood extract (manufactured by Yaizu Suisankagaku Industry Co., Ltd., an anserine content of 3.5% by weight) obtained by desalting, ion-exchange, and condensation after hot water extraction from bonito was boiled for 120 minutes under a reduced pressure condition of 130 kPa at 75°C and subjected to azeotropic distillation with water to remove odorous components, thereby giving 120 g of seafood extract concentrate.

[0048]

GC-MS (manufactured by Agilent Technologies, G2579A) was used to determine the content of the odorous components in the seafood extract before and after the azeotropic treatment to quantify the deodorizing level in the seafood extract due to the azeotropic treatment.

[0049]

(GC-MS analysis conditions)

Column: HP-INNOWax (manufactured by Agilent Technologies) of 60 m (length) and 0.25 mm (inner diameter) and oven conditions: retaining for 2 minutes at 40°C, heating up to 100°C at a rate of 3°C/minute, and then heating up to 240°C at a rate of 5°C/minute, followed by retaining at 240°C for 30 minutes.

[0050]

FIG. 1 shows the GC-MS measurement results of the content of the odorous components (the content of odorous components per anserine weight) in the seafood extract obtained by the azeotropic treatment.

[0051]

As a result of measurement by GC-MS, it was found that odorous components derived from the fishery product, such as trimethylamine, hexanal, and nonanal, can be significantly removed by azeotropically treating the seafood extract.

[0052]

Next, 50 g of a seafood extract concentrate (an anserine content of 28% by weight) after the azeotropic treatment was added to the oily components of 100 g of MCT (manufactured by Riken Vitamin, Actor M-2) and 5.0 g of tetraglycerin-condensed ricinoleic acid ester (manufactured by Riken Vitamin, Poem PR-100), HLB 0.3), followed by emulsification and dispersal with a homogenizer. Subsequently, the prepared emulsion was stirred for 60 minutes under reduced pressure conditions of 13 kPa at 75°C to remove moisture content, thereby giving 130 g of S/O suspension in which a seafood extract was stably dispersed in an oily component. Further, 100 mg of citronellal (manufactured by Wako Pure Chemical Industries, Ltd.) was added to 50 g of the S/O suspension and mixed to give a seafood extract (anserine content 12% by weight) in the form of S/O suspension. The resulting seafood extract had no seafood odor even after storage at room temperature for 2 months or more, and could be orally ingested without feeling unpleasant odor.

...

[Example 6]

[0058]

Eighty grams of the seafood extract concentrate (anserine content of 28% by weight) azeotropically treated by the same method under the same conditions as in Example 1 was added to oily components of 100 g of hydrogenated rapeseed oil (melting point of 65°C) and 5.0 g of tetraglycerin-condensed ricinoleic acid ester (Riken Vitamin, Poem PR-100, HLB0.3), which had been heated to 70°C and melted in advance and then emulsified and dispersed by a homogenizer. Subsequently, the prepared emulsion was stirred for 90 minutes under reduced pressure conditions of 13 kPa at 75°C to remove moisture content, thereby giving 130 g of an S/O suspension in which the seafood extract was stably dispersed in the oily components. Furthermore, 100 mg of lemon oil (FA-6589 manufactured by Riken Perfumery Co., Ltd.) was added to 50 g of the S/O suspension and mixed, followed by addition to 300 mL of an aqueous solution containing gum arabic (0.5% by weight) and decaglycerin monooleate (manufactured by Riken Vitamin Co., Ltd., Poem J-0381V, HLB12) (0.05% by weight), which had been previously heated at 70°C and agitated using a disc turbine blade to prepare an S/O/W emulsion. Subsequently, the S/O/W emulsion was rapidly cooled by addition, in a single addition, to 300 mL of an aqueous solution containing gum arabic (0.5% by weight part) and decaglycerin monooleate (0.05% by weight), which had been previously cooled to 10°C, to solidify the oily components, followed by being subjected to suction filtration and vacuum drying to remove moisture content, thereby giving S/O type microcapsules of 288 μm in average particle size. The content of



anserine in the microcapsules was 18.0% by weight."

(1g) "

評価点数	評価基準
1	魚臭が全く感じられない
2	わずかに魚臭を感じる
3	すぐに魚臭を感じる
4	強い魚臭を感じる
5	強烈で不快な魚臭を感じる

試料				評価										
	脱臭操作	油性成分	消臭物質	パネラー										平均
				①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	
実施例3	○	○	シトロネラル	1	3	3	1	2	2	1	3	1	1	1.8
実施例4	○	○	リナロール	2	2	3	2	1	1	2	2	1	2	1.8
実施例5	○	○	ジンジャーフレーバー	1	1	1	1	1	1	2	1	1	1	1.1
実施例6	○	○	レモンオイル	1	1	1	1	2	2	1	1	1	1	1.2
比較例1	○	○	—	4	4	3	2	4	3	2	3	3	3	3.1
比較例2	○	—	—	5	3	3	4	3	2	5	5	3	5	3.8

評価点数

Evaluation score

評価基準

Evaluation criteria

魚臭が全く感じられない No perceptible fishy smell at all

わずかに魚臭を感じる Slight fishy smell

すぐに魚臭を感じる Immediately smells fishy

強い魚臭を感じる Strong fishy smell

強烈で不快な魚臭を感じる Strong and unpleasant fishy smell

試料 Sample

評価 Evaluation

脱臭操作 Deodorization operation

油性成分 Oily component

消臭物質 Deodorizing substance

パネラー Panelist

シトロネラル Citronellal

リナロール Linalool

ジンジャーフレーバー Ginger flavor

レモンオイル Lemon oil

平均 Average

実施例 Example

比較例 Comparative example

" ([Table 1] [Table 2])

## (2) Descriptions in Publication 2

Publication 2 distributed before the priority date of the present application describes as follows:

represented by translation

### (2a) "Technical field

[0001] This disclosure relates to perfume and flavorant formulations (hereinafter jointly referred to as fragrant formulations). More specifically, the present invention is directed to fragrant formulations, which employ alkyl ketal esters as solvents, co-solvents, or fixatives.

### Background of the Invention

[0002] Flavor is the sensory impression of a food or of another substance and is determined mainly by the chemical senses of taste and smell. The 'trigeminal senses,' which detect chemical irritants in the mouth and throat as well as temperature and texture, are important to the overall Gestalt of flavor perception. The flavor of a food can be altered with natural or artificial flavorants, which affect these senses. Flavor compounds are sold to the food and beverage industries for use in consumer products such as prepared foods, beverages, dairy, food, and confectionery products.

[0003] Flavorants are defined as substances that give another substance flavor, altering the characteristics of the solute, causing it to become sweet, sour, tangy, or the like. Of the three chemical senses, smell is the main determinant of a foods flavor. While the taste of food is limited to sweet, sour, bitter, salty, and savory (umami) - the basic tastes - the smells of a food are potentially limitless. A food's flavor, therefore, can be easily altered by changing its smell while keeping its taste similar. Nowhere is this better exemplified than in artificially flavored jellies, soft drinks, and candies, which, while made of bases with similar tastes, have dramatically different flavors due to the use of different scents or fragrances. The flavorings of commercially produced food products are generally created by flavorists.

[0004] Although the terms 'flavoring' and 'flavorant' in common language denote the combined chemical sensations of taste and smell, the same terms are usually used in the fragrance and flavors industry to refer to edible chemicals and extracts that alter the flavor of food and food products through the sense of smell. Due to the high cost or unavailability of natural flavor extracts, most commercial flavorants are nature-identical, which means that they are the chemical equivalent of natural flavors but are chemically

synthesized rather than being extracted from the source materials. Flavorants are added to beverages, food items, and health care products (e.g., toothpaste, mouthwash, and the like) in much the same manner and for some of the same reasons as perfumes are added to solid substrates or to gases, or to enhance odor or camouflage malodors.

[0005] Fragrant formulations are added to a variety of products to deliver an odor. For example, these fragrant formulations are often added to consumer products to deliver a fresh (or clean) odor to targeted substrates (such as textiles, hard surfaces, skin, hair, and the like) and to provide an olfactory aesthetic benefit. They are often added to gases and industrial products to camouflage malodors (e.g., air fresheners, candles) or added to odorless gases to facilitate detection (e.g., methane and carbon monoxide)."

(2b) "[0064] Naturally occurring fragrant molecules include 'essential' oils derived from plants. Essential oils are concentrated, hydrophobic liquids containing volatile fragrant molecules from plants. Essential oils are also known as volatile, ethereal oils or aetherolea, or simply as the 'oil of the plant from which they were extracted', such as, for example, oil of clove. An oil is 'essential' in the sense that it carries a distinctive scent, or essence, of the plant. Essential oils do not have any specific chemical properties in common, beyond conveying characteristic fragrances. Some essential oils such as lavender, peppermint, and eucalyptus are steam distilled. Raw plant material, comprising flowers, leaves, wood, bark, roots, seeds, or peel, are put into a distillation apparatus over water. As the water is heated the steam passes through the plant material, vaporizing the volatile compounds. The vapors flow through a coil where they condense back to liquid, which is then collected in the receiving vessel.

[0065] Essential oils are derived from berries, allspice, juniper, seeds, almond, anise, celery, cumin, nutmeg oil, bark, cassia, cinnamon, sassafras, wood, camphor, cedar, rosewood, sandalwood, agarwood, rhizome, galangal, ginger, leaves, basil, bay leaf, cinnamon, common sage, eucalyptus, lemon grass, melaleuca, oregano, patchouli, peppermint, pine, rosemary, spearmint, tea tree, thyme, wintergreen, resin, frankincense, myrrh, flowers, cannabis, chamomile, clary sage, clove, scented geranium, hops, hyssop, jasmine, lavender, manuka, marjoram, rose, rosemary, basil, lemon grass, ylang-ylang, peel, bergamot, grapefruit, lemon, lime, orange, tangerine, root, valerian, mango, or the like, or a combination comprising at least one of the foregoing.

[0066] Examples of fragrant molecules are alcohols (e.g., furaneol (strawberry), 1-hexanol (herbaceous, woody), cis-3-hexen-1-ol (fresh cut grass), menthol (peppermint), or the like, or a combination comprising at least one of the foregoing alcohols); aldehydes (e.g., acetaldehyde (pungent), hexanal (green, grassy), cis-3-hexenal (green

tomatoes), furfural (burnt oats), or the like, or a combination comprising at least one of the foregoing aldehydes); esters (e.g., fructone (fruity, apple-like), hexyl acetate (apple, floral, fruity), ethyl methylphenylglycidate (strawberry), methyl formate, methyl acetate, methyl butyrate, methyl butanoate, ethyl acetate, ethyl butyrate, ethyl butanoate, isoamyl acetate, pentyl butyrate, pentyl butanoate, pentyl pentanoate, benzoin (extracted from resin of styrax benzoin tree); black pepper (from the plant piper nigrum of the piperaceae family), cajuput oil (from melaleuca cajuputi), caraway, carrot seed, coriander, cypress, dill, fennel, helichyrsum, lavandin, lemon verena, bee balm (lemon balm essential oil extracted from melissa officinalis of the labiatae family), niaouli, palmarosa, petitgrain, tagetes, vetiver, or the like, or a combination comprising at least one of the foregoing esters); ketones (e.g., dihydrojasmone (fruity woody floral), oct-1-en-3-one (blood, metallic, mushroom-like), 2-acetyl-1-pyrroline (fresh bread, jasmine rice), 6-acetyl-2,3,4,5-tetrahydropyridine (fresh bread, tortillas, popcorn), or the like, or a combination comprising at least one of the foregoing ketones); lactones ( $\gamma$ -decalactone (intense peach flavor),  $\gamma$ -nonalactone (coconut odor, popular in suntan lotions),  $\delta$ -octalactone (creamy note), jasmine lactone (powerful fatty fruity peach and apricot) massoia lactone (powerful creamy coconut), wine lactone (sweet coconut odor) sotolon (maple syrup, curry, fenugreek), or the like, or a combination comprising at least one of the foregoing lactones); thiols (ethanethiol (commonly called ethyl mercaptan), grapefruit mercaptan (grapefruit), methanethiol (commonly called methyl mercaptan), 2-methyl-2-propanethiol (commonly called tertiary-butyl mercaptan)); linear terpenes (e.g., myrcene (woody, complex), geraniol (rose, flowery) nerol (sweet rose, flowery), citral, lemonal, geranial, neral (lemon, lemon myrtle, lemongrass), citronellal (lemon, lemongrass), citronellol (lemon, lemongrass, rose, pelargonium), linalool (floral, sweet, woody, lavender), nerolidol (woody, fresh bark), or the like, or a combination comprising at least one of the foregoing linear terpenes); cyclic terpenes (e.g., limonene, camphor, terpinol, ionone, thujon, or the like, or a combination comprising at least one of the foregoing cyclic terpenes); aromatic species (e.g., benzaldehyde, eugenol, cinnamaldehyde, ethyl maltol, vanillin, anisole, anethole, estragole, thymol, or the like or a combination comprising at least one of the foregoing aromatic species); amines (e.g., thiethylamine, trimethylamine, cadaverine, pyridine, indole, skatole, or the like, or a combination comprising at least one of the foregoing amines) or the like, or a combination comprising at least one of the foregoing fragrant molecules."

### (3) Descriptions in Publication 3

Publication 3 distributed before the priority date of the present application

describes as follows:

(3a) "[0008]

[Means for solving the problem] The present inventors have completed the present invention as a result of earnestly studying for achieving the above object. Specifically, the present invention is a vinegar characterized by the addition of DHA and flavor. When fish oil containing DHA is simply added to vinegar, it can become fishy vinegar. By adding a flavor to this, the irritating and unpleasant fish odors are suppressed and the aroma is significantly improved. Furthermore, adding the bonito extract allows the vinegar to have a good mouthfeel and good taste.

[0009] Vinegars containing these DHA fish oils are surprisingly more stable and preservable than previously said, and may be, if desired, added with tocopherol, lecithin, catechin, or the like as an antioxidant of DHA, and soluble starch, dextrin, cyclodextrin, or the like may serve as a stabilizer.

[0010] The vinegar of the present invention thus obtained can be made into a solid or powder by a usual freeze-drying method or by adding a dehydrating agent.

[0011] In addition, it is possible to prevent deterioration of these DHA-added vinegars by vacuum packaging or by packaging using an oxygen absorber using recent food packaging technique.

[0012] Examples of the vinegar used in the present invention include brewed vinegars, synthetic vinegars, for example, fruit vinegars (e.g., apple vinegar, grape vinegar, and persimmon vinegar), grain vinegars (e.g., rice vinegar, barley vinegar, malt vinegar, pearl barley vinegar, and sake lees vinegar), and alcoholic vinegars. However, the vinegar is not limited so long as it is used as vinegar.

[0013] The DHA used in the present invention is not particularly limited so long as it contains DHA from any of marine animal fats and oils, such as squid oil, sardine oil, krill oil, bonito oil, mackerel oil, salmon oil, saury oil, cod liver oil, tuna oil, menhaden oil, and the like. It is more convenient that the DHA is deoxidized, decolorized, deodorized, and highly purified and concentrated by physical, chemical, or biological procedures, because these treatments do not cause a change in flavor of vinegar. The amount of DHA added is preferably 1 to 20% by weight with respect to vinegar.

[0014] Examples of the flavor used in the present invention include fruit juices of oranges such as orange, lemon, sudachi, lemon lime, and kabosu and processed products thereof including Apple-F (NSB-6253 from T. Hasegawa Co., Ltd.), Lemon Lime-F (NSB-6254 from T. Hasegawa Co., Ltd.), orange oil, lemon oil, and the like. These may be used alone or in combination.

## 2 Inventions disclosed in publications

### (1) Invention disclosed in Publication 1

Publication 1 is of the technique that "relates to a purification method for a seafood extract for the purpose of reducing the odor derived from the fishery product contained in the seafood extract" (Described Matter (1a)). Publication 1 takes food as an example of the use of the seafood extract as described in Described matter (1c) and plant essential oil obtained from lemon as an example of the deodorizing substance as described in Described matter (1e). As the invention disclosed in Example 6 of Described Matter (1f), there is described as follows: A 1000-g aqueous solution of seafood extract was boiled for 120 minutes under a reduced pressure condition of 130 kPa at 75°C and subjected to azeotropic distillation with water to remove odorous components, thereby giving 120 g of seafood extract concentrate. Subsequently, 80 g of the azeotropically treated seafood extract concentrate was added to oily components of 100 g of hydrogenated rapeseed oil and 5.0 g of tetraglycerin-condensed ricinoleic acid ester, which was heated to 70°C and melted in advance, and then emulsified and dispersed by a homogenizer. The prepared emulsion was stirred for 90 minutes under reduced pressure conditions of 13 kPa at 75°C to remove moisture content, thereby giving 130 g of S/O suspension in which a seafood extract was stably dispersed in an oily component. Further, 100 mg of lemon oil was added to 50 g of the S/O suspension and mixed, followed by addition to 300 mL of an aqueous solution containing gum arabic, (decaglycerin monooleate, HLB12), which had been previously heated at 70°C and agitated using a disc turbine blade to prepare an S/O/W emulsion. Subsequently, the S/O/W emulsion was rapidly cooled by being added in a single addition to 300 mL of an aqueous solution containing gum arabic and decaglycerin monooleate, which had been previously cooled to 10°C, to solidify the oily components, followed by being subjected to suction filtration and vacuum drying to remove moisture content, thereby giving S/O type microcapsules.

The resulting microcapsules undoubtedly form a composition when used in food products and serve as a technique relating to a method for purifying seafood extract for the purpose of reducing the odor derived from the fishery product contained in the seafood extract. Thus, it can be said that the composition is intended to reduce odor derived from fishery products.

Therefore, it can be said that Publication 1 discloses the following invention (hereinafter referred to as the "Publication 1 Invention").

"A food composition with S/O type microcapsules obtained by: adding 80 g of a

seafood extract, which was prepared by boiling a 1000-g aqueous solution of seafood extract for 120 minutes under a reduced pressure condition of 130 kPa at 75°C and subjecting it to azeotropic distillation, to oily components of 100 g of hydrogenated rapeseed oil and 5.0 g of tetraglycerin-condensed ricinoleic acid ester, which was heated to 70°C and melted in advance, followed by emulsification and dispersion with a homogenizer; stirring the prepared emulsion for 90 minutes under reduced pressure conditions of 13 kPa at 75°C to remove moisture content to give 130 g of S/O suspension in which the seafood extract is stably dispersed in the oily compositions; adding 100 mg of lemon oil as a deodorizing substance to 50 g of the S/O suspension and mixing them, followed by being added to 300 mL of an aqueous solution containing gum arabic and decaglycerin monooleate (HLB12), which has been previously heated at 70°C; agitating the mixture using a disc turbine blade to prepare an S/O/W emulsion; rapidly cooling the S/O/W emulsion by adding it in a single addition to 300 mL of an aqueous solution containing gum arabic and decaglycerin monooleate, which has been previously cooled to 10°C, to solidify the oily components; and then subjecting the oily components to suction filtration and vacuum drying to remove moisture content to give the S/O type microcapsules."

### 3 Comparison / judgment

#### (1) Comparison between the Invention and the Publication 1 Invention

Comparing the Invention and the Publication 1 Invention, Described Matter (1c) states that particularly preferred examples of the "seafood extract" in Publication 1 invention are bonito, tuna, and salmon, which correspond to the "fish-derived materials" in the Invention.

The "lemon oil as a deodorizing substance" in the Publication 1 Invention is common with the "citronellol and citronellal" of Invention insofar as it is a substance for masking, as is evident from the following descriptions: the present specification, paragraph [0006], "The inventors of the present application have conducted extensive studies in view of such circumstances, and as a result, the present invention has been completed by finding out that a fish odor felt before and after ingestion of a liquid food composition containing fish-derived materials can be effectively prevented when the composition contains one of the compound groups: a combination of benzyl acetate and benzyl benzoate; a combination of linalool and linalyl acetate; a combination of carvone and limonene; a combination of citronellol and citronellal; a combination of citronellol and geraniol; a combination of ethyl ester having 5 to 6 carbon atoms and ethyl maltol and hexenol; and a combination of an ethyl ester compound having 4 to 10 carbon

atoms and hexyl ester having 9 to 12 carbon atoms and  $\beta$ -ionone." and, paragraph [0010], "In the present invention, compound groups that can be contained for masking fish-derived materials are a combination of benzyl acetate and benzyl benzoate, a combination of linalool and linalyl acetate, a combination of carvone and limonene, a combination of citronellol and citronellal, a combination of citronellol and geraniol, a combination of ethyl ester having 5 to 6 carbon atoms and ethyl maltol and hexenol, and a combination of an ethyl ester compound having 4 to 10 carbon atoms, and hexyl ester having 9 to 12 carbon atoms, and  $\beta$ -ionone."

In addition, the Publication 1 Invention is "a food composition with S/O type microcapsules obtained by: adding 80 g of a seafood extract concentrate prepared by azeotropically boiling a 1000-g aqueous solution of seafood extract for 120 minutes under a reduced pressure condition of 13 kPa at 75°C to oily components of 100 g of hydrogenated rapeseed oil and 5.0 g of tetraglycerin-condensed ricinoleic acid ester, which has been heated to 70°C and melted in advance, followed by being emulsified and dispersed by a homogenizer; stirring the prepared emulsion for 90 minutes under reduced pressure conditions of 13 kPa at 75°C to remove moisture content to give 130 g of S/O suspension in which the seafood extract is stably dispersed in the oily compositions; adding 100 mg of lemon oil as a deodorizing substance to 50 g of the S/O suspension and mixing them, followed by addition to 300 mL of an aqueous solution containing gum arabic and decaglycerin monooleate (HLB12), which has been previously heated at 70°C; agitating the mixture using a disc turbine blade to prepare an S/O/W emulsion; rapidly cooling the S/O/W emulsion by adding it in a single addition to 300 mL of an aqueous solution containing gum arabic and decaglycerin monooleate, which has been previously cooled to 10°C, to solidify the oily components; and then subjecting the oily components to suction filtration and vacuum drying to remove moisture content to give the S/O type microcapsules," which corresponds to "a food composition" "comprising fish-derived materials" recited in Invention.

Therefore, the Invention and the Publication 1 Invention are identical with each other in being

"a food composition comprising fish-derived materials including a substance for masking"

and are different in the following features.

Different Feature 1: The Invention specifies that the composition is a liquid, whereas the Publication 1 Invention does not specify whether the final food composition is a



liquid.

Different Feature 2: Regarding the substance for masking, the Invention specifies that it contains citronellol and citronellal, whereas in the Publication 1 Invention lemon oil is added as a deodorizing substance.

Different Feature 3: Regarding a liquid food composition comprising fish-derived materials, the Invention is specified except for a composition containing coconut oil, palm oil, palm kernel oil, linseed oil, camellia oil, brown rice germ oil, rapeseed oil, rice oil, peanut oil, olive oil, corn oil, wheat germ oil, soybean oil, perilla oil, cottonseed oil, sunflower seed oil, kapok oil, evening primrose oil, shea butter, monkey butter, cocoa butter, mango oil, illipe oil, sesame oil, safflower oil, beef tallow, milk fat, pork fat, or processed fats and oils thereof, or medium chain fatty acid triglyceride (MCT), long chain fatty acid triglyceride, or partial glyceride of fatty acid; a composition containing beeswax, Japan wax, candelilla wax, rice bran wax, carnauba wax, snow wax, shellac wax, or jojoba wax; and a composition containing caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, oleic acid, behenic acid, or esters thereof, whereas the Publication 1 Invention is a composition produced using hydrogenated rapeseed oil, tetraglycerin-condensed ricinoleic acid ester, and decaglycerin monooleic acid ester.

## (2) Judgment of the different feature

### A Judgment of Different Feature 1

In the Publication 1 Invention, it is not obvious that a food produced using microcapsules containing a seafood extract is liquid. However, from the wide range of uses of the Described Matter (1b), it is obvious that the forms of the food include liquid. Therefore, specifying a composition as liquid in the Publication 1 Invention is nothing but a technical matter that a person skilled in the art could easily conceive.

### B Judgment of Different Feature 2

As stated in Described Matter (2b) of Publication 2, it is a matter of chemical technical common sense that citronellol and citronellal are contained in lemon oil, which is an essential oil from lemon added as a deodorant component in the Publication 1 Invention. Thus, Different Feature 2 cannot be said to be a substantial difference.

Even if it is a substantial difference, as stated above, it is a matter of common technical knowledge that lemon oil contains citronellol and citronellal. Thus, specifying the components is merely a technical matter that a person skilled in the art

could easily conceive of.

### C Judgment of Different Feature 3

The Invention specifies that certain vegetable oils, animal oils, waxes, higher fatty acids and their esters are excluded; i.e., specifying exclusion of a composition containing coconut oil, palm oil, palm kernel oil, linseed oil, camellia oil, brown rice germ oil, rapeseed oil, rice oil, peanut oil, olive oil, corn oil, wheat germ oil, soybean oil, perilla oil, cottonseed oil, sunflower seed oil, kapok oil, evening primrose oil, shea butter, monkey butter, cocoa butter, mango oil, illipe oil, sesame oil, safflower oil, beef tallow, milk fat, pork fat, or processed fats and oils thereof, or medium chain fatty acid triglyceride (MCT), long chain fatty acid triglyceride, or partial glyceride of fatty acid; a composition containing beeswax, Japan wax, candelilla wax, rice bran wax, carnauba wax, snow wax, shellac wax, or jojoba wax; and a composition containing caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, oleic acid, behenic acid, or esters thereof. On the other hand, originally, there is no description that limits the types of oil contained in the liquid food composition comprising fish-derived materials of the present invention. It is thus not limited to the specific examples, such as those excluded in the present invention. It is obvious that various vegetable and animal fats and oils are included. In other words, at least the fish oils described in Publication 1 are included (for example, it is recognized as prior art in Publication 1 (Described Matter (1b))). Described Matter (3a) of Publication 3 (Japanese Unexamined Patent Application Publication No. 6-70746) describes that lemon oil is added as a flavor to marine animal fats and oils, such as squid oil, sardine oil, krill oil, bonito oil, mackerel oil, salmon oil, saury oil, cod liver oil, tuna oil, and menhaden oil, to suppress fishy smell.

The above matter is also consistent with Appellant's statement in the written opinion dated October 4, 2019 alleging that fish oil is a fish-derived material and should not be excluded from the present invention.

As stated above, suppression of fish odor by adding lemon oil as a flavor to marine animal fats and oils, such as squid oil, sardine oil, krill oil, bonito oil, mackerel oil, salmon oil, saury oil, cod liver oil, tuna oil, or menhaden oil has been known. In the liquid food composition (vinegar in Publication 3), as of the priority date of the present application, it had already become a matter of common general technical knowledge. Considering that such a premise is mentioned in Publication 1, even though a microencapsulation technique is additionally used to deal with a decrease in masking effect and an increase in application range over time, it can be said that

choosing fish oil instead of hydrogenated rapeseed oil or tetraglycerin-condensed ricinoleic acid ester (fatty acid glyceride) as an oily component used in combination with a deodorant component for masking is a technical matter that a person skilled in the art could easily conceive in the Publication 1 Invention.

Then, as a result, in view of the considerations in Different Features 1 and 2, forming a liquid food composition corresponding to the Invention with S/O type microcapsules containing fish oil and lemon oil including citronellol and citronellal is a technical matter that a person skilled in the art could easily conceive.

Further, the Publication 1 Invention, which is a food composition using S/O type microcapsules obtained by removing water, is considered to contain hydrogenated rapeseed oil and tetraglycerin-condensed ricinoleic acid ester. As stated in Described Matter (1d) in Publication 1, as an oily component used in combination with a deodorant component for masking, any oily component in solid or liquid form at room temperature can be used. As its preferable main component, fats and oils, such as natural fats and oils from animals and plants, synthetic fats and oils, and processed fats and oils, can be used. More preferably, it is said that oily components that can be used include oils and fats, waxes, fatty acids, and the like on the premise of being acceptable for foods, cosmetics, or medicines.

Furthermore, first mentioned examples of fats and oils include rapeseed oil, medium-chain fatty acid triglyceride (MCT), long-chain fatty acid triglyceride, and partial glyceride of fatty acid as vegetable oils used in the Publication 1 Invention as well as fish oil as animal oils and fats. Thus it is obvious from the description that fish oil itself is more preferable as an oily component (oils and fats) acceptable for foods. It can be said that adding fish oil, which is naturally included in a liquid food composition comprising fish-derived materials, as an oily component instead of rapeseed oil or fatty acid glyceride is a technical matter that a person skilled in the art could easily conceive of.

In connection with the microencapsulation technique described above, the Publication 1 Invention uses decaglycerin monooleate as a hydrophilic component of HLB12 in the S/O/W emulsion-forming step and the cooling step for forming S/O microcapsules in the production. Both steps are used only for the formation and cooling of a separated aqueous phase. It is therefore obvious that the component is not contained as one in the final composition using S/O microcapsules.

Further, even if it is assumed that decaglycerin monooleate mixed in the manufacturing process remains in the composition of the Publication 1 Invention, the ester is a partial glyceride of fatty acid and used as a surfactant (emulsifier). In Publication 1, an aspect in which a surfactant is used for forming an S/O/W emulsion (corresponding to each of Examples 3 to 6) and an aspect in which no surfactant is used and no S/O/W emulsion is formed (corresponding to each of Examples 1 and 2) are described in detail in paragraph [0044] and each of them is preferably used. It can therefore be said that, in the Publication 1 Invention, it is a technical matter that a person skilled in the art could appropriately make an aspect in which S/O microcapsules are formed without formation of S/O/W emulsion.

#### D Regarding effects

Even considering the results represented in the present specification, paragraphs [0021] and [0022], the composition is only a mixture of flavors or extracts based on [Table 1] as a premise. Thus, it is identified as "a liquid food composition comprising fish-derived materials including citronellol and citronellal." It cannot be absolutely said that the effects of the invention are those as a whole including many components other than the removed components. In addition, regarding the lemongrass extract, which is a comparative example in [Table 2], it is unclear whether citronellol or citronellal is present.

Therefore, considering that a sufficient deodorizing effect is obtained by adding citronellal and lemon oil and both citronellol and citronellal themselves are well known as deodorant ingredients as represented in Described Matter (1g) [Table 1] [Table 2] in the Publication 1 Invention and also considering that lemon oil suppresses fish odor as described in Described Matter (1b) of Publication 1 and Described Matter (3a) of Publication 3, it cannot be admitted that the effects of the Invention are remarkable effects beyond the prediction of a person skilled in the art.

#### E Appellant' allegation

On page 2 of the written opinion dated October 4, 2019, the appellant alleges that the amendment excludes from the Invention specific examples of oils and fats, waxes, fatty acids, and the like, which are oily components of Publication 1, and a person skilled in the art referring to Publication 1 could not easily prepare the food composition from which the above specific examples of components are excluded, as it withdraws the problem solved in the publication.

However, as considered above, the oily components assumed in Publication 1 are

not limited to the oils and fats, waxes, and fatty acids listed as examples, and are not limited to the respective oils and fats, waxes, and fatty acids.

Furthermore, even in exemplified oils and fats, the fish oil recognized as being included in the Invention by the appellant itself is clearly exemplified in Publication 1. As described in Publication 3 listed as a conventional technique in Publication 1, suppressing fishy odor by adding lemon oil to marine animal fats and oils as a flavor in liquid food compositions had already been a matter of common general technical knowledge as of the priority date of the present application. Thus, in the Publication 1 Invention, hydrogenated rapeseed oil and tetraglycerin-condensed ricinoleic acid ester are merely used as oily components. Using fish oil in place of the oily component exemplified together with rapeseed oil and fatty acid glyceride in paragraph [0030] of Publication 1 is a technical matter that a person skilled in the art could easily conceive of. Therefore, the appellant's allegation does not correspond to the identified Scope of Claims and cannot be adopted.

#### 4 Summary

The Invention could be easily made by a person skilled in the art based on the Publication 1 Invention and the common general technical knowledge described in Publications 2 to 3.

#### No. 5 Closing

As stated above, the Invention could be easily made based on the invention disclosed in Publication 1 and the common general technical knowledge described in Publications 2 to 3 before the priority date of the application. Therefore, without needing to examine the remaining claims, the Invention should not be granted a patent, in accordance with the provisions of Article 29(2) of the Patent Act.

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

November 20, 2019

Chief administrative judge:	MURAKAMI, Kimitaka
Administrative judge:	SERA, Satoki
Administrative judge:	SAITO, Mayumi