(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 December 2017 (14.12.2017)

WIPO | PCT

(10) International Publication Number
WO 2017/211670 A1

(51) International Patent Classification:
A23F 3/16 (2006.01) *A23F 3/40* (2006.01)
A23L 2/56 (2006.01) *A23L 27/00* (2016.01)
A23F 3/34 (2006.01) *A23L 27/30* (2016.01)

(21) International Application Number:
PCT/EP2017/063278

(22) International Filing Date:
01 June 2017 (01.06.2017)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
16173960.2 10 June 2016 (10.06.2016) EP

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:
— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
— *of inventorship (Rule 4.17(iv))*

Published:
— *with international search report (Art. 21(3))*

(54) **Title:** A PROCESS FOR ENCAPSULATION

(57) **Abstract:** The present invention relates to a process of encapsulation and more particularly a process of encapsulation of a flavour component for liquid beverage products. According to the present invention there is provided a process for encapsulating a flavour comprising the steps of: (a) combining an aqueous solution of polysaccharide with a polyphenol; (b) adding glycyrrhizic acid or a derivative thereof, or a source of glycyrrhizic acid and mixing; (c) adding a hydrophobic flavour to the solution of step (b); and then (d) adding a protein and mixing.

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A PROCESS FOR ENCAPSULATION

Technical Field

The present invention relates to a process of encapsulation and more particularly to a process for encapsulation of a flavour for liquid beverage products.

Background of the invention

Liquid beverages e.g. fruit based drinks, liquid teas, are quite popular. This type of liquid beverages provides refreshment to consumers. It is believed that different kinds of flavours delivered through liquid beverage enhances the degree of refreshment. These flavours also increase the palatability of the liquid beverage.

Liquid beverages with encapsulated substance are known in the art.

US 2010/196549 (Tropicana) discloses methods for fortifying a sports drink with one or more citrus phytochemicals while concealing the bitter taste of these compounds in the beverage. These methods comprise microencapsulating the citrus phytochemicals and adding the microencapsulated citrus phytochemicals to the beverage. It also discloses sports drinks fortified with one or more microencapsulated citrus phytochemicals but which do not have the bitter taste characteristics of these compounds.

WO 2014/184119 (Nestec) discloses a process for producing capsules comprising a composition comprising coffee oil. It also discloses capsules obtainable by such process, and compositions, food ingredients and food products comprising such capsules.

US 2013/004617 (Tropicana) discloses complex coacervates incorporating one or more hydrophobic substances that are stable in certain aqueous systems and food products. The coacervates may be used as an ingredient in food products, e.g., in beverages, dry foods, and semi-moist foods. Methods for producing the complex coacervates and food products are also disclosed.

WO 2015/090855 (Unilever) discloses a liquid concentrate tea product and a process for producing the same.

US 2010/272852 (PepsiCo) discloses a complex coacervate delivery system which encapsulates water-insoluble flavorants.

US 2015/272864 (Symrise) relates to substance mixtures comprising terpenes and specific complementary substances, to foodstuffs comprising them, to a method of enhancing stability, and to the use of the complementary substances as stabilizers.

We have found that a liquid beverage product comprising hydrophobic flavour components tends to deteriorate over time, which affects the taste of the product. Consumers do not find the product attractive anymore for consumption when the flavour is lost.

It is therefore an object of the present invention to provide a process for encapsulation of a hydrophobic flavour.

It is another object of the present invention to provide a liquid beverage with an encapsulated hydrophobic flavour.

It is yet another object of the present invention to provide a liquid tea product with an encapsulated hydrophobic flavour.

The present inventors while working extensively on this have surprisingly found that when a hydrophobic flavour component is encapsulated before adding into a liquid beverage using a process which comprises the addition of a polysaccharide, a polyphenol, glycyrrhizic acid and a protein, the resulting beverage is able to retain the flavour for long time and thereby satisfy one or more of the above mentioned objects.

Summary of the invention

In a first aspect, the present invention provides a process for encapsulating a flavour comprising the steps of:

(a) combining an aqueous solution of a polysaccharide with a polyphenol;

(b) adding glycyrrhizic acid or a derivative thereof, or a source of glycyrrhizic acid and mixing;

(c) adding a hydrophobic flavour to the solution of step (b); and then

(d) adding a protein and mixing.

In a second aspect the present invention provides an encapsulated flavour composition comprising:

(a) 0.1 to 5% by weight of polysaccharide;

(b) 0.1 to 5% by weight of polyphenol;

(c) 0.1 to 10 % by weight of protein;

(d) 0.05 to 5% by weight of glycyrrhizic acid or a derivative thereof; and

(e) 0.01 to 5 % by weight of a hydrophobic flavour.

In a third aspect, the invention provides a liquid product composition comprising 2 to 20% by weight of the encapsulated hydrophobic flavour of the second aspect of the invention.

Detail description of the invention

According to the present invention there is provided a process for encapsulating a flavour comprising the steps of:

(a) combining an aqueous solution of a polysaccharide with a polyphenol;

(b) adding glycyrrhizic acid or a derivative thereof, or a source of glycyrrhizic acid and mixing;

(c) adding a hydrophobic flavour to the solution of step (b); and then

(d) adding a protein and mixing.

The process of the present invention requires a polysaccharide. Long chains of monosaccharide units bound together by glycosidic linkages are known as

polysaccharides. They are polymeric carbohydrates, which on hydrolysis produce the constituent monosaccharides or oligosaccharides. Polysaccharides are well known in foods and beverages industry. In the process of the present invention the amount of polysaccharides used is preferably in the range of 0.1 to 5%, more preferably 0.5 to 4% and most preferably 0.5 to 3 % by weight of the encapsulated flavour composition.

In the process of the present invention, the polysaccharides are preferably used in the form of an aqueous solution. To make the aqueous solution of polysaccharides, the polysaccharides are preferably added in water at room temperature. However, for some types of polysaccharides a slightly elevated temperature may be needed. Depending on the type of polysaccharides, the appropriate temperature may be selected.

The most preferred polysaccharides are selected from alginate, pectin and carrageenan.

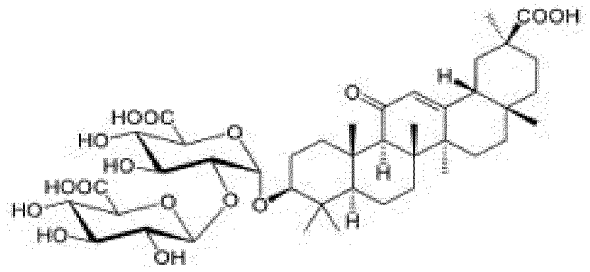
The process for encapsulation of the present invention also employs a polyphenol. Polyphenols are also known as polyhydroxyphenols and abundantly available in nature e.g. in plants. Tannins that are naturally available in plants and fruits are also generally referred to as polyphenols.

Black tea or green tea (e.g. from the plant *Camelia sinensis*) are known to have a high levels of polyphenols. Tea polyphenols includes catechins, theaflavins, *etc*. The major catechins that are present in green tea are epicatechin (EC), epigallocatechin (EGC), epicatechin gallate (ECG), and epigallocatechin gallate (EGCG).

Any source of polyphenols may preferably be used in the process of the present invention. However, tea polyphenols as disclosed above are preferred, with catechins being particularly preferred.

The amount of polyphenols used is preferably in the range of 0.1 to 5%, more preferably 0.5 to 4% and most preferably 0.5 to 3 % by weight of the encapsulated flavour composition.

The process of the present invention further comprises the addition of glycyrrhizic acid or its derivatives or a source of glycyrrhizic acid. Glycyrrhizic acid is a triterpenoid saponin glycoside from the roots and rhizomes of licorice (Yashtimadhu/ *Glycyrrhiza glabra*), and is used in traditional and modern medicine for the treatment of numerous medical conditions including skin diseases. In the food and drug industry, it is also used as natural sweetener. It has the following structure:



Glycyrrhizic acid and derivatives thereof are commercially available from many suppliers.

The amount of glycyrrhizic acid or the derivative thereof is preferably in the range of 0.05 to 5%, more preferably 0.08 to 5%, still more preferably 0.1 to 5% and most preferably 0.2 to 5% by weight of the encapsulated flavour composition. The glycyrrhizic acid can be provided by a source of glycyrrhizic acid, such as a licorice extract.

Preferably, the glycyrrhizic acid or the derivative thereof are substantially free of any other substances (impurities and/or any other compounds). The purity of the glycyrrhizic acid or the derivative thereof is preferably greater than 95%, more preferably greater than 99% and most preferably greater than 99.9%. Most preferably the purity of the glycyrrhizic acid or the derivative thereof is in the range of 95 to 100%.

The derivatives of glycyrrhizic acid may preferably be a salt of glycyrrhizic acid. The most preferred salt of glycyrrhizic acid is monoammonium glycyrrhizate.

The process of the present invention is about encapsulation of hydrophobic_flavours. Flavours are known to enhance the organoleptic properties of foods and beverages.

However, a problem of using flavours in a food and/or beverage composition is that they tend to deteriorate rapidly. This problem is more pronounced in case of a hydrophobic flavour.

Any hydrophobic flavour can be used in the process of the present invention. The flavours are preferably selected on the basis of the taste and end use.

The most preferable flavour in the case of a hydrophobic flavour is citral flavour, as this has wide applicability in food and beverages industry. Preferable examples of citral flavours are lemon flavour, lime flavour, orange flavour, grapefruit flavour, bergamot flavour, *etc*.

The amount of hydrophobic flavour is preferably in the range of 0.01 to 5 %, more preferably 0.1 to 5 % and most preferably in the range of 0.3 to 3% by weight of the encapsulated flavour composition.

The process of the present invention also employs a protein. Proteins are polymeric chains of amino acids joined by peptide bonds. Proteins can be sourced from both animal and plants. The most preferable proteins are selected from Beta-lactoglobulin, gelatin and whey protein.

The amount of protein preferably is in the range of 0.1 to 10%, more preferably 0.5 to 5% and most preferably 0.5 to 2% by weight of the encapsulated flavour composition.

<u>Process Details</u>

Step a:

In the first step, an aqueous solution of a polysaccharide is combined with a polyphenol. The aqueous solution is preferably made by dissolving the polysaccharide in water, adding the polyphenol and mixing. For this purpose, deionized water is preferred. Depending on the types of polysaccharides, it may be appropriate to increase the temperature of the water to around 40 to 70°C, more preferably to around 40 to 60°C.

The mixing can be done by employing any mechanical device or simply by agitation. The most preferred way is homogenization by employing a homogenizer.

The amount and the list of preferred polysaccharides have already been mentioned in this specification, as have the amount and the list of preferred polyphenols.

Step b:

In this next step, the glycyrrhizic acid or its derivatives or a source of glycyrrhizic acid is added to the solution of step (a) followed by mixing. The mixing can be done by employing any mechanical device or just simply by agitation. The most preferred way is homogenization by employing a homogenizer.

The amount of glycyrrhizic acid or its derivatives has already been mentioned in this specification.

Steps c and d:

Hydrophobic flavour is added into the solution of step (b), followed by the addition of a protein. After that the solution is thoroughly mixed. The mixing can be done by employing any mechanical device or just simply by agitation. The most preferred way is homogenization by employing a homogenizer.

The amount and the list of preferred proteins have already been mentioned before in this specification.

The temperature of the solution for the whole process is preferably in kept in the range of 10°C to 70°C, more preferably 20°C to 60°C and most preferably 30°C to 60°C.

The present inventors have found that when a hydrophobic flavour is encapsulated by using the process of the present invention, the resulting product can retain the hydrophobic flavour for an increased period of time. This is the main benefit/advantage of the process of the present invention.

The present invention also provides an encapsulated flavour composition comprising:

(f) 0.1 to 5% by weight of polysaccharide;
(g) 0.1 to 5% by weight of polyphenol;
(h) 0.1 to 10 % by weight of protein;
(i) 0.05 to 5% by weight of glycyrrhizic acid or a derivative thereof; and
(j) 0.01 to 5 % by weight of a hydrophobic flavour.

This encapsulated flavour composition can be made using the process described above, and is preferably obtained/obtainable by this process.

The preferably amount of different components and the preferable list of different component of the above flavour composition have already been mentioned in previous sections of this specification.

The present invention also provides a liquid product comprising 2 to 20%, preferably 2 to 10% by weight of the encapsulated hydrophobic flavour composition.

The liquid product is preferably packaged. A suitable packaged format may preferably be selected depending on the targeted uses.

The liquid product is preferably a liquid tea product. The term “liquid tea product” means any tea product which is in liquid form. The liquid tea product may be in a concentrate format or may be in a ready-to-drink format.

The present invention also relates to use of polysaccharide, polyphenol, glycyrrhizic acid or a derivative thereof, and protein for encapsulation of hydrophobic flavour.

Any feature of one aspect of the present invention may be utilized in any other aspect of the invention. The word “comprising” is intended to mean “including” but not necessarily “consisting of” or “composed of.” In other words, the listed steps or options need not be exhaustive. Except in the operating and comparative examples, or where otherwise explicitly indicated, all numbers in this description indicating amounts of material or conditions of reaction, physical properties of materials and/or use are to be understood as modified by the word “about”. Numerical ranges expressed in the format "from x to y" are understood to include x and y. When for a specific feature multiple preferred ranges are described in the format "from x to y", it is understood that all ranges combining the different endpoints are also contemplated.

Now the invention will be demonstrated in terms of examples. The following examples are just for illustration and in no way limit the scope of the present invention.

Examples:

Different liquid tea products were prepared as per Table 1:

Table 1

Ingredients	Example A (wt %)	Example B (wt %)	Example C (wt %)	Example 1 (wt %)
Soluble tea solids	3	3	3	3
Citric acid	4	4	4	4
Sorbic acid	0.05	0.05	0.05	0.05
Whey Protein	0	0	1	1
Polyphenol	0	0	1	1
Sodium Alginate	0	0	1	1
Glycyrrhizic acid (GA)	0	0.4	0	0.4
Citral flavour	0.5	0.5	0.5	0.5
Water	To 100	To 100	To 100	To 100

For this purpose the Whey Protein was procured from Sigma, Alginic Acid was procured from Fluka, Glycyrrhizic acid (GA) was procured from Natural Remedies, Citral Flavour was procured from Sigma and Polyphenol was procured from Taiyo International as Sunphenon ® XLB 100.

Procedure for preparing the liquid tea products:

Example A: all the ingredients as per Table 1 were added and homogenized for 5 minutes. After that the sample was stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example B: all the ingredients as per Table 1 were added and the temperature of the solution raised to about 50°C followed by the addition of GA. After that this solution was homogenized for 5 minutes. After that, the sample was stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%)

Example C: first, the required amount of polyphenol was taken and dissolved in water followed by addition of sodium alginate and stirred for about 10 minutes. After that the citral flavour was added into it and mixed thoroughly, followed by addition of whey protein and a further homogenization step. Finally, the remaining ingredients were added, and the resulting mixture was homogenized for about 5 minutes.

After that the sample was stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example 1: a solution of sodium alginate was prepared by adding required amount of sodium alginate in water followed by addition of polyphenol, and stirring for about 10 minutes. The temperature of the solution was raised to about 50°C followed by the addition of GA. After that this solution was homogenized for 5 minutes. After that the citral flavour was added into it and mixed thoroughly, followed by addition of whey protein. Finally, the remaining ingredients were added, and the resulting mixture

homogenized for about 5 minutes. After that the sample was stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

All the samples were stored and under the conditions as specified above and tested for remaining citral flavour by using standard head space GC (Gas Chromatography) after 5 days, 10 days and 20 days.

The conditions for GC was as follows:
Name of the GC Instrument: Perkin Elmer Clarus 600/Clarus500/Autosytem XL
Column: Cpwax 52 CB (30m X 0.25mm X 0.15um)
Carrier gas: Helium (He)
Flow rate: 1mL/min
Detector: FID (Flame Ionization Detector)
Detector temperature: 250°C

The results of the experiments is summarized in following Table 2:

Table 2

Time period	Example A (wt %)	Example B (wt %)	Example C (wt %)	Example 1 (wt %)
Day 0	98.8	99.0	99.1	99.0
Day 5	25.7	83.2	75.7	93.6
Day 10	ND*	42.9	10.4	71.4
Day 20	ND*	16.8	4.5	50.6

*Not detected

From the above Table 2 it is evident that the remaining citral favour for Example 1 is better than any of the examples A, B or C. The effect is more pronounced and significant after longer storage times (e.g. Day 10 and Day 20). It is notable that at Day 20 the flavour in the control examples (A to C) is almost gone, whereas in Example 1 >50% of the flavour is remaining.

A further set of experiments were carried out by preparing the compositions according to Table 3 (where all amounts are given as wt% of the final composition).

Table 3

Ingredients	Example No.									
	D	E	F	G	H	I	J	K	L	2
Soluble tea solids	3	3	3	3	3	3	3	3	3	3
Citric acid	4	4	4	4	4	4	4	4	4	4
Sorbic acid	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Whey Protein	0	0	1	0	0	1	1	0	1	1
Polyphenol	0	0	0	1	0	0	1	1	1	1
Sodium Alginate	0	0	0	0	1	1	0	1	1	1
Glycyrrhizic acid (GA)	0	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0	0.4
Citral flavour	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Water	To 100	To 100	To 100	To 100	To 100	To 100	To 100	To 100	To 100	To 100

The same raw materials were used as mentioned in the previous examples. The liquid tea products described in Table 2 were prepared as follows:

Example D: all the ingredients as per Table 3 were added in water and homogenized for 5 minutes. At the end, citric acid was added. After that, the sample was stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example E: first GA was added in water followed by the addition of citral flavour. The solution was then homogenized for 5 minutes. After that, the rest of the ingredients

were added and the solution was mixed thoroughly. Finally citric acid was added to the solution. The sample was then stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example F: first GA was added in water followed by the addition of citral flavour. The solution was then homogenized for 5 minutes. After that, whey protein was added and the solution was stirred. After that, the rest of the ingredients were added and the solution was mixed thoroughly. Finally, citric acid was added to the solution. The sample was then stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example G: first the required amount of polyphenols was added in water and mixed. Then GA was added followed by the addition of citral flavour. The solution was then homogenized for 5 minutes. After that, the rest of the ingredients were added and the solution was mixed thoroughly. Finally citric acid was added to the solution. The sample was then stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example H: first the required amount of sodium alginate was added in water and the temperature of the solution was raised to about 50°C. The temperature of the solution was raised as the solubility of sodium alginate is better at elevated temperature. Then GA was added followed by the addition of citral flavour. The solution was then homogenized for 5 minutes. After that, the rest of the ingredients were added and the solution was mixed thoroughly. Finally, citric acid was added to the solution. The sample was then stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example I: first the required amount of sodium alginate was added in water and the temperature of the solution was raised to about 50°C. Then GA was added followed by the addition of citral flavour. The solution was then homogenized for 5 minutes. After that, whey protein was added and the solution was stirred. After that, the rest of the ingredients were added and the solution was mixed thoroughly. Finally, citric acid

was added to the solution. The sample was then stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example J: first the required amount of polyphenols was added in water and mixed. Then GA was added followed by the addition of citral flavour. The solution was then homogenized for 5 minutes. After that, whey protein was added and the solution was stirred. After that, the rest of the ingredients were added and the solution was mixed thoroughly. Finally, citric acid was added to the solution. The sample was then stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example K: first the required amount of sodium alginate was added in water and the temperature of the solution was raised to about 50°C. After that the required amount of polyphenols were added. Then GA was added followed by the addition of citral flavour. The solution was then homogenized for 5 minutes. After that, the rest of the ingredients were added and the solution was mixed thoroughly. Finally, citric acid was added to the solution. The sample was then stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example L: first the required amount of sodium alginate was added in water and the temperature of the solution was raised to about 50°C. Then, polyphenols was added followed by the addition of citral flavour. The solution was then homogenized for 5 minutes. After that, whey protein was added and the solution was stirred. After that, the rest of the ingredients were added and the solution was mixed thoroughly. Finally, citric acid was added to the solution. The sample was then stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

Example 2: first the required amount of sodium alginate was added in water and the temperature of the solution was raised to about 50°C. After that the required amount of polyphenols were added. Then GA was added followed by the addition of citral flavour. The solution was then homogenized for 5 minutes. After that, whey protein was added and the solution was stirred. After that, the rest of the ingredients were

added and the solution was mixed thoroughly. Finally, citric acid was added to the solution. The sample was then stored in an air tight bottle under hot and humid conditions (Temperature: 35±2°C and Humidity: around 95%).

All the samples were stored and under the conditions as specified above and tested for remaining citral flavour by using standard head space GC (Gas Chromatography) after 1 week (7days), 2 weeks (15 days) and 3 weeks (21 days).

The conditions for GC was as follows:

Name of the GC Instrument: Perkin Elmer Clarus 600/Clarus500/Autosytem XL

Column: Cpwax 52 CB (30m X 0.25mm X 0.15um)

Carrier gas: Helium (He)

Flow rate: 1mL/min

Detector: FID (Flame Ionization Detector)

Detector temperature: 250°C

The results of the experiments are summarized in Table 4.

Table 4

Time Period	Example No.									
	D	E	F	G	H	I	J	K	L	2
0	100	100	100	100	100	100	100	100	100	100
1 week	51.6	56.0	65.7	75.3	65.0	58.0	60.8	67.8	61.6	100
2 week	11.4	44.5	56.8	61.2	54.5	52.8	55.9	53.7	57.6	98.1
3 week	6.4	33.3	37.2	47.2	46.1	40.6	46.0	36.2	44.2	78.7

From the Table 4, it is evident that the remaining citral favour for Example 2 is better than any of the control examples D to L. It can be seen from this Table that after the end of 1 week, for most of the control samples the flavour is almost lost by half whereas for Example 2 there is no loss of flavour. The effect of encapsulation by way of present invention can also be seen from the data for 2 weeks and 3 weeks.

From the above description and the given examples it is very clear that it is now possible by the way of present invention to encapsulate a hydrophobic flavour for sufficiently longer time period.

Claims:

1. A process for encapsulating a flavour comprising the steps of:
   (a) combining an aqueous solution of a polysaccharide with a polyphenol;
   (b) adding glycyrrhizic acid or a derivative thereof, or a source of glycyrrhizic acid and mixing;
   (c) adding a hydrophobic flavour to the solution of step (b); and then
   (d) adding a protein and mixing.

2. A process as claimed in claim 1 wherein the amount of polysaccharide is in the range of 0.1 to 5% by weight.

3. A process as claimed in any one of the preceding claims wherein the polysaccharide is selected from alginate, pectin, carrageenan or mixtures thereof.

4. A process as claimed in any one of the preceding claims wherein the amount of polyphenol is in the range of 0.1 to 5% by weight.

5. A process as claimed in any one of the preceding claims wherein the amount of hydrophobic flavour is in the range of 0.01 to 5 % by weight.

6. A process as claimed in any one of the preceding claims wherein the amount of protein is in the range of 0.1 to 10% by weight.

7. A process as claimed in any one of the preceding claims wherein the protein is selected from Beta-lactoglobulin, gelatin and whey protein.

8. A process as claimed in any one of the preceding claims wherein the amount of glycyrrhizic acid or a derivative thereof is in the range of 0.05 to 5%.

9. A process as claimed in any one of the preceding claims wherein the polyphenol is tea polyphenols.

10. An encapsulated flavour composition comprising:
    (a) 0.1 to 5% by weight of polysaccharide;
    (b) 0.1 to 5% by weight of polyphenol;
    (c) 0.1 to 10 % by weight of protein;
    (d) 0.05 to 5% by weight of glycyrrhizic acid or a derivative thereof; and
    (e) 0.01 to 5 % by weight of a hydrophobic flavour.

11. A liquid product comprising 2 to 20% by weight of the encapsulated flavour composition as claimed in claim 10.

12. A liquid product as claimed in claim 11 wherein the liquid product is packaged.

13. The use of polysaccharide, polyphenol, glycyrrhizic acid or a derivative thereof, and protein for encapsulation of hydrophobic flavour.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/063278

A. CLASSIFICATION OF SUBJECT MATTER
INV. A23F3/16 A23L2/56 A23F3/34 A23F3/40 A23L27/00
A23L27/30
ADD.
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A23L A23F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data, FSTA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
19 July 2017	28/07/2017

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	WO 2015/090855 A1 (UNILEVER NV [NL]; UNILEVER PLC [GB]; CONOPCO INC DBA UNILEVER [US]) 25 June 2015 (2015-06-25) page 1, line 4 - line 5 page 5, line 11 - line 18 page 7, line 23 - line 25 page 8, line 21; claims 1,4,5,10	1-13
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