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(54) Titre : CONCENTRE PERMETTANT DE PREPARER UN BOUILLON, UNE SOUPE, UNE SAUCE, UN JUS OU A  
 UTILISER COMME ASSAISONNEMENT, LE CONCENTRE COMPRENANT DES PARTICULES ET DE  
 L'XANTHANE ET DE LA GOMME DE CAROUBE  
 (54) Title: CONCENTRATE FOR PREPARING A BOUILLON, SOUP, SAUCE, GRAVY OR FOR USE AS A SEASONING,  
 THE CONCENTRATE COMPRISING PARTICULATES AND XANTHAN AND LOCUST BEAN GUM

(57) Abrégé/Abstract:

Concentrates for preparing a bouillon, broth, soup, sauce, gravy or for use as a seasoning, which concentrates comprises 20-80% water, 0.5-60% (pieces of) herbs, vegetables, meat, fish or crustaceans, 3-30% salt and a gelling agent comprising xanthan and locust bean gum.



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(54) Title: CONCENTRATE FOR PREPARING A BOUILLON, SOUP, SAUCE, GRAVY OR FOR USE AS A SEASONING, THE CONCENTRATE COMPRISING PARTICULATES AND XANTHAN AND LOCUST BEAN GUM

(57) Abstract: Concentrates for preparing a bouillon, broth, soup, sauce, gravy or for use as a seasoning, which concentrates comprises 20-80% water, 0.5-60% (pieces of) herbs, vegetables, meat, fish or crustaceans, 3-30% salt and a gelling agent comprising xanthan and locust bean gum.

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**CONCENTRATE FOR PREPARING A BOUILLON, SOUP, SAUCE, GRAVY OR FOR USE AS A SEASONING, THE CONCENTRATE COMPRISING PARTICULATES AND XANTHAN AND LOCUST BEAN GUM**

5 **Field of the invention**

The present invention relates to concentrates for preparing a bouillon, broth, soup, sauce, gravy or for use as a seasoning. More in particular, the invention relates to such concentrates which allow the inclusion of herbs, vegetables, meat, fish or crustaceans which are not completely dry.

10

**Background of the invention**

Concentrates for preparing a bouillon, broth, soup, sauce, gravy, or for use as seasoning are well known in the western and non-western cooking. For brevity, such formulations are herein all abbreviated to "concentrates for preparing a bouillon or for use as a seasoning".

15

Conventionally, bouillon and seasoning cubes or tablets comprise ingredients such as one or more of salt, sugar, flavour enhancers (like e.g. monosodium glutamate, MSG), herbs, spices, vegetable particulates, colourants and flavourants, next to e.g. 0-40% (for seasoning cubes 1-60%, for seasonings and bouillon cubes typically 0-20%) fat and/or oil. Salt is usually an ingredient which is present in large amounts, e.g. 5-60%.

20

Such concentrates are conveniently available in the form of rigid or plastic (i.e. deformable) cubes, tablets, crumbly cubes, or as powders, granules, etcetera. These formulations are known as being dry: a moisture content of less than 8%, usually even lower.

25

Although such dry formulations have advantages in terms of e.g. preservation, they do require all the ingredients to be dry. If ingredients used in such concentrates are not directly available in a dry form (e.g. herbs and vegetables and pieces thereof, pieces of meat), such ingredients need to be dried first. Needless to say, such is both a hassle as well as that it can have a negative impact on the quality of (pieces of) such herbs, vegetables and meat. Hence, there is a need for concentrates for use as seasoning or for preparing a bouillon, broth, soup, sauce, or gravy, which concentrate would allow the use of ingredients, such as for example herbs and/or vegetables and/or fruits or particles thereof as well as pieces of meat, fish or crustaceans, to be in a not completely dry state, i.e. more than 8% (by weight of the herb/vegetable) moisture. Preferably, the concentrates should be shelf stable when in a closed packaging. Preferably, it would allow the use of such ingredients as herbs, vegetables,

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fruits, meat, fish, crustaceans and particles thereof in the form of intermediate moisture-stabilised ingredients.

5 WO 2001/072148 discloses cooking aids which are composed of a meltable or dissolvable wall material, enclosing a fluid or pasty filling. Such liquid or pasty filling would allow the use of non-dry herbs and vegetable (particulates) in its filling. However, the manufacture of such filled cubes can be cumbersome.

10 JP 61/031,068 discloses soup concentrates for use with instant noodles, which soup concentrate is in the form of a jelly, which concentrate needs to be diluted 5-6 times with water to yield a soup to be consumed or served with noodles. Said jellies are formed with gelatin in combination with one or more of alginate, agar and apple puree. The jellies take 3-6 minutes to dissolve. The jellies in this reference can include meat (pieces) and vegetable (pieces). Although this jelly form allows for non-dry particulates, the jellies disclosed have  
15 some disadvantages.

### Summary of the invention

There is a need for packaged concentrates for use as seasoning or for preparing a bouillon, broth, soup, sauce, or gravy, which concentrate is in the form of a (packaged) jelly, which jelly  
20 can dissolve in boiling water fairly quickly (e.g. a mass of 30 g would dissolve in 900 ml boiling water in less than 3.5 minutes, preferably less than 3 minutes). It is also preferred that such jelly has a low tendency to syneresis (water separation) and is preferably an elastic, not too rigid gel (as such will facilitate removal from its packaging; elastic and not too rigid can best be judged by hand-feel). Also it is desired that preferably the gel is not too sticky (as such gel is  
25 likely to be handled by fingers and to allow easy removal from the packaging), and a simple method for manufacturing such (e.g. not too viscous in preparation, or requiring more complex equipment or processing). Preferably, the concentrates should be such that they allow the usual dilution rates (in e.g. an aqueous liquid such as water) for e.g. bouillons (e.g. as in bouillon cubes) like 1:20-1:50 (i.e. allows for high salt levels in the gel). Also, the product  
30 should be fairly stable in transport and storage, which is normally at ambient temperatures, but during which temperatures can rise substantially higher. Preferably, the gel should also have a certain strength: preferably the strength should be such that the force (in gram) necessary for a plunger to penetrate 10 mm in a gel is above 50, preferably above 70 g. Also low to no phase separation is desired.

35

It has now been found that such may be achieved (at least in part) by a packaged concentrate for preparing a bouillon, broth, soup, sauce, gravy or for use as a seasoning, said concentrate comprising:

- 20-80% water (weight % based on total packaged concentrate),
- 5 - 0.5-60% by weight of herbs, vegetables, fruits, meat, fish, crustaceans, or particulates thereof, (weight % based on total packaged concentrate),
- 0.1% to 10% (weight % based on water content of concentrate) of a gelling agent comprising the combination of xanthan and locust bean gum (LBG), xanthan and LBG each being present in an amount of 30-70% on the total amount of xanthan + LBG,
- 10 - 3-30% (weight % based on water content of concentrate, more preferably 15-30%, most preferably 15-26%) of salt,

wherein the concentrate has the appearance of a gel (preferably judged when taken out of the packaging).

15 The person of average skill in the art of food products recognizes a gel when he or she sees one. The appearance of a gel generally can be achieved in an aqueous environment when sufficient gelling agents are used in the formulation. A gel will usually have a smooth surface appearance, be shape-retaining at ambient temperature when exposed to gravity, but easily deformable (to some degree in an elastic way). More preferably, the packaged concentrate  
20 according to the invention (when taken out of the packaging) has the appearance or rheology of a gel as expressed by a ratio of elastic modulus  $G'$  : viscous modulus  $G''$  of at least 1, preferably at least 3, more preferably at least 5. It can furthermore be preferred that the viscous modulus  $G''$  is at least 10 Pa, preferably at least 50 Pa. The method of measuring such is described below.

25 With "herbs, vegetables, fruits, meat, fish, crustaceans, or particulates thereof" is meant particles having a size such that they are at least visible to the naked eye, in the product as consumed, e.g. upon dillution with water in the required dillution rate (as that is when the particulates or herbs etcetera matter: to be seen just prior to consumption). Thus, "meat  
30 powder" as known in the bouillon industry can be difficult to be seen in the jelly cube (e.g. due to the concentration, possible turbidity following certain ingredients), but such conventional meat powder particulates are well visible to the naked eye in the soup or bouillon when prepared in the proper dillution.

35 Water (as amount) is herein to be understood as the total amount of moisture present. The concentration of salt is to be calculated as (amount of salt) / (amount of salt + total moisture).

The same is true for other dissolved matter, such as gelling agent (amount of gelling agent / (amount of gelling agent + total moisture amount)).

It can be preferred that the concentrate according to the present invention comprises 15-30 %  
5 (by weight, based on total water content, more preferably 15-26%) salt (preferably NaCl, but also including other salts, preferably in dissolved form). "Salt" in this context can be sodium chloride but it can also be another alkali metal salt such as potassium chloride, or a mixture thereof, or other low-sodium products that aim for the taste impression of sodium chloride, as long as the taste in the end formulation (e.g. bouillon, or seasoned food product) is  
10 acceptable. The upper limit of solubility in water of NaCl is around 26% (at room temperature), and hence above this limit some salt crystals may occur. Hence, the amount of salt is preferably (just) below this salt saturation concentration level.

By the above formulation, concentrates for preparing a bouillon, broth, soup, sauce, gravy or  
15 for use as a seasoning can be obtained that are different from the conventionally used dry cubes and tablets, in that the concentrates according to the invention are not dry. It allows the use of herbs, vegetables, meat, fish, crustaceans (or particulates thereof) which are partially wet, i.e. not completely dried. What it shares with conventional bouillon cubes and tablets is that it comes in a unit dose format (i.e. not a bulk product like liquid, powder or granules): a  
20 portioned amount, individually packaged.

Notwithstanding the fact that the concentrate according to the present invention allows the use of (piece of) herbs, vegetables, meat, fish, crustaceans which are not dry, it is also possible to include such ingredients in dry form in the concentrate according to the present invention.  
25 Such dry ingredients may then be to some extent hydrated by the moisture present in the concentrate.

The concentrates are more or less shape stable: it is not an easily flowable product, but it being a gelled product means it can deform (easily) under pressure. By choosing the amount  
30 and ratio of xanthan and LBG the desired rheology can be obtained.

The amount and ratio of xanthan and LBG as required will e.g. depend on the amount of salt in the formulation, and such amounts and ratio can be determined by the person of average skill in the art of gelled food products without undue burden. Locust bean gum and xanthan on  
35 their own at high salt levels do not really gel, but in combination they do. Typical amounts will be:

- at a salt level of 15%: LBG + xanthan (together): 0.15-5%, more preferably 0.4-2%,
- at a salt level of 25%: LBG + xanthan (together): 0.2-7%, more preferably 0.6-3%,  
both as wt% on the amount of water as defined above.

5 LBG and xanthan are herein preferably used in such amounts that the total amount of LBG+xanthan comprises 30-70% LBG and 30-70% xanthan (wt% on total amount of xanthan+LBG). Preferably, these amounts are 40-60% and 60-40%, respectively, and even more preferred 45-55% and 55-45%, respectively. Most preferred ratio is each component in an amount of about 50% and 50%.

10 The texture or rheologie desired for the product according to the invention is preferably that of a gel. Regarding a gel, in scientific literature, e.g. "Das Rheologie Handbuch, Thomas Mezger, Curt R. Vincentz-Verlag, Hannover, 2000" a gel is typically defined by its ratio of elastic modulus  $G'$  to viscous modulus  $G''$ . This allows it to distinguish between a highly viscous fluid,  
15 e.g. a paste and an elastic system of same viscosity e.g. a jelly. This ratio should be greater than 1 for a gel. For the given product, a ratio of greater than 1 is suitable. It is preferred, however, that said ratio is greater than 3, more preferably it is greater than 5.

20 The absolute value of the viscous modulus  $G''$  is preferably greater than 10 Pa, more preferred greater than 50 Pa. This criterion distinguishes between thin solutions with gel character and a more shape retaining jelly products that are the intended products according to this invention.

The above given values need should be measured under the following circumstances:

- a maturation time of at least 12 h under ambient conditions,
- 25 - measurement temperature of 25 °C,
- an oscillatory frequency of 1 rad/s and
- a strain of 1%.

This set of parameters refers to a standard oscillatory test conducted with a standard state of the art low deformation rheometer as commercially available from e.g. Bohlin or TA  
30 Instruments.

The requirements as stated herein for  $G' : G''$  should preferably apply to the whole concentrate (apart from the particulates mentioned), and not just for a part of it. For example, for a construction like in WO 01/72148 such may be true for the wall material, but not for the  
35 fluid or pasty core. Also, it is preferred that the concentrate does not consist of a solid envelope material covering core. It can also be preferred that the concentrate is translucent

and/or transparent, apart from the visual elements like herbs, vegetables, meat, fish, crustaceans (or particulates thereof). Hence, of the matrix material (e.g. comprising water, a gelling agent, and optionally salt, taste enhancers, oil) further comprising the visual elements like herbs, vegetables, meat, fish, crustaceans (or particulates thereof), the matrix material is preferably transparent and/or translucent.

The concentrate according to the invention is preferably non-sweet, which is characterised by a sweetness as an equivalent to a percentage sucrose of lower than 20%, preferably lower than 15%, even more preferably lower than 10%, most preferably lower than 6%, and resulting in an end-product that is lower in sweetness than 0.5g/l of sucrose equivalent, preferably below 0.3 g/l of sucrose equivalent, more preferably below 0.2 g/l of sucrose equivalent. The sweetness refers to an equivalent sweetness to sucrose that is calculated via the sweetness index of the used sweeteners. Thus, the concentrate according to the invention has a sweetness as expressed by a sweetness index of below 0.5 g / litre sucrose equivalent, preferably below 0.3 g/l of sucrose equivalent, more preferably below 0.2 g/l of sucrose equivalent. The equivalent amount to sucrose refers to an equivalent sweetness to sucrose as it is calculated via the sweetness index of the used sweeteners.

As used herein, "sweetness index" is a term used to describe the level of sweetness of the dosage form relative to sucrose. Sucrose, defined as the standard, has a sweetness index of 1. For example, the sweetness indices of several known sweet compounds are listed below:

Sorbitol 0.54-0.7, Dextrose 0.6, Mannitol 0.7, Sucrose 1.0, High Fructose Corn Syrup 55% 1.0, Xylitol 1.0, Fructose 1.2-1.7, Cyclamate 30, Aspartame 180, Acesulfame K 200, Saccharin 300, Sucralose 600, Talin 2000-3000. Further values and reference literature can be found e.g. in "Römpp Lebensmittelchemie, Georg Thieme Verlag, 1995".

It can also be preferred that by equivalent sweetness is herein understood the perceived sweetness by a consumer as determined by a trained panel matching the product sweetness to a standard sucrose solution. The detailed method is described in the appropriate DIN standard. For recipe design purposes this shall be assumed similar to the sweetness as calculated by the so called sweetness index.

The herbs, vegetables, meat, fish, crustaceans, or particulates thereof (including mixtures thereof) as applied in the current invention can be intermediate moisture components.

Typically, intermediate moisture ingredients will have a water activity  $a_w$  of 0.5-0.98, preferably 0.6-0.87, more preferably 0.6-0.75.

### Detailed description of the invention

5 In the concentrates according to the present invention the amount of herbs, vegetables, fruits, meat, fish, crustaceans, or particulates thereof is preferably 1-40%, more preferably 1-20%, most preferably 2-20% (by weight on the total packed concentrate).

10 The total moisture content of the total concentrate according to the present invention as it is in the packaging (i.e. including the particulates of herbs, vegetables, meat, fish, crustaceans) is 20-80% (by weight, based on total packed concentrate), preferably 40 to 60 % by weight (based on the total packed concentrate). The water activity  $a_w$  of the total concentrate as it is in the packaging is preferably preferably 0.5-0.98, more preferably 0.6-0.87, even more preferably 0.7-0.8, and most preferably 0.7-0.75. The pH of the total concentrate according to  
15 the invention is preferably between 3 and 8, more preferably 4-7. Such pH can be measured after e.g. finely grinding the whole concentrate. In connection to this, it may be preferred that (organic) acids are present. Such may also be the case for taste reasons.

20 The concentrate according to the present invention is preferably shelf stable when in its intact packaging. This can be ensured by selecting the appropriate manufacturing process in combination with a correct composition. For example, a process involving a pasteurising step (either explicitly or as part of other process steps), followed by hot or aseptic filling of packaging, and the right water activity  $a_w$  and pH of the composition may ensure such.

25 Depending on the ingredients and processing chosen, the concentrate according to the present invention is shelf stable for at least 3 months when in its intact packaging at ambient temperature. Preferably, the concentrate according to the present invention has an open shelf life of at least 3 months at ambient temperature. This can be achieved at high salt levels, e.g. at 20-26% salt (on water basis). Hence, such salt level can be preferred.

30 Next to the ingredients mentioned, it may be preferred for the concentrates according to the present invention that they further comprise 0.5 - 30 % (weight on total concentrate) of a taste enhancer selected from the group of monosodium glutamate, 5'-ribofides, organic acids, or mixtures thereof. Salt can also be seen as a taste enhancer, but is herein regarded as a  
35 separate category of ingredients.

Fats and/or oils may be used as an ingredient in the concentrates according to the present invention. They may contribute to flavour and/or mouthfeel. Due to the aqueous nature of the concentrates, such fat is preferably present in an emulsified or dispersed form. Use of emulsifiers and/or stabilisers may be desired. Hence, it may be preferred that the concentrate according to the present invention further comprises 1-30% (weight on total packaged concentrate) of emulsified or dispersed oil and/or fat, preferably 1-15%.

As the concentrates are jelly-like, they can have a shape. Preferably, the concentrate according to the invention is in the form of a cube, tablet, brick-shape, pellet, ball (sphere), briquette, dragee, egg-shape, or flattened egg-shape. It is herein to be understood that "cubes or tablets" and "unit dose" encompass a wide variety of geometric shapes: next to cubes and tablets also pellets, briquettes, brick-like shapes, etcetera. Each individual gelled concentrate preferably is of a size such that the concentrate has a weight (excluding packaging) of 1g-10 kg, preferably 2-250 g, more preferably 10-50 g. The portion of the concentrate according to the present invention as packaged is preferably such that the concentrate has a weight excluding packaging) of 1g-10 kg, preferably 2-250 g, more preferably 10-50 g. The packaging can be e.g. a blister pack or a glass or plastic jar or (sealed) tubs or cups. Preferably, in the packaged concentrate according to the invention the container is a cup or tub with a seal, but also more complex packaging shapes are now possible (e.g. a reclosable pack). A specific and preferred packaging option are sealed or reclosable cups or tubs (e.g. plastic cups e.g. having a volume of 1-250 ml, comprising 1-250 g, preferably 2-50 g (more preferably 10-50 g) concentrate, which are closed with a lid or seal, preferably a seal of sheet-like material).

The packaged concentrates according to the present invention are preferably translucent or transparent. This can also make it attractive to choose e.g. packaging which is at least partially transparent.

The invention further relates to a process for the preparation of the concentrates according to the present invention. A process for the preparation may comprise the steps of mixing the ingredients with the water, filling into the packaging (e.g. blister packs or cups or tubs) and closing the packs (e.g. by a seal), whereby preferably a heating step is applied prior to, during or after filling into the packaging, for preservation purposes and/or to facilitate dissolution of ingredients and/or achieving gelation (upon cooling thereafter) of thermoset gels. Alternatively, the (heated) mixture may be poured in moulds, cooled to set. After setting to a gel, the gelled concentrate will have to be removed from the moulds and packaged. It is preferred, however, to manufacture directly into the packaging. It is preferred that the steps of mixing the

ingredients with the water, filling into the packaging and closing the packaging, whereby a heating step is applied prior to, and/or during and/or after filling into the packaging.

In the above process, it is preferred that at least part of the heating stage is to a temperature of at least 80°C. Also, it is preferred that the temperature of the mixture during the filling is at least 70°C. When fat is used solid at room temperature, it is preferably melted first before adding to other components.

The invention further relates to the use of a concentrate as set out above, for preparing a bouillon, broth, soup, sauce, gravy or for use as a seasoning. This may be done by diluting with an aqueous liquid (e.g. water) under application of heat, in e.g. a ratio of 1:15 – 1: 100, preferably 1:20 – 1:70, more preferably 1:20 – 1:50.

The invention further relates to the use of the concentrate according to the present invention and as set out above for preparing a bouillon, broth, soup, sauce, gravy or for use as a seasoning. Such use e.g. implies removing the concentrate from its packaging, and adding it to food or a dish, either during or after its preparation, optionally further applying heat and/or stirring the food or dish with such concentrate.

## 20 Examples

### Example 1: medium salt jelly with xanthan + LBG and fresh vegetables

	Recipe Dry Base Mix
Ingredient	kg
vegetable flavour	7.500
yeast extract	1.200
IG	0.400
Sugar	8.000
MSG	8.000
Salt	10.000
Spices	2.400
vegetable powders	3.200
Acidifier	1.000

41.70

	Recipe Jelly
Ingredient	kg
Dry Base Mix	41.700
Water	50.000
Xanthan	0.500
LGB	0.500
frozen vegebles	
Carrot grits	6.000
Parsley leaves frozen	3.000
Leek pieces	5.000
Onion pieces frozen	7.000
	113.700

**Process Dry Mix**

Add all dry ingredients into a Lödige™ Mixer

Mix dry powders at 120rpm without chopper for 5min until homogeneous

Pack into plastic bags

Close and store at ambient temperature

**Process Jelly**

Add water into a vessel (Unimix™)

Add xanthan and LBG

Continue mixing for 30min

Add dry mix and mix still homogenous

Heat up to 95°C

Add frozen vegetables

Heat up to 95°C

Keep at 95°C for 5min

Hot filling into glass jars of 50ml

Capping of glass jars

Cooling down at room temperature for 24h.

**Example 2: high salt jelly with xanthan****+ LBG**

	<b>Recipe Dry Base Mix</b>
<b>Ingredient</b>	<b>Kg</b>
Chicken flavour	8.400
Chicken meat powder	3.000
Yeast extract	1.200
IG	0.400
Carrot grits	0.900
Sugar	10.200
Onion pieces	3.000
Leek pieces	1.000
Maltodextrin	8.500
MSG	17.000
Parsley leaves	1.300
Salt	35.000
Spices	2.400
Vegetables powders	1.700
Potato starch	6.000
	100.00

	<b>Recipe Jelly</b>
<b>Ingredient</b>	<b>Kg</b>
Dry Base Mix	50.000
Water	50.000
Xanthan	0.400
LGB	0.400
	100.800

**Process Dry Mix**

Add all dry ingredients into a Lödige Mixer

Mix dry powders at 120rpm without chopper for 5min until homogeneous

Pack into plastic bags

Close and store at ambient temperature

**Process Jelly**

Add water into a vessel (Unimix)

Add xanthan and LBG

Continue mixing for 30min

Add dry mix and mix still homogeneous

Heat up to 90°C

Keep at 90°C for 10min

Hot filling into glass jars of 40ml

Capping of glass jars

Cooling down at room temperature for

24h.

The resulting products of both examples 1 and 2 had the appearance of a gel and were shape stable.

**5 Example 3:**

Dry mix (g):

375 g salt

200 g palm fat

175 g MSG

10 27.45 g flavouring components, spices and taste enhancers

Vegetable mix (g):

220 g frozen grated carrots

110 g frozen grated leek

15 70 g frozen grated spinach

50 g frozen grated bell pepper

30 g frozen grated pumpkin

20 g frozen grated celery

15 g frozen grated corn

Gelling system:

700 g water

8 g xanthan

5 3.5 g LBG

A product was made by mixing all ingredients, heating to 80°C, pouring in moulds and cooling to set. The resulting product looked like a gel, was shape stable, and 15 g of the gel dissolved in less than 2 minutes when immersed in boiling water (dillution 30 times).

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**Examples 4-7:** several bouillon concentrates have been prepared with varying taste according to the recipes as described below. Moisture was added as water, all other ingredients are used in a dry form (that is: commercially dry, which usually means for such ingredients 1-3% of moisture). The  $a_w$  and G'and G"have been measured: these results are given after example

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4. All four products appeared as gels.

Example 4: Beef Jelly with LBG+xanthan

Description	Amount [%]	Amount [g] for 10kg
Sugar	2	0.2
Salt	18.4	1.84
Flavour	4.9	0.49
Citric Acid powder	0.5	0.05
Vegetable powder	0.45	0.045
Yeast extract	1.5	0.15
Spices	0.2	0.02
5'-ribotides	0.2	0.02
MSG	5.1	0.51
Palm fat	10.5	1.05
Water	55.38	5.535
Xanthan	0.3	0.03
Locus Bean Gum	0.3	0.03
Total	100	10

**Process Description:**

1. Mix all dry ingredients in a Hobart™ Mixer till homogeneous
2. Melt fat at 60°C
3. Add melted fat to the dry ingredients and mix in the Hobart mixer until homogeneous
4. Add mix into a double jacket vessel (Unimix type)
5. Add water into the vessel and close the vessel.
6. Heat up to 90°C while stirring
7. Keep at 90°C for 3min while stirring
8. Hot filling into oval tubs of 35ml size, followed by sealing and leaving to cool to room temperature.

**Example 5: Fish Jelly with LBG+xanthan**

Description	Amount [%]	Amount [g] for 10kg
Fish powder	8	0.8
Flavour	0.5	0.05
Palm fat	5.8	0.58
Creamer powder	16.1	1.61
Spices	0.1	0.01
Lactid acid (liquid)	0.6	0.06
Water	40	4
Modified starch	3.5	0.35
Salt	13.1	1.31
MSG	4.4	0.44
Locus Bean Gum	0.5	0.05
Xanthan	0.5	0.05
Sugar	6.6	0.66
5'-ribotides	0.2	0.02
Caramel powder	0.1	0.01
Total	100	10

## Process Description:

1. Mix all dry ingredients in a Hobart Mixer till homogeneous
2. Melt fat at 60°C
3. Add melted fat to the dry ingredients and mix in the Hobart mixer until homogeneous
4. Add mix into a double jacket vessel (Unimix type)
5. Add water and lactic acid into the vessel and close the vessel.
6. Heat up to 90°C while stirring
7. Keep at 90°C for 3min while stirring
8. Hot filling into oval tubs of 35ml size, followed by sealing and leaving to cool to room temperature.

## Example 6: Chicken Jelly (LBG+xanthan)

Description	Amount [%]	Amount [g] for 10kg
Chicken extract	3.2	0.32
Chicken meat powder	7.3	0.73
Chicken fat	16.1	1.61
Spices	0.4	0.04
Water	44.4	4.44
Flavour	1.3	0.13
Salt	17.3	1.73
MSG	4	0.4
Locus Bean Gum	0.5	0.05
Xanthan	0.5	0.05
Sugar	4.8	0.48
5'-ribotides	0.2	0.02
Total	100	10

## Process Description:

1. Mix all dry ingredients in a Hobart Mixer till homogeneous
2. Melt fat at 60°C
3. Add melted fat to the dry ingredients and mix in the Hobart mixer until homogeneous
4. Add mix into a double jacket vessel (Unimix type)
5. Add water and lactic acid into the vessel and close the vessel.
6. Heat up to 90°C while stirring
7. Keep at 90°C for 3min while stirring
8. Hot filling into round tubs of 15ml size, followed by sealing and leaving to cool to room temperature.

## Example 7: Pork Jelly with LBG+xanthan

Description	Amount [%]	Amount [g] for 10kg
Pork Flavour	1.5	0.15
Water	41.5	4.15
Pork fat	12.1	1.21
Pork meat powder	6.1	0.61
Salt	13.6	1.36
MSG	5.3	0.53
Locus Bean Gum	0.5	0.05
Xanthan	0.5	0.05
Sugar	3.8	0.38
Palm fat	3	0.3
Pork bone powder	12.1	1.21
Total	100	10

## Process Description:

1. Mix all dry ingredients in a Hobart Mixer till homogeneous
2. Melt fat at 60°C
3. Add melted fat to the dry ingredients and mix in the Hobart mixer until homogeneous
4. Add mix into a double jacket vessel (Unimix type)
5. Add water into the vessel and close the vessel.
6. Heat up to 90°C while stirring
7. Keep at 90°C for 3min while stirring
8. Hot filling into round tubs of 15ml size, followed by sealing and leaving to cool to room temperature

Results examples 4-7: ratio  $G' / G''$  at 21°C (ambient, as measured following the instructions in the description):

Recipe	Storage modulus $G'$ (Pa)	Loss modulus $G''$ (Pa)	Ratio $G'/G''$	$a_w$	Dilution rate	Dilution time (s)	syneresis
Beef	75.48	14.41	5.24	0.68	28	90	Low
Fish	1061.50	186.70	5.69	0.74	26	180	Very low
Chicken	187.50	39.55	4.74	0.73	29	120	Low
Pork	466.29	100.38	4.65	0.73	30	90	Very low

- 5 The gel strength was measured using the following method:
- using a texture analyser from Microstable Sytems, model TA XT2 with 5 kg load cell.
  - Plunger: Diameter (according AOAC method) 0.5 inches means 12.7 mm, height 35 mm, plane surface, sharp edges, material plastics.
  - Sample Containers have an influence on results if not very large. Therefore the choosen container should always be the same. We have used plastic containers for model systems (diameter bottom 5.5 cm; diameter top 6.5 cm; height 8.5 cm) and glass jars for process trials with recipes other than model systems (diameter 7 cm; height 4 cm).
  - After preparation, samples have been stored at ambient conditions (21°C) at least over night before measurement.
  - 15 - TA-Parameters: Pre speed 1 mm/s, Test speed 0.5 mm/s, Re speed 10 mm/s, Distance 15 mm, Trigger Auto, Force 0.5 g, Stop recording at target. Result we take from the recorded graph is force at 10 mm penetration depth (should be in N, but simplified in g).

**CLAIMS**

1. Packaged concentrate for preparing a bouillon, broth, soup, sauce or gravy or for use as a seasoning, said concentrate comprising:
  - 20-80wt.% water, based on total packaged concentrate,
  - 0.5-60wt.% of particulates of herbs, vegetables, fruits, meat, fish or crustaceans, based on total packaged concentrate,
  - 0.1 to 10wt.% of a gelling agent based on water content of concentrate, comprising a combination of xanthan and locust bean gum,
  - 15-30wt.% salt based on water content of the concentrate, wherein the concentrate is in the form of a gel.
2. Packaged concentrate according to claim 1 containing 15-26wt.% salt, based on the water content of the concentrate.
3. Concentrate according to claim 1, wherein the xanthan and locust bean gum are each present in an amount of 30-70wt.% based on the total amount of xanthan + locust bean gum.
4. Concentrate according to claim 1, 2, or 3, wherein the concentrate has the rheology of a gel.
5. Concentrate according to any one of claims 1 to 4, wherein the concentrate has the rheology of a gel as expressed by a ratio of elastic modulus  $G'$ : viscous modulus  $G''$  of at least 1.
6. Concentrate according to claim 5 wherein said ratio is at least 3.
7. Concentrate according to any one of claims 1-6, having a viscous modulus  $G''$  of at least 10 Pa.
8. Concentrate according to claim 7, wherein the viscous modulus  $G''$  is at least 50 Pa.
9. Concentrate according to one of claims 1-6, wherein the amount of said gelling agent comprising the combination of xanthan and locust bean gum is 0.2-7wt.%.
10. Packaged concentrate according to claim 9 wherein the amount of said gelling agent is 0.6-3wt.%.

11. Concentrate according to any one of claims 1-10, wherein said xanthan and said locust bean gum are each present in an amount of 40-60wt.% based on the total amount of xanthan + locust bean gum.
12. Packaged concentrate according to claim 11 wherein said xanthan and said locust bean gum are each present in an amount of 45-55wt.% based on the total weight of xanthan + locust bean gum.
13. Packaged concentrate according to claim 12 wherein said xanthan and said locust bean gum are each present in an amount of about 50wt.% based on the total weight of xanthan + locust bean gum.
14. Concentrate according to any one of claims 1-13, wherein the total water content of the concentrate is 40-60% by weight, based on the total packaged concentrate.
15. Concentrate according to one of claims 1-14, wherein the concentrate has a water activity  $a_w$  of 0.6 to 0.87.
16. Concentrate according to claim 15, wherein the concentrate has a water activity  $a_w$  of 0.7 to 0.8.
17. Concentrate according to any one of claims 1-15, further comprising 0.5 to 30wt.%, based on total concentrate, of a taste enhancer which is monosodium glutamate, 5'-ribotides, organic acids, or a mixture thereof.
18. Concentrate according to any one of claims 1 to 17, further comprising 1-30wt.%, based on packaged concentrate, of emulsified oil and/or fat.
19. Concentrate according to claim 18 comprising 1-15wt.% based on packaged concentrate, of emulsified oil and/or fat.
20. Concentrate according to any one of claims 1-19, wherein the concentrate is in the form of a cube, tablet, pellet, ball, briquette or dragee.
21. Concentrate according to any one of claims 1-20, wherein the concentrate is packaged in a cup or tub with a seal.

22. Process for preparing a concentrate for preparing a bouillon, broth, soup, sauce or gravy or for use as a seasoning, said concentrate comprising:

- 20-80wt.% water, based on total packaged concentrate,
- 0.5-60wt.% of particulates of herbs, vegetables, fruits, meat, fish or crustaceans, based on total packaged concentrate,
- 0.1 to 10wt.% based on the water content of the concentrate, of a gelling agent comprising a combination of xanthan and locust bean gum,
- 15-30wt.%, based on the water content of the concentrate, of salt,

wherein the concentrate has the appearance of a gel, the process comprising the steps of mixing the ingredients with the water, filling the resulting mixture into a packaging and closing the packaging.

23. Process according to claim 22 wherein a heating step is applied prior to, during or after filling the resulting mixture into the packaging.

24. Process according to claim 23, wherein at least part of the heating step is to a temperature of at least 70°C.

25. Process according to claim 22, 23 or 24 wherein the concentrate comprises 0.2-7wt.% based on the water content of the concentrate of said gelling agent.

26. Process according to claim 25 wherein the concentrate comprises 0.6-3wt.% based on the water content of the concentrate of said gelling agent.

27. Process according to claim 22, 23 or 24 wherein the concentrate comprises 15-26wt.% salt, based on the water content of the concentrate.

28. Process according to any one of claims 22-27 wherein said xanthan and said locust bean gum are each present in an amount of 30-70wt.% based on the total amount of xanthan + locust bean gum.

29. Process according to claim 28 wherein said xanthan and said locust bean gum are each present in an amount of 40-60wt.% based on the total amount of xanthan + locust bean gum.

30. Process according to claim 29 wherein said xanthan and said locust bean gum are each present in an amount of about 50wt.% based on the total amount of xanthan + locust bean gum.

31. Use of a concentrate according to any one of claims 1-21, for preparing a bouillon or soup.

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