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(54) **Title:** PACKAGED SOLID CONCENTRATES FOR PREPARING A BOUILLON, SOUP, SAUCE, GRAVY OR ROUX OR FOR USE AS A SEASONING AND PROCESS FOR PREPARING THE SAME

(57) **Abstract:** A process for preparing a packaged, shaped concentrate article for preparing a bouillon, soup, sauce, gravy, or roux or for use as seasoning, the concentrate article comprising salt and/or starch/flour, and one or more of fat, taste and/or flavour imparting substances, the process comprising the steps of mixing the ingredients, shaping a portion of the mixture by roller compacting, packaging the so-obtained solid concentrate article in a container, wherein the container, when closed, has a volume which is at least 10% larger than the volume of the solid concentrate article, and which article can be crumbled between fingers.

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PACKAGED SOLID CONCENTRATES FOR PREPARING A BOUILLON, SOUP, SAUCE, GRAVY OR ROUX OR FOR USE AS A SEASONING AND PROCESS FOR PREPARING THE SAME

Field of the invention

The present invention relates to a process for preparing packaged solid concentrate articles for (preparation of) a bouillon (including a broth), soup, sauce (including or gravy and sauce binder, roux) or for use as a seasoning, which concentrate articles are produced such that they allow new packaging concepts. The process involves roller compacting, and the concentrate particles so obtained are not in the traditional cube or tablet shape but have one or two convex sides, like the shape of e.g. pellet, lentil, briquette, pebble, dragee, pillow, egg (optionally flattened) or ball (optionally flattened).

Background of the invention

Solid (at room temperature) concentrates for bouillons, sauces, gravies or for use as seasonings are widely used to yield a bouillon, broth, gravy or sauce in a convenient way, or which can be added to other foods to provide a flavour or seasoning. Such concentrates may form the entire bouillon or sauce, e.g. upon dilution with a (hot) aqueous liquid, optionally with stirring and/or allowing time, or may be used as addition to other dishes, e.g. for flavouring, thickening or texturing purposes. These concentrates are often referred to as "dry" products, as they have a dry appearance, yet such concentrates may contain up to 15 or even up to 20% of moisture, e.g. as part of the flour or starch used. The concentrates concerned usually contain one or more of the following components: salt, taste and/or flavour imparting substance (other than salt and sugar) like herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers (such as mono sodium glutamate), flour (or an alternative starch source), non-starch thickeners, fat and optionally other components such as e.g. colorants. The individual amounts of these compounds usually depend upon the intended use and local taste. For example, a bouillon concentrate will usually contain less fat than a concentrate for sauce or gravy, and a seasoning will usually contain more salt and taste enhancers than a sauce.

The most common physical formats in which such solid seasonings or concentrates are available are powders, granulates and unit-dose concentrates such as cubes or tablets. The powders and granulates are generally offered in sachets or jars, the cubes usually individually wrapped and packed in a box. The powders can be prepared by mixing all ingredients in the proper proportion, optionally followed by granulating to obtain granules using equipment

known in the art. Powders and granulates have some advantages, e.g. simple cheap packaging, good dispersibility, whereas unit dose concentrates such as cubes and tablets can be advantageous, e.g. in terms of convenience, dosing, and appearance. The conventional bouillon and seasoning cubes are prepared by mixing the ingredients, followed by pressing to a cube, either in a mould which already contains a wrapper, which is then folded to a closed wrapper after the pressing operation, or the cube, after pressing, is removed from the mould, and a wrapper is wrapped around it. Alternatively, cubes or tablets can be prepared by mixing all ingredients followed by extruding and cutting the extrudate, followed by wrapping a wrapper around it. The wrappers (usually made from sheet or foil-like material, such as aluminium, paper, plastic or composite sheet or foil like materials) around the conventionally pressed or extruded cubes are wrapped fairly tightly around the cube or tablet. Although such packaging material lying fairly tight against the bouillon concentrate has some advantages, there is a desire for concentrate articles that allow for different packaging options to pack them.

Thus, there is a need for a process enabling manufacturing solid concentrate articles of a certain size (e.g. minimum weight per article 0.04 g, preferably at least 0.05 g) for preparing a bouillon (including broth and soup), sauce (including gravy and sauce binder) or for use as a seasoning or roux concentrate, and which solid concentrate article allow for the use of alternative packaging than the usual tightly adhereing wrappers. Still, the solid concentrates so prepared should allow crumbling between fingers (i.e. by hand force, without tools, and fairly easily) as such is the way such concentrates for e.g. seasoning are usually applied (i.e. the cubes should not be rock-hard). Even though e.g. concentrates for preparing a bouillon or sauce are not always crumbled, also for these it is preferred that they could be crumbled, as the opposite (rock-hard cubes) usually also means that they take undesirably long to dissolve or melt. Preferably, the concentrate articles whilst in the packaging should remain stable.

EP 1214895 and WO 98/12934 disclose processes for preparing edible concentrate particles high in fat (25-39% and 15-35%, respectively) by first melting the fat, followed by mixing in the fat the particulate ingredients, followed by casting in a shape and cooling to solidify.

EP 1491101 discloses the manufacture of marbled bouillon or seasoning cubes, prepared by roller compacting a particulate mixture.

Summary of the invention

It was found that mixtures of (dry) particulates like salt, starch or flour, taste or flavour imparting substances can be manufactured into solid concentrate articles (e.g. particles of more than 0.04 g matter, preferably more than 0.05 g matter) by roller compacting the mixture, and that such roller-compacted concentrate article allows for different packaging options that the conventionally tightly wrapped cubes or tablets, and said solid concentrates do not require to be rock-hard, i.e. they can still be crumbled between fingers. Roller compacting is also referred to as roller pressing or roll compacting.

Thus, the invention relates to a process for preparing a packed solid concentrate article for preparing a bouillon, soup, sauce, gravy, or roux or for use as seasoning, the concentrate article comprising (by weight on total composition):

- 2-70% (5-50%) of salt and/or 1-70% (preferably 1-40%) starch or flour,

and one or more of:

- 3-60% (preferably 5-40%) fat
- 10-95% of a taste and/or flavour imparting substance including herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers, sugar,

the process comprising the steps of:

(a) mixing the ingredients,

(b) shaping by compressing a portion of the mixed ingredients obtained under (a) to a solid concentrate article by roller compacting using a pair of rollers, wherein at least one of the rollers of the pair has moulds,

(c) packaging the solid concentrate article obtained under (b) in a container, wherein the container, when closed, has a volume which is at least 10% larger than the volume of the solid concentrate article.

Preferably the article produced by step (b) have a weight of 0.04 to 30 g, preferably 0.05-30 g, more preferably 0.5-20 g, and most preferably 1-12 g.

The invention further relates to the packaged solid concentrate articles which can be prepared by the above process: i.e. the invention further relates to packaged solid concentrate article for preparing a bouillon, soup, sauce, gravy, or roux, or for use as seasoning, the concentrate article comprising (by weight on total composition):

- 2-70% (preferably 5-50%) of salt and/or 1-70% (preferably 1-40%) starch or flour,

and one or more of:

- 3-60% (preferably 5-40%) fat

- 10-95% of a taste and/or flavour imparting substance including herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers, sugar,

wherein the particle is in a shape having one convex side with an opposed flat side or (preferably) two opposed convex sides and has a weight of 0.04 to 30 g, preferably 0.05-30 g, more preferably 0.5-20 g, and most preferably 1-12 g, and wherein the packaging, when closed, has a volume which is at least 10% larger than the volume of the solid concentrate article in the packaging.

The invention further relates to the use of a packaged solid concentrate article as defined above and below for preparing a bouillon, soup, sauce, gravy or roux, or for use as seasoning.

Detailed description of the invention

Roller compacting (also called briquetting, roll compacting, or prepared by roll-pressing, all of which are herein referred to as roller compacting) is e.g. disclosed for other materials in e.g. EP 1120436 and by P. Guignon and O. Simon in: Powder Technology 130, pp 41-48, 2003.

Roller compacting usually means feeding the material between a pair of rollers (or rolls), wherein the pair of rollers have their axis of rotation horizontally aligned and the circumference surface of both rollers facing eachother. At least one of the rollers, preferably both rollers, have moulds to shape the matter. The rolling action presses the matter together in the mould and by further rotation the matter is usually released. The moulds are preferably concave moulds. Typical concave moulds on the rollers are moulds in the shape of halves of a pellet, lentil, briquette, pebble, dragee, pillow, egg or ball: upon operation both mould-halves (in case of two jointly operated rollers) will form the concentrate particle in the shape of a pellet, lentil, briquette, pebble, dragee, pillow, egg or ball, respectively.

In the process according to the present invention it can be preferred that the container, when closed, has a volume which is at least 15%, and more preferably at least 20% larger than the solid concentrate article. The word "container" should be interpreted as a packaging surrounding the concentrate article. It can be prepared of a wide variety of materials. It does not necessarily mean that it hermetically seals of the concentrate article from the environment, but it can mean that. It can be rigid, flexible, or something in between, or a combination of rigid or flexible material. The packaging can be partly or wholly transparent. The packaging may be reclosable such as a jar with a screw cap.

The concentrate articles according to the present invention can each be in a separate (volume of a) container. Suitable packagings for such purpose encompass blister pack, loose wrapper, bag, pouch, or flowpack. A multitude of concentrates in containers may be linked together, such as e.g. a blister pack in the form of a strip or sheet, containing a plurality of (sealed) cavities, each cavity containing a concentrate article according to this invention. Also a flowpack may consist of a strip of cavities linked together, each cavity comprising one concentrate article according to the present invention.

It may also be possible to pack a plurality of solid concentrate articles as manufactured as herein described in one container. Hence, the invention also relates to a process according to this invention wherein a plurality of solid concentrate articles as obtained under step (b) of the process are packed jointly in one container. Jointly packed means herein that a single packaging coontainer comprises more than one solid concentrate. Usually it will mean that the solid concentrates are in contact with oneanother. Suitable containers for such comprise: a pot, jar, can, tin, box, bag, pouch, flowpack, sachet, or doypack.

In the process according to the invention the level of fat is preferably 3-45% (by weight on the total compressed ingredients), more preferably 15-45% (by weight), most preferably 20-45% (by weight), in particular for bouillons, soups, seasonings. For high fat formulations (e.g. sauces, gravies, roux) the level of fat can be preferred to be 10-70% or 10-60% (by weight on the total compressed ingredients), more preferably 20-60% (by weight). The fat used in the process and product according to the present invention is preferably solid at room temperature, preferably fat having a melting point above 35°C, more preferably above 40°C. However, part of the fat, up to 5% or even 10% of total amount of fat may be a lower melting fat (e.g. chicken fat) or a liquid oil. The solid fat used is preferably in the form of flakes or powdered fat. Part of the fat can be fat in disguise: as a composition containing fat, such as a creamer/whitener. For the purpose of this invention, the fat in such creamer will be calculated to be part of the 3-60% of fat. Use of such creamer is particularly preferred when very high levels of fat (e.g. above 45 or 50% of total fat on the total composition) are desired. Although the fats used in the present invention will be mainly fatty acid triglycerides, the fat fraction may also comprise (plant) stanols or (plant) sterols as part of the fat fraction.

In the present invention, the salt is preferably sodium and/or potassium chloride. The flour can be of conventional origin, e.g. corn, wheat, rice, rye flour. The starch can be natural and/or (chemically and/or physically) modified. The taste and/or flavour imparting substances may

comprise one or more of: (dried) herbs (small leafs, parts of leafs, ground herbs), spices vegetable or meat flavour, vegetable-, meat-, fish-, or yeast-extract or -hydrolysate, dried vegetable- or fruit-powder or -particulates (particulates should preferably not be too big, e.g. less than 30% of the size of the solid concentrate).

The roller-compacted articles according to the present invention may further comprise maltodextrin in an amount of 2-20% by weight, such as for example as processing aid. Optionally, moisture (e.g. 2-10%) may be added to the mixture to be roller compactaed, to e.g. facilitate coherence of the material.

If in the roller compacting one roller is used having (concave) moulds forming a pair with one flat roller, the concentrate articles so produced can have a shape of which one side is flat, and the other side can be in the shape of half a pellet, lentil, briquette, dragee, pillow, egg or ball. If pairs of rollers are used in the present process with pairs of (concave) moulds, the concentrates can be in the shape of a pellet, lentil, briquette, dragee, pillow, (optionally flattened) egg or (optionally flattened) ball. In the latter case the concentrates will have two convex sides opposite to eachother. Such may be preferred over one flat side and one convex side.

The material to be shaped may also comprise ingredients of different appearance, e.g. different color. Such differently colored ingredients may be fairly big granules, so that marbled objects can be obtained. The feed material may also be chosen such that multiple phases can be distinguished (e.g. visually or by touch) in the resulting shaped seasonings, soup- or sauce concentrate. This may be obtained as above, by using differently colored ingredients, optionally the ingredients may be in the form of granules.

Although in theory it is possible with the process as set out above to manufacture a range of different shapes of the concentrates it may be preferred that the moulds are in the shape of one half of a pellet, briquette, pebble, dragee, pillow (all optionally with sharp or rounded edges), or the shape of a halved ball, or the shape of a halve, flattened ball, or the shape of a longitudinally halved (optionally flattened) egg. The so-produced concentrates can then have the shape of a pellet, lentil, briquette, pebble, dragee, pillow (with or without rounded edges), the shape of a (flattened) ball, or of an egg (possibly flattened), respectively. Many different shapes are possible. It may be preferred to have shapes of the moulds without sharp edges, to facilitate release of the shaped material from the mould. The moulds may be asymmetrical,

or different on both rollers. Another option would be to have relief's (positive or negative) on one or more of the moulds, so that the shaped particles may be made with relief decoration, e.g. letters, symbols, figures, brands, etcetera.

In theory all sorts of sizes are possible for the moulds, but it may be preferred that the surface area of one mould is at least 0.2 (preferably at least 0.3, most preferably at least 0.5) cm^2. It may be preferred that the surface area of one mould is below 50 cm^2.

It was found that if small size for the concentrates are preferred, e.g. pellets or lentil-like shape (or pillows, pebbles, briquettes etcetera) concentrates (of the compositions herein) having a weight (per particle) of 0.04-4 g, preferably 0.05-4 g, more preferably 0.05-2 g, most preferably 0.05-1 g, the technique of the present invention is quite suitable for preparing such with high throughput. The moulds for such relatively small particles have preferably a surface area of 0.2-3, preferably 0.3-1.5, more preferably 0.3.-1 cm^2. For producing larger size particles according to the present invention (e.g. pillows, briquettes, pebbles) having e.g. a weight of 1-30 g, preferably 1-20 g, and most preferably 1-12 g, the moulds of the roller(s) have preferably such a size that the surface area of the moulds are preferably 0.5-20, preferably 1-20 more preferably 2-10 cm^2. Thus, overall the the concentrate article preferably has a weight of 0.04-30 g, more preferably 0.05-20 g, even more preferably 0.05-12 g.

A preferred arrangement can be seen in figure 3 of EP 1120436, wherein the feeding to the pair of rollers is achieved by a hopper or screw feeder, but other feed mechanisms as known in the art may be used, e.g. using gravity. The rollers and feed mechanism may comprise additional equipment like e.g. scrapers, sieves, transport mechanisms for transporting the feed material or the shaped articles, packaging equipment, conveyor belts, separating equipment, flow pack or multi pack machines. Also, a drive mechanism for the rollers will usually be part of it, e.g. a motor and/or gearbox, and speed and pressure control of the rollers. The degree of compaction as well as the density can be adjustable by regulating the speed of the rollers and/or the speed of feeding the material to the rollers.

An advantage of the present invention over techniques such as extruding is that the product upon shaping is not subjected to heat formed in the shaping equipment itself (by e.g. friction), as little to no heat is developed in shaping the mixture. It may not be necessary for most applications, but the rollers may be heated or cooled. The mixture to be compacted and shaped is preferably not melted and/or heated prior to feeding to the rollers.

The process according to the present invention can be used to prepare packaged solid concentrates for various applications (for preparing a bouillon, broth, soup, sauce, as soup or sauce finisher, gravy, gravy finisher, roux, or for use as a seasoning), as long as they have the general composition as set out above and are packaged along the lines as set out above.

The invention further relates to (the use of) a packaged solid bouillon or broth concentrate or solid seasoning article shaped following the process according to the present invention, comprising (% by weight on total composition):

(a) 2-70% (preferably 10-60%) of salt
(b) 10-95% (preferably 15-80%) of a taste and/or flavour imparting substance including herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers,
(c) 0-30% (preferably 0-10%) sugar,
(d) 0-20% starch or flour,
(e) 3-40% (preferably 5-20%) fat,
(f) optionally 2-20% maltodextrin,
(g) optionally moisture,

wherein the article is in a shape having one convex side with an opposed flat side or two opposed convex sides and has a weight of 0.04 to 30 g, preferably 0.05-30 g, more preferably 0.5-20 g, and most preferably 1-12 g, and wherein the packaging, when closed, has a volume which is at least 10% larger (preferably at least 15%, more preferably at least 20%) than the volume of the solid concentrate article in the packaging.

The invention thus also relates to a process of roller compacting the above mixture, followed by packaging the solid concentrate article in a container, wherein the container, when closed, has a volume which is at least 10%, preferably at least 15%, more prefably at least 20% larger than the volume of the solid concentrate article.

The invention further relates to (the use of) a packaged solid soup (other than bouillon or broth) concentrate article shaped following the process according to the present invention, comprising (% by weight on total composition):

(a) 3-30% (preferably 5-20%) of salt,
(b) 10-95% (preferably 15-80%) of a taste and/or flavour imparting substance including herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers,
(c) 0-15% sugar,

(d) 0.5-50% (preferably 1-30%) starch or flour,
(e) 3-25% (preferably 3-10%) fat,
(f) optionally 2-20% maltodextrin,
(g) optionally moisture,
wherein the article is in a shape having one convex side with an opposed flat side or two opposed convex sides and has a weight of 0.04 to 30 g, preferably 0.05-30 g, more preferably 0.5-20 g, and most preferably 1-12 g, and wherein the packaging, when closed, has a volume which is at least 10% larger (preferably at least 15%, more preferably at least 20%) than the volume of the solid concentrate article in the packaging.

The invention thus also relates to a process of roller compacting the above mixture, followed by packaging the solid concentrate article in a container, wherein the container, when closed, has a volume which is at least 10%, preferably at least 15%, more prefably at least 20% larger than the volume of the solid concentrate article.

The invention further relates to (the use of) a packaged sauce (incl. gravy) concentrate article shaped following the process according to the present invention, comprising (% by weight on total composition):
(a) 2-50% (preferably 2-25%) of salt
(b) 0-65% (preferably 5-50%) of a taste and/or flavour imparting substance including herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers,
(c) 0-20% sugar,
(d) 2-65% starch or flour (preferably 10-60%),
(e) 3-60% fat (preferably 3-45%),
(f) optionally 2-20% maltodextrin,
(g) optionally moisture,
wherein the article is in a shape having one convex side with an opposed flat side or two opposed convex sides and has a weight of 0.04 to 30 g, preferably 0.05-30 g, more preferably 0.5-20 g, and most preferably 1-12 g, and wherein the packaging, when closed, has a volume which is at least 10% larger (preferably at least 15%, more preferably at least 20%) than the volume of the solid concentrate article in the packaging.

The invention thus also relates to a process of roller compacting the above mixture, followed by packaging the solid concentrate article in a container, wherein the container, when closed,

has a volume which is at least 10%, preferably at least 15%, more prefably at least 20% larger than the volume of the solid concentrate article.

The invention further relates to (the use of) a packaged roux-base concentrate article shaped following the process according to the present invention, comprising (% by weight on total composition):

(a) 35-70% starch or flour,

(b) 30-65% fat,

(c) optionally 2-20% maltodextrin,

(d) optionally moisture,

wherein the article is in a shape having one convex side with an opposed flat side or two opposed convex sides and has a weight of 0.04 to 30 g, preferably 0.05-30 g, more preferably 0.5-20 g, and most preferably 1-12 g and wherein the packaging, when closed, has a volume which is at least 10% larger (preferably at least 15%, more preferably at least 20%) than the volume of the solid concentrate article in the packaging.

The invention thus also relates to a process of roller compacting the above mixture, followed by packaging the solid concentrate article in a container, wherein the container, when closed, has a volume which is at least 10%, preferably at least 15%, more prefably at least 20% larger than the volume of the solid concentrate article.

For the articles according to the present invention, and also for the articles as set out above, it may be preferred that the container, when closed, has a volume which is at least 15%, and more preferably at least 20% larger than the volume of the solid concentrate article. The word "container" should be interpreted as a packaging surrounding the concentrate article. It can be prepared of a wide variety of materials. It does not necessarily mean that it hermetically seals of the concentrate article from the environment, but it can mean that. It can be rigid, flexible, or something in between, or a combination of rigid or flexible material. The packaging can be partly or wholly transparent. The packaging may be reclosable such as a jar with screw cap.

The concentrate articles according to the present invention can each be in a separate container. Suitable packagings for such purpose encompass blister pack, loose wrapper, bag, pouch, or flowpack. A multitude of concentrates in containers may be linked together, such as e.g. a blister pack in the form of a strip or sheet, containing a plurality of (sealed) cavities, each cavity containing a concentrate article according to this invention. Also a flowpack may

consist of a strip of cavities linked together, each cavity comprising one concentrate article according to the present invention.

It may also be possible to pack a plurality of solid concentrate articles as manufactured as herein described in one container. Hence, the invention also relates to a process according to this invention wherein a plurality of solid concentrate articles as obtained by step (b) of the process are packed jointly in one container. Jointly packed means herein that a single packaging container comprises more than one solid concentrate. Usually it will mean that the solid concentrates are in contact with oneanother. Suitable containers for such comprise: a pot, jar, can, tin, box, bag, pouch, flowpack, sachet, or doypack.

The invention further relates to the use of a packaged solid concentrate article for preparing a bouillon, soup, sauce, gravy or roux or for use as seasoning, the concentrate article comprising (by weight on total composition):

- 2-70% (preferably 5-50%) of salt and/or 1-70% (preferably 1-40%) starch or flour,

and one or more of:

- 3-60% (preferably 5-40%) fat
- 10-95% of a taste and/or flavour imparting substance including herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers, sugar,
- optionally moisture,

wherein the particle is in a shape having one convex side with an opposed flat side or two opposed convex sides and has a weight of of 0.04 to 30 g, preferably 0.05-30 g, more preferably 0.5-20 g, and most preferably 1-12 g, and wherein the packaging, when closed, has a volume which is at least 10% larger than the volume of the solid concentrate article in the packaging.

The invention also relates to the use of such concentrate, wherein the concentrate article is dissolved in food, a dish, or an aqueous liquid or melted in or with food, a dish or an aqueous liquid.

The invention further relates to the use of the concentrate when being crumbled above food, a dish, in a cooking pot, during or after preparation of food or a dish.

EXAMPLES

Several mixtures for seasonings, soup and sauce concentrates were subjected to shaping equipment similar to figure 3 of EP 1120436. The mixtures used and the way they were processed is set out below.

Example 1: Fat based chicken seasoning for pillow shaping

All ingredients as in table 1 except the fat flakes were mixed in a ploughshare mixer at 120 rpm for 2 minutes. Then the palm fat flakes were added. Mixing was continued for 7 minutes. Final product temperature 35-40°C.

The mixture was added into the feeding hopper of the shaping equipment as mentioned above. The moulds of the roller were 33x19 mm, 2 lines of 25 moulds on each roller. Speed of the feeding screw: 55 rpm. Speed of the rollers: 5 rpm. Pressure 45-50 kN.

The resulting product were pillow-shaped pieces suitable as a chicken seasoning to other foodstuffs, and the pillow-shaped pieces could by crumbled between fingers. The pillow-shaped pieces so-obtained had a volume of approx. 4.5 ml. The so-obtained articles were packaged as follows: 12 pieces in a doy pack of 200 ml, as well as 20 pieces in a carton box of 150 ml. Suitable packaging would also be 1 piece in a flow wrap of 10 ml.

Table 1

Ingredients	Amount [%]
MSG	33
Salt	31
Palm Fat Flakes	19
Sugar	8.5
Minor Ingredients	8.5

Minor ingredients	Amount [%]
Cornstarch	80
Chicken Flavour	10
Modified Starch	6
Spices	4

Example 2: Vegetable bouillon pillow-shaped pieces

All ingredients as in table 2 except the herbs, vegetable pieces and fat flakes were mixed in a ploughshare mixer at 120 rpm for 1 minute. During mixing the fat flakes were added. Mixing was continued for 3 minutes, after which the herbs and vegetable pieces were added. Mixing for 1 minute at 60 rpm.

The mixture was added into the feeding hopper of the shaping equipment. The moulds of the roller were 20x29 mm. Speed of the feeding screw: 50 rpm. Speed of the rollers: 10 rpm. Pressure 25-30 kN.

The resulting product were pillow-shaped pieces suitable as a vegetable bouillon upon mixing with hot water, with comparable in taste and use of conventional vegetable bouillon cubes, and they could be crumbled between fingers. The pillow-shaped pieces so-obtained had a volume of approx. 4 ml. The so-obtained articles were packaged as follows: 15 pieces in a doy pack of 200 ml, as well as 1 piece in a blister pack of 10 ml.

Table 2.

Ingredients	Amount [%]
Salt	35
MSG	20
Flaked vegetable fat	13
Yeast extract	10
Flavour	6
Sugar	4
Spices	4
Meat extract replacer	3
Vegetable powders	2
Vegetable pieces (1-2mm)	2
Herb pieces	1

Example 3: Beef bouillon pillow-shaped pieces

All ingredients as in table 3 except the water and the beef extract were mixed in a ploughshare mixer at 120 rpm for 1 minute. The water and the beef extract were added. Mixing was continued for 5 minutes. Temperature of the mix after mixing: 35-40°C.

The mixture was added into the feeding hopper of the shaping equipment. The moulds of the roller were 20x24 mm. Speed of the feeding screw: 60 rpm. Speed of the rollers: 5 rpm. Pressure 40-45 kN.

The resulting product were pillow-shaped pieces suitable as a beef bouillon upon mixing with hot water, with comparable taste and use of conventional beef bouillon cubes, and could be crumbled between fingers. The pillow-shaped pieces so-obtained had a volume of approx. 2.9 ml. The so-obtained articles were packaged as follows: 30 pieces in a doy pack of 200 ml. Suitable packaging would be 2 pieces in a blister pack of 12 ml.

Table 3.

Ingredients	Amount [%]
Salt	49.5
MSG	14
Vegetable fat flakes	12
Beef extract paste 80%d.s	5.5
Cornstarch native	5.5
Yeast extract	5
Flavours	3
Spices	2
Water	1.5
Onion powder	1.5
Colouring agent	0.5

Example 4: Yellow pea soup pillow-shaped pieces

All ingredients as in table 4 except the smoked bacon pieces were mixed in a ploughshare mixer at 120 rpm for 30 seconds. The smoked bacon pieces were added. Mixing was continued for 8 minutes at 120 rpm. The product was fed through a sieve mill (30 mm) and mixed in a low shear screw mixer for 1 minute.

The mixture was added into the feeding hopper of the shaping equipment. The moulds of the roller were 20x24 mm. Speed of the feeding screw: 60 rpm. Speed of the rollers: 5 rpm. Pressure 55-60 kN.

The resulting product were pillow-shaped pieces (which could be crumbled between fingers) suitable to yield a yellow pea soup upon mixing with hot water, with comparable taste and use as known yellow pea soup concentrates (Germany). The pillow-shaped pieces so-obtained had a volume of approx. 2.9 ml. The so-obtained articles were packaged as follows: 30 pieces

in a doy pack of 200 ml, as well as 60 pieces in a square metal tin of 350 ml. Suitable packaging would be 5 pieces in a flow wrap of 30 ml.

Table 4

Ingredients	Amount [%]
Yellow pea flour	71
Smoked bacon pieces	8.5
Flavour	5.9
Salt	5.5
Liquid vegetable fat	3.4
Yeast extract	2.5
MSG	2.4
Modified starch	0.5
Colouring agent	0.3

Example 5: Chicken-garlic pillow-shaped pieces

All ingredients as in table 5 except the garlic grits, parsley leaves, fat flakes and water were mixed in a ploughshare mixer at 120 rpm for 1 minute. During mixing the water and fat flakes were added. Mixing was continued for 3 minutes. The product was fed through a sieve mill (30 mm) and mixed in a low shear screw mixer for 1 minute. Garlic grits and parsley leaves were added. Mixing was continued for further 3min.

The mixture was added into the feeding hopper of the shaping equipment. The moulds of the roller were 20x24 mm. Speed of the feeding screw: 50 rpm. Speed of the rollers: 6 rpm. Pressure 35-40 kN.

The resulting product were pillow-shaped pieces (which could be crumbled between fingers) suitable as a chicken garlic bouillon upon mixing with hot water, with comparable taste and use of conventional chicken-garlic bouillon cubes. The pillow-shaped pieces so-obtained had a volume of approx. 2.9 ml. The so-obtained articles were packaged as follows: 30 pieces in a doy pack of 200 ml, as well as 60 pieces in a square metal tin of 350 ml. Suitable packaging would be 5 pieces in a flow wrap of 30 ml.

Table 5

Ingredients	Amount [%]
Salt	50

Maltodextrin	11.5
Sugar	7
MSG	14
Vegetable fat flakes	7.5
Cornstarch	5
Flavours	1.2
Colouring spices	0.5
Spice mix	1
Water	0.8
Citric acid	0.5
garlic grits	0.8
Parsley leaves	0.2

Example 6: Sauce suprême pillow-shaped pieces

All ingredients as in table 6 except the powdered fat and the fat flakes mixed in a ploughshare mixer at 120 rpm for 2 minute. During mixing the fat flakes were added. Mixing was continued for 1 minutes. The product was fed through a sieve mill (30 mm) and mixed in a low shear screw mixer for 1 minute. Powdered fat was added. Mixing was continued for further 2min. The mixture was added into the feeding hopper of the shaping equipment. The moulds of the roller were 20x24 mm. Speed of the feeding screw: 45 rpm. Speed of the rollers: 5 rpm. Pressure 30-35 kN.

The resulting product were pillow-shaped pieces suitable as a sauce suprême upon mixing with hot water, with comparable taste and use of conventional sauce suprême concentrates, and could be crumbled between fingers. The pillow-shaped pieces so-obtained had a volume of approx. 2.9 ml. The so-obtained articles were packaged as follows: 30 pieces in a doy pack of 200 ml. Suitable packaging would be 2 pieces in a blister pack of 30 ml.

Table 6

Ingredients	Amount [%]
Powdered fat	31.3
Modified starch	26
Vegetable fat flakes	19
Maltodextrin	7
Salt	5.5

Flavours	3.2
MSG	2.5
Wine powder	2
Chicken fat	2
Vegetable powders	1
Colouring agent	0.2
Spices	0.2
Vegetable extracts	0.1

Example 7: Roux pillow-shaped pieces

The ingredients as in table 7 were mixed in a stephan cutter at 1500 rpm with scrapers. The mixture was subsequently heated up to 120°C (by indirect steam, double jacket). The moisture present was evaporated down to 3-5% by applying vacuum. The product was crystallised on a cooling belt. The crystallised roux was granulated on a sieve granulator.

The mixture was fed to the rollers of the shaping equipment by gravity. The moulds of the roller were 14x14 mm. Speed of the rollers: 7 rpm. Pressure 15-20 kN.

The resulting products were pillow-shaped roux pieces suitable to be mixed with an aqueous liquid to form a roux base sauce under stirring and heating, and could be crumbled between fingers. The pillow-shaped pieces so-obtained had a volume of approx. 0.8 ml. The so-obtained articles were packaged as follows: 300 pieces in a doy pack of 500 ml. Suitable packaging would be: 10 pieces in a flow wrap of 20 ml.

Table 7

Ingredients	Amount [%]
Vegetable fat	40
Wheat flour	60

Example 8: Vegetable Bouillon Pillow

Table 8

Ingredients	Amount [%]
Vegetable fat (mp 50-55°C)	12
Modified starch	9

Lactose	10
Maltodextrin	11
Salt	36
MSG	13
Yeast extract	3
Herbs	1
Vegetable part. (dried)	3
Spices and flavourings	2

The ingredients of tbale 8 except the herbs were mixed in a blender for about 3 minutes; the herbs were added and mixed for another half a minute. The mixture was added into the feeding hopper of the shaping equipment (similar to previous examples). The moulds of the roller were 24x24mm. Speed of the feeding screw: 70 rpm. Speed of the rollers: 5 rpm. Pressure 41-43 kN.

The resulting products were pillow-shaped vegetable bouillon pieces suitable to be mixed with a hot aqueous liquid to form a vegetable bouillon under stirring and heating, and could be crumbled between fingers. The pillow-shaped pieces so-obtained had a volume of approx. 4.7 ml and a weight of approx. 8 g.

The so-obtained articles were packaged as follows: 10 pieces in a squared plastic pot of 100ml, 30 pieces in a squared metal tin of 350ml, 10 pieces in an aluminium pouch of 150ml, 12 pieces in a squared carton box of 166ml, 1 piece in a blister pack of 9ml. Suitable packaging would be 2 pieces in a flow wrap of 25ml, or 1 piece in a flow wrap of 12ml.

Example 9: chicken bouillon

Table 9

Ingredients	Amount [%]
Vegetable fat (mp 48-52°C)	12
Sugar	9
Maltodextrin	12
Salt	44
MSG	10
Yeast extract	2
Herbs	1

Chicken meat part. (dried)	3
Vegetable part. (dried)	2
Spices and flavourings	5

The ingredients of table 9 except the herbs were mixed in a blender for about 3 minutes; the herbs were added and mixed for another half a minute. The mixture was added into the feeding hopper of the shaping equipment (similar to previous examples). The moulds of the roller were 17.5x17.5 mm. Speed of the feeding screw: 65 rpm. Speed of the rollers: 7 rpm. Pressure 43-45 kN.

The resulting products were pillow-shaped chicken bouillon pieces suitable to be mixed with a hot aqueous liquid to form a chicken bouillon under stirring and heating, and could be crumbled between fingers. The pillow-shaped pieces so-obtained had a volume of 2.4 ml and a weight 4 g. The so-obtained articles were packaged as follows: 20 pieces in a squared plastic pot of 100ml, 60 pieces in a squared metal tin of 350ml, 25 pieces in an aluminium pouch of 150ml, 12 pieces in a carton box of 166ml. Suitable packaging would be: 3 pieces in a flow wrap of 20ml, 1 piece in a flow wrap of 7ml, 1 piece in a blister of 5ml.

CLAIMS

1. Process for preparing a packed solid concentrate article for preparing a bouillon, soup, sauce, gravy, or roux or for use as seasoning, the concentrate article comprising (by weight on total composition):
   - 2-70% of salt and/or 1-70% starch or flour,

   and one or more of:
   - 3-60% fat
   - 10-95% of a taste and/or flavour imparting substance including herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers, sugar,

   the process comprising the steps of:
   (a) mixing the ingredients,
   (b) shaping by compressing a portion of the mixed ingredients obtained under (a) to a solid concentrate article by roller compacting using a pair of rollers, wherein at least one of the rollers of the pair has moulds,
   (c) packaging the solid concentrate article obtained under (b) in a container, wherein the container, when closed, has a volume which is at least 10% larger than the volume of the solid concentrate article.

2. Process according to claim 1, wherein the container, when closed, has a volume which is at least 15%, preferably at least 20% larger than the volume of the solid concentrate article.

3. Process according to claim 1-2, wherein the container is a blister pack, loose wrapper, bag, pouch, or flowpack.

4. Process according to claim 1-3, wherein a plurality of solid concentrate articles as obtained under (b) are packed jointly in one container.

5. Process according to claim 4, wherein the container is a pot, jar, can, tin, box, bag, pouch, flowpack, sachet, or doypack.

6. Process according to claim 1-5, wherein both rollers of the pair of rollers have moulds.

7. Process according to claim 1-6, wherein the rollers have concave moulds.

8. Process according to claim 1-7, wherein moulds in the shape of halves of a pellet, lentil, briquette, pebble, dragee, pillow, (flattened) egg or (flattened) ball.

9. Packaged solid concentrate articles which can be prepared by the above process: i.e. the invention further relates to packaged solid concentrate article for preparing a bouillon, soup, sauce, gravy, or roux, or for use as seasoning, the concentrate article comprising (by weight on total composition):

- 2-70% of salt and/or 1-70% starch or flour,

and one or more of:

- 3-60% fat
- 10-95% of a taste and/or flavour imparting substance including herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers, sugar,

wherein the particle is in a shape having one convex side with an opposed flat side or two opposed convex sides and has a weight of 0.04 to 30 g, preferably 0.05-30 g, more preferably 0.5-20 g, and most preferably 1-12 g, and wherein the packaging, when closed, has a volume which is at least 10% larger than the volume of the solid concentrate article in the packaging.

10. Packaged solid concentrate article according to claim 9, wherein the packaging, when closed, has a volume which is at least 15%, preferably at least 20% larger than the volume of the solid concentrate article.

11. Packaged solid concentrate article according to claim 9-10, wherein the container is a blister pack, loose wrapper, bag, or flowpack.

12. Packaged solid concentrate article according to claim 9-11, wherein a plurality of solid concentrate articles are packed jointly in one packaging.

13. Packaged solid concentrate article according to claim 9-12 wherein the packaging is a pot, jar, can, tin, box, bag, pouch, flowpack, sachet, or doypack.

14. Packaged solid concentrate article according to claim 9-13 the concentrate article having a weight of 0.04-30 g, preferably 0.05-20 g, more preferably 0.05-12 g.

15. Packaged solid concentrate article according to claim 9-14 wherein the concentrate article is in the shape of a pellet, lentil, briquette, pebble, dragee, pillow, egg or ball.

16. Packaged solid concentrate article according to claim 9-15, wherein multiple phases can be distinguished by vision or by touch.

17. Use of a packaged solid concentrate article for preparing a bouillon, soup, sauce, gravy, or roux, or for use as seasoning, the concentrate article comprising (by weight on total composition):

- 2-70% of salt and/or 1-70% starch or flour,

and one or more of:

- 3-60% fat
- 10-95% of a taste and/or flavour imparting substance including herbs, spices, vegetable powders or particulates, flavourants, taste-enhancers, sugar,
- optionally moisture,

wherein the particle is in a shape having one convex side with an opposed flat side or two opposed convex sides and has a weight of of 0.04 to 30 g, preferably 0.05-30 g, more preferably 0.5-20 g, and most preferably 1-12 g, and wherein the packaging, when closed, has a volume which is at least 10% larger than the volume of the solid concentrate article in the packaging.

18 Use according to claim 17, wherein the concentrate is crumbled above food, a dish, in a cooking pot, during or after preparation of food or a dish.

19 Use according to claim 17, wherein the concentrate article is dissolved in food, a dish, or an aqueous liquid or melted in or with food, a dish or an aqueous liquid.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2006/002098

A. CLASSIFICATION OF SUBJECT MATTER
INV. A23L1/40 A23L1/00

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

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 practical, search terms used)
EPO-Internal, WPI Data, PAJ, FSTA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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