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(54) **GELATIN REPLACEMENT BY WHEAT FIBER GEL AND STARCH**

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(57) **ABSTRACT**

A composition for gelatin replacement is disclosed. The composition comprises wheat fiber gel and starch. The wheat fiber gel may be Vitacel™ and the starch is a modified starch, preferably modified waxy maize starch or modified tapioca starch. The composition is used for gelatin replacement in dairy products, fermented milk products, fat spreads and margarine.

GELATIN REPLACEMENT BY WHEAT FIBER GEL AND STARCH

TECHNICAL FIELD

[0001] The present invention relates to a composition for gelatin replacement. The composition comprises wheat fiber gel and starch. The composition is used for gelatin replacement in dairy products, fermented milk products, fat spreads and margarine.

BACKGROUND OF THE INVENTION

[0002] Gelatin is obtained by hydrolysis of collagen. Collagen is the major intercellular protein found in the connective tissue of animal skins and bones. Gelatin is used for its gel forming ability. A firm gel is formed in aqueous medium. Gelatin is mainly used in foods, pharmaceutical preparations or photographic products. It is also widely used as a colloid, it is particularly effective as an emulsifier and stabilizer of emulsions and foams such as water crystals in ice cream, air in marshmallows and oils in water.

[0003] Gelatin has found wide application, and it is used in many different products. The product has a very heterogeneous composition and this may influence the characteristics. Already since a long time one is searching for gelatin replacers. Preferably such a replacer is to be made from easily obtainable (vegetable) material having a homogeneous composition and having all the essential characteristics of gelatin. The interest in this search has lately increased since the outbreak of the BSB disease. Bovine skin and bones form a major source of collagen used for gelatin production.

[0004] Wheat fiber gel is made by thermal/physical processing of wheat fiber. A special milling technique is used for treating wheat material resulting in a product containing a large proportion of microfine particles. Specific improvements are obtained by mixing the product with maltodextrin. The product so obtained is sold under the tradename Vitacel. This product is a dry powder, which readily disperses in water. Upon stirring of the dispersion the gel forms through shear forces. It is reported that wheat fiber gel can be used as a gelatin replacer in yoghurt or ice cream. (I. I. Bollinger, Food Marketing & Techn. October 1995, 4-6).

SUMMARY OF THE INVENTION

[0005] The present invention discloses a composition for use as a gelatin replacer comprising wheat fibers and modified starch. The composition may in addition thereto contain a maltodextrin having a low DE.

[0006] The modified starch in the composition is preferably modified waxy maize starch or modified tapioca starch.

[0007] The present invention also discloses dairy product, fermented milk product, fat spread or margarine comprising from 0.1 to 10% (w/w) of a gelatin replacer composition.

[0008] The invention further discloses a method for preparing a gelatin replacer comprising the steps of

[0009] mixing wheat fiber gel with starch,

[0010] thoroughly homogenizing the product at a temperature below 50° C., and optionally

[0011] drying the product.

DETAILED DESCRIPTION OF THE INVENTION

[0012] The present invention discloses a composition for use as a gelatin replacer comprising wheat fibers and modified starch. The composition may in addition thereto contain a maltodextrin having a low DE that is a DE value of below 20. A suitable product is a mixture of Vitacel® WFG HS73 (available from Rettenmaier & Söhne and which is a mixture of wheat fiber gel and maltodextrin (70:30%)) and modified starch. Preferably, the components are mixed in a ratio of from 40:60 to 80:20%. The most preferred mixture contains components in a ratio of 60:40%.

[0013] The modified starch in the composition is preferably modified waxy maize starch or modified tapioca starch. Although different types of modified starch can be used the modification is preferably a hydroxypropylation.

[0014] Although the product used in the Examples contains maltodextrin it is also possible to obtain good results without the presence of maltodextrin. The composition, which consists of wheat fiber gel, starch and maltodextrin has also some physiological advantages.

[0015] The present invention also discloses a dairy product, fermented milk product, fat spread or margarine comprising from 0.1 to 10% (w/w) of a gelatin replacer composition. The gelatin replacer composition is used to replace up to 100% of the gelatin and is used in similar amounts (w/w) as the gelatin, which is replaced.

[0016] Basically the preparation of the products is the standard preparation process wherein instead of gelatin the gelatin replacer is added. A specific advantage of the gelatin replacer is the ease of handling. The cumbersome process step of the dissolving of gelatin is omitted and the gelatin replacer is much easier to dissolve. Moreover, it is easier to produce a product of the same and constant quality.

[0017] The invention further discloses a method for preparing a gelatin replacer comprising the steps of

[0018] mixing wheat fiber gel with starch,

[0019] thoroughly homogenizing the product at a temperature below 50° C., and optionally

[0020] drying the product.

[0021] The product may be dried by spray-drying. As indicated before the starch is a modified starch, preferably modified waxy maize starch or modified tapioca starch.

EXAMPLE 1

[0022] 1. Yoghurt milk was pasteurised using an UHT plant; milk, sucrose, gelatin replacer, modified starch. SMP were blended and dispersed into the milk. The process was performed using the following steps; preheating 50-52° C., homogenisation at 175-200 bar, heating 120° C. for 7" or 95° C. for 5 min., cooling to 37-44° C.

[0023] 2. Incubation of the milk with culture in tanks to desired pH-value (3.7-4.6).

[0024] 3. Stopping of the fermentation process by cooling to 18-32° C., add fruit preparation and blend carefully.

[0025] 4. Aseptic filling and cooling to 4° C.

[0026] Recipe Yoghurt

[0027] Skimmed milk powder 1.0% 4.0%

[0028] Sucrose 5.0% 1.5%

[0029] Starch, modified* 1.0% ---

[0030] Gelatin replacer 0.5% 0.4%

[0031] Whole milk up to 100% up to 100%

[0032] Culture q.s. 0.02%

[0033] Fruit preparation 10% 17%

[0034] The product has a good mouthfeel and has the same organoleptic characteristics as the normal, gelatin based fruit yoghurt.

*modified starch is C☆Tex® 06201 (Cerestar)

EXAMPLE 2

[0035] Application: Low Fat Spreads—40% Oil Content—Gelatin Replacement

[0036] 1. Preparation of the 2 phases:

[0037] Water phase (Water, at replacer—C☆deLight® MD 01970—Cerestar, Gelatin replacer, Stabiliser, Salt, potassium sorbate, lactic acid and colour) preheating at 60° C. and

[0038] Oil phase (Oil, emulsifier and flavour) preheating at 65° C.

[0039] 2. Incorporation of the water phase slowly into the oil phase under severe agitation to build a stable pre-emulsion, preheating at 65° C.

[0040] 3. Processing of the pre-emulsion on a continuous scraped surface Kombinator plant, (Schroeder-Tübeck) heating 90° C. for 25", first cooling 55° C., second cooling 12° C., first crystallisation at 300 rpm in a pin mixer unit, third cooling 15° C., second crystallisation at 420 rpm.

[0041] 4. Filling at 16° C. and storage at 6° C.

[0042] Recipe Low Fat Spread

[0043] Hydrogenated vegetable oil: 24%

[0044] Refined vegetable oil: 16%

[0045] Gelatin Replacer: 2.75%

[0046] Emulsifier—Dimodan LS: 1%

[0047] Fat Replacer—Low DE maltodextrin: 4.75%

[0048] Stabiliser—Xanthan Gum: 0.075%

[0049] Salt: 0.7%

[0050] Potassium Sorbate: 0.1%

[0051] Lactic Acid: →4.75 pH

[0052] Colour and Flavour: q.s.

[0053] Water: 50%

[0054] The product has a good mouthfeel and has the same organoleptic characteristics as the normal, gelatin based low fat spread.

1. A composition for use as a gelatin replacer comprising wheat fibers and modified starch.

2. A composition, according to claim 1 further comprising maltodextrin having a low DE.

3. A composition according to claim 1 wherein the starch is modified waxy maize starch or modified tapioca starch.

4. A dairy product, fermented milk product, fat spread or margarine containing from 0.1 to 10% (w/w) of a gelatin replacer according to anyone of claims 1 to 3.

5. A method for preparing a gelatin replacer comprising the steps of

mixing wheat fiber gel with starch,

thoroughly homogenizing the product at a temperature below 50° C., and optionally

drying the product.

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