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(54) Title: A FOOD-PROCESSING EMULSION WITHOUT GLUTEN FOR FOOD COATING

(57) Abstract: The invention relates to a food-processing emulsion without gluten for coating of foods, wherein the emulsion consists of 20 to 50 % by weight of a dry mixture and water, the dry mixture containing granulated native rice flour and at least one granulated native pulse flour and optionally vegetable proteins.



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A food-processing emulsion without gluten for food coating

Technical Field

The object of the present invention is a food-processing emulsion without gluten for coating of foods (meat, fish, vegetables and cheese), the specific composition of which enables joining of various types of breadcrumbs (dry) with the coated food. The use of lupine and chickpeas in the food processing industry is part of the Czech Technology Agency (TAČR) task solved by our company: TA01010737 - Development of Technological Processing of Highly Nutritive Pulses Recently Implemented in the World for Utilization to Prepare Common Foodstuffs and Dietary and Nutrition Products”.

Background Art

In the prior art, emulsions are known that use an egg mixture as the carrier and are thickened (emulsified) with wheat flour or its derivatives (modified starch) or animal proteins, for technological preparation of the product for application of a dry layer (breadcrumbs or batter). According to the prior art there is a trend towards higher requirements for increasing the efficiency of the process (emulsion stability), shortening the preparation time of the product, improving the final quality of the prepared product and reducing loading of the organism by allergens.

With regard to the increasing occurrence of allergies in the population – especially in children, products with a limited content of allergens, mainly, gluten, eggs and milk are getting in higher demand. At the same time, new methods of ingredient preparation (grinding, extrusion) enable the use of non-traditional ingredients (pulses), meeting the required emulsification characteristic and maintaining the generally representative sensory properties of the product. An advantage of these ingredients is that they are prepared without modified starch, other additives, colorants and stabilizers.

Batters used so far, e.g. as described in EP 2 536 299 A1 Edible batter compositions and methods of preparing batter-coated foods using the same, or EP 1 343 392 B1 Batter composition comprising starch, dextrin and rice flour for fried food products, which solve the problem of emulsification and emulsion stability with the use of animal proteins and peptides

or starch and dextrin naturally meet the required technological and sensory parameters, but do not deal with the problem of allergens or special groups of consumers – e.g. vegetarians.

Disclosure of Invention

The object of the invention is a food-processing emulsion without gluten for coating of foods (meet, fish, vegetables and cheese) based on water and a dry mixture that contains rice flour and at least one pulse flour of various granulations and/or extracted vegetable proteins. The food-processing emulsion without gluten for coating of foods consists of 20 to 50 % by weight of the dry mixture and water, wherein the dry mixture contains granulated native rice flour and at least one granulated native pulse flour and/or extracted vegetable proteins.

The composition of the emulsion according to this invention complies with the requirements for gluten-free food and meets the definition of vegetarian food.

The dry mixture may contain flour of various types of pulses, e.g. chickpeas, lupine, yellow peas, soy. The selection of the main component is mainly related to the optimization of sensory properties and the respective specification with respect to the list of allergens (eliminating soy and partly lupine). The pulses lupine and chickpea have proved perfect emulsification characteristics in the given granulation range between 10 and 250 μ . Reduction of the upper limit under 100 μ considerably improves the emulsifying characteristics, increases the yield of the dry mixture and stability of the resulting emulsion, but the economical costs do not compensate the effect.

The dry mixture in the present invention contains 23.8 to 28.1 % by weight of native chickpea flour with the granulation of 10 to 400 μ and 1.3 to 3.9 % by weight of native lupine flour with the granulation of 10 to 250 μ and/or 6.6 to 8.3 % by weight of native rice flour with the granulation of 10 to 250 μ and/or 1.3 to 2.7 % by weight of lupine protein with the granulation of 10 to 250 μ .

The food-processing emulsion is produced by mixing of the dry mixture with water at a temperature of 16 to 35 °C, the required amount of water depending on the type of material to be coated and being such to obtain a smooth emulsion.

In an especially convenient embodiment the composition of the food-processing emulsion in % by weight is as follows:

Water	57 to 67 %
Dry mixture	33 to 43 %

In an especially convenient embodiment the composition of the dry mixture in % by weight is as follows:

Native chickpea flour	23.8 to 28.1 %
Native lupine flour	1.3 to 3.9 %
Native rice flour	6.6 to 8.3 %
Lupine protein	1.3 to 2.7 %

Examples

A)

Name	g in 100 g of preparation
Water	66.7
Dry mixture	33.3
Composition of the dry mixture	g in 100 g of preparation
Native chickpea flour	24.7
Native rice flour	7.3
Lupine protein	1.3

B)

Name	g in 100 g of preparation
Water	57.2
Dry mixture	42.7
Composition of the dry mixture	g in 100 g of preparation
Native chickpea flour	28.1
Native lupine flour	3.6

Native rice flour	8.3
Lupine protein	2.7

C)

Name	g in 100 g of preparation
Water	62.5
Dry mixture	37.5
Composition of the dry mixture	g in 100 g of preparation
Native chickpea flour	26.5
Native rice flour	7.9
Native lupine flour	3.6

CLAIMS

1. A food-processing emulsion without gluten for coating of foods, characterized in that it consists of 20 to 50 % by weight of a dry mixture and water, wherein the dry mixture contains granulated native rice flour and at least one granulated native pulse flour and optionally extracted vegetable proteins.
2. The food-processing emulsion according to claim 1, characterized in that the pulse flours are selected from the group comprising chickpea flour and lupine flour.
3. The food-processing emulsion according to claim 2, characterized in that the dry mixture contains 6.6 to 8.3 % by weight of native rice flour with the granulation of 10 to 250 μ and 23.8 to 28.1 % by weight of chickpea flour with the granulation of 10 to 400 μ and/or 1.3 to 3.9 % by weight of lupine flour with the granulation of 10 to 250 μ and/or 1.3 to 2.7 % by weight of extracted vegetable protein.
4. The food-processing emulsion according to claims 1 to 3, characterized in that the extracted vegetable protein is lupine protein.

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
INV. A23L1/00 A21D10/04 A23L1/176
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)
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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.
X	EP 2 522 230 A1 (CRISP SENSATION HOLDING SA [CH]) 14 November 2012 (2012-11-14) paragraphs [0002] - [0042]; claims; examples	1-4
X	----- WO 88/06007 A1 (CIBUS SA [CH]) 25 August 1988 (1988-08-25) page 1, line 11 - page 4, line 15; claims; examples	1-4
X	----- US 2012/288592 A1 (PICKFORD KEITH GRAHAM [GB]) 15 November 2012 (2012-11-15) paragraphs [0002] - [0056]; claims; examples	1-4
	----- -/-	



Further documents are listed in the continuation of Box C.



See patent family annex.

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"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 343 392 B1 (CERESTAR HOLDING BV [NL]) 27 October 2004 (2004-10-27) cited in the application the whole document -----	1-4
A	WO 2011/101664 A1 (WITWOOD FOOD PRODUCTS LTD; WHITE DAVID [GB]; LUKER PETER [GB]) 25 August 2011 (2011-08-25) the whole document -----	1-4
A	US 4 588 600 A (SUDERMAN DARREL R [US]) 13 May 1986 (1986-05-13) the whole document -----	1-4
A	EP 1 488 706 A1 (EGIDIO GALBANI SPA [IT]) 22 December 2004 (2004-12-22) the whole document -----	1-4

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/CZ2014/000003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2522230	A1	14-11-2012	AU 2012273781 A1 28-11-2013
		CA 2835812 A1 27-12-2012	
		EA 201370249 A1 31-03-2014	
		EP 2522230 A1 14-11-2012	
		SG 194942 A1 30-12-2013	
		WO 2012175930 A1 27-12-2012	
WO 8806007	A1	25-08-1988	AU 1366488 A 14-09-1988
		EP 0303666 A1 22-02-1989	
		WO 8806007 A1 25-08-1988	
US 2012288592	A1	15-11-2012	NONE
EP 1343392	B1	27-10-2004	AT 280508 T 15-11-2004
		AU 3328402 A 01-07-2002	
		CA 2432455 A1 27-06-2002	
		DE 60106783 D1 02-12-2004	
		DE 60106783 T2 17-03-2005	
		EP 1343392 A1 17-09-2003	
		ES 2225626 T3 16-03-2005	
		JP 2004516023 A 03-06-2004	
		MX PA03005670 A 06-10-2003	
		PT 1343392 E 28-02-2005	
		US 2004028784 A1 12-02-2004	
		WO 0249461 A1 27-06-2002	
WO 2011101664	A1	25-08-2011	AU 2011217010 A1 20-09-2012
		CA 2789935 A1 25-08-2011	
		CN 102892311 A 23-01-2013	
		EP 2536299 A1 26-12-2012	
		RU 2012139663 A 27-03-2014	
		SG 183372 A1 27-09-2012	
		US 2013040017 A1 14-02-2013	
		WO 2011101664 A1 25-08-2011	
US 4588600	A	13-05-1986	NONE
EP 1488706	A1	22-12-2004	AT 348534 T 15-01-2007
		DE 60310538 T2 27-09-2007	
		EP 1488706 A1 22-12-2004	
		HK 1070536 A1 23-03-2007	