

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

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
18 December 2003 (18.12.2003)

PCT

(10) International Publication Number
WO 03/103414 A1

- (51) International Patent Classification⁷: A23L 1/182, A23P 1/10
- (21) International Application Number: PCT/EP03/05904
- (22) International Filing Date: 5 June 2003 (05.06.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
PCT/IT02/00373 6 June 2002 (06.06.2002) IT
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- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A METHOD FOR PRODUCING FROZEN READY-TO-EAT DISHES BASED ON RICE, BARLEY, WHEAT OR SPELT

(57) Abstract: A method of producing a frozen risotto or a like ready-to-eat dish based on rice, barley, wheat or spelt. For risotto the steps include, adding to rice the necessary liquid and particulate ingredients and cooking all the above ingredients up to desired cooking degree, rapidly cooling the thus prepared risotto and feeding it into a dosing apparatus, which forms sphere-like portions of a predetermined weight or volume, which are subjected to ultra-fast freezing and then packaged.



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A METHOD FOR PRODUCING FROZEN READY-TO-EAT DISHES BASED ON RICE, BARLEY, WHEAT OR SPELT

DESCRIPTION

Field of Application

The present invention broadly pertains to the frozen food industry.

- 5 Specifically, the invention relates to frozen food products based on rice, which are ready for consumption, after being heated, such as risotto, paella and the like.

Prior Art

- 10 The so-called ready-to-eat dishes have met an ever increasing success among the consumers, since the present way of living leaves very few time available for preparing meals.

The most successful ready-to-eat dishes are the so-called "primi piatti" (first dishes), such as various kinds of pasta with more or less elaborated sauces and the risotto.

- 15 The technology which is currently used for producing ready-to-eat dishes includes the steps of preparing the basic ingredients of the dish in a separate manner, freezing them and finally mixing the frozen ingredients in suitable ratios.

- 20 Thus, if it is desired to prepare, for example, a dish of pasta with sea food, the operative steps will be the following:

- cooking the pasta in water, followed by draining, washing with water and freezing;
- preparing and cooking the sauce and converting it into frozen pellets;
- 25 - cooking and freezing the sea food;
- mixing the three ingredients in suitable ratios among them and finally packaging the thus obtained mixture.

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The same process as above is carried out when it is desired to prepare a risotto with sea food. Also in this case, rice is separately cooked in water, rinsed and frozen.

5 Whereas the results achieved with the present technology may be regarded as satisfactory as far as pasta-based dishes are concerned, the same does not apply to rice-based dishes.

10 In the case of pasta, the employed process involves a separate cooking of pasta and sauce, just as it happens with the traditional way of preparing pasta dishes. In such a case the organoleptic and consistency features of the final dish do not differ so much from those of a corresponding dish, which has been prepared in the traditional way.

15 On the contrary, in the case of a risotto, the way in which it is prepared is quite different from the traditional way. According to the latter, rice shall not be cooked alone in water, but together with sauce, broth and optional particulate ingredients, such as sea food, mushrooms, asparagus etc..

20 It is well known that the organoleptic and structural characteristics of a risotto which has been prepared in the traditional way are quite different from those of rice which has simply been boiled and then seasoned with a sauce.

25 Such a difference is due both to the different amount of water which is absorbed in the two different manners of cooking and to the fact that the starch, which is released from rice upon cooking, is not lost when risotto is prepared according to the traditional recipe. This provides risotto with a velvety consistency and improves its taste.

30 As a matter of fact, the risotto dishes which are currently available on the market would not even deserve such a name, since the dishes which are eventually obtained, after thawing and heating them, are rather comparable to boiled rice, seasoned with a sauce and other optional ingredients.

Another drawback of the ready-to-eat dishes based on rice which are presently on the market lies in the difficult portioning thereof.

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The above ready-to-eat dishes are, in fact, mostly sold as bags or boxes containing about 500 g (the equivalent weight of 2-3 portions) of a mixture consisting of loose rice grains (obtained by freezing, in a fluidized bed, rice which has been boiled in water and rinsed), sauce pellets and various particulate ingredients (mushrooms, mussels, vegetables, etc.).

When the entire package is used, a final dish with the proper weight ratios among the various components can be obtained, but if it desired to just prepare, for instance, a single portion, a part of mixture such as to contain the three ingredients with the correct ratios is very unlikely to be drawn. The final dish will turn out to be either too much or too less seasoned.

The problem underlying the present invention has been that of providing a ready-to-eat dish, based on rice or the like grain cereals, which has organoleptic and structural features as closest as possible to those of traditional risotto and which allows for an easy portioning thereof, thus overcoming the above prior art inconveniences.

Summary of the Invention

The above problem has been solved, according to the invention, by a method of producing a frozen risotto or a like rice-based ready-to-eat dish, including the steps of:

- a) adding to rice the necessary liquid and particulate ingredients for preparing a risotto according to the sequence provided for by the traditional recipe and cooking all the above ingredients up to desired cooking degree;
- b) rapidly cooling the thus prepared risotto;
- c) feeding the risotto into a dosing apparatus, which forms sphere-like portions of a predetermined weight or volume;
- d) subjecting said portion to ultra-fast freezing;
- e) packaging a predetermined number of said frozen portions in suitable bags or boxes.

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Suitable liquid ingredients to be used in the above-described method are, for instance, the following: meat- or fish- or vegetable-broth, tomato sauce and milk. Exemplary particulate ingredients are the following: vegetables (asparagus, spinach, artichokes, pumpkin, zucchini, etc.),
5 molluscs, crustaceans, fish, meat, mushrooms etc..

In the above-mentioned step of rapid cooling, the risotto is brought from a temperature of above 100°C to a temperature ranging from 4° to 0°C.

The dosing apparatus for portioning the risotto can, for instance, consist of a screw dosing device.

10 The method of the present invention can also be carried out for preparing ready-to-eat dishes based on cereal grains other than rice, such as, e.g., wheat, barley and spelt, which are suitable as well for being cooked in the same way as for risotto.

The frozen risotto or like ready-to-eat rice-based dish obtained
15 according to the method of the present invention comes out in the form of a plurality of drop-shaped portions of predetermined volume or weight, each one of these portions including all the ingredients of the risotto or like ready-to-eat rice-based dish in the appropriate ratios.

As a consequence, even when the frozen risotto is packaged in bags
20 typically containing 2-3 portions, it is always possible to prepare a single portion of risotto with the correct ratios between the rice, the sauce and the remaining ingredients, by just using one third to one half of the total number of the frozen drop-like portions.

The method of the present invention will be further described with
25 reference to a non-limiting example, which is provided hereafter for illustration purpose.

EXAMPLE

Risotto with artichokes

Rice	1500 g
30 Artichokes	1000 g

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	Cream	400 g
	White wine	300 g
	Cheese	300 g
	Extra-virgin olive oil	200 g
5	Sunflower oil	200 g
	Onions	200 g
	Carrots	200 g
	Salt	155 g
	Vegetable broth	100 g
10	Black pepper	20 g
	Spinach	20 g
	Water	4000 g

Onions and carrots were minced and slightly fried in olive oil and sunflower oil for about 5 minutes. Afterwards, rice was added to the
15 above ingredients and let to toast for about 1 minute; then the white wine was added and let to evaporate.

At this point, water and vegetable broth were added, followed by the artichokes, which had previously been sliced, and then by all the remaining ingredients but the cheese.

20 The above mixture was brought to the boiling temperature and was cooked at such a temperature for about 18 minutes. Afterwards, the mixture was cooled down to about 4°C by means of a continuous apparatus and grated cheese was added thereto.

25 The thus obtained risotto was pumped, by such means as not to damage the pieces, like for instance a lobe pump, into the nozzles of a dosing device for forming drop-shaped portions with a diameter of about 30-40 mm, a thickness of 6-8 mm and a weight of 10 g.

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The drops were thereafter immediately frozen to -20°C in 3-5 minutes and packaged in suitable food containers, such as e.g. bags or trays or carton boxes.

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CLAIMS

1. A method of producing a frozen risotto or a like ready-to-eat dish based on rice, including the steps of:
 - a) adding to rice the necessary liquid and particulate ingredients
5 for preparing a risotto according to the sequence provided for by the traditional recipe and cooking all the above ingredients up to desired cooking degree;
 - b) rapidly cooling the thus prepared risotto;
 - c) feeding the risotto into a dosing apparatus, which forms
10 sphere-like portions of a predetermined weight or volume;
 - d) subjecting said portion to ultra-fast freezing;
 - e) packaging a predetermined number of said frozen portions in suitable bags or boxes.
2. A method according to claim 1, wherein a cereal in grains selected
15 among the group comprising barley, wheat and spelt is used instead of rice.
3. A method according to claim 1 or 2, wherein said liquid ingredients are selected among the group comprising meat- or fish- or vegetable-broth, tomato sauce and milk and said particulate ingredients
20 are selected among the group comprising vegetables, molluscs, crustaceans, fish, meat and mushrooms.
4. A method according to any one of the preceding claims, wherein in said step of rapid cooling b) the risotto is brought to a temperature of 4° to 0°C.
- 25 5. A frozen risotto or a like frozen ready-to-eat dish based on rice, characterized in that it is in the form of a plurality of drop-shaped portions of predetermined volume or weight, each one of these portions including all the ingredients of the risotto or like ready-to-eat rice-based dish in the appropriate ratios.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/05904

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 A23L1/182 A23P1/10

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)

IPC 7 A23L A23P

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, PAJ, 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	US 4 764 390 A (ZUKERMAN HAROLD W ET AL) 16 August 1988 (1988-08-16) example 3	1-5
X	US 5 137 745 A (ZUKERMAN HAROLD W ET AL) 11 August 1992 (1992-08-11) column 3, line 23 - line 30 column 6, line 45 -column 9, line 7	1-5
X	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 23, 10 February 2001 (2001-02-10) & JP 2001 161277 A (NIHON SHOKKEN CO LTD; INAHO SEIKA KK), 19 June 2001 (2001-06-19) abstract	1,3-5
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Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

24 October 2003

Date of mailing of the international search report

04/11/2003

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/05904

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 108 366 A (IWAMOTO YUKIKO ; IWAMOTO TADAHIKO (US)) 20 June 2001 (2001-06-20) example 1 ---	1,3-5
X	GB 2 333 687 A (DANPAL COMPANY LTD) 4 August 1999 (1999-08-04) page 5, line 4 - line 12; example IC ---	1,3-5
X	US 4 276 321 A (NAGATANI YOSHIO) 30 June 1981 (1981-06-30) claim 1 ---	1,3-5
X	EP 0 300 948 A (SEGURA CASTANO JUAN) 25 January 1989 (1989-01-25) column 1, line 27 - line 36 -----	5
A		1,3,4

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/05904

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4764390	A	16-08-1988 CA 1300423 C	12-05-1992
US 5137745	A	11-08-1992 CA 1333024 C JP 2023841 A JP 2784792 B2	15-11-1994 26-01-1990 06-08-1998
JP 2001161277	A	19-06-2001 NONE	
EP 1108366	A	20-06-2001 US 6316042 B1 EP 1108366 A1 JP 2001178384 A	13-11-2001 20-06-2001 03-07-2001
GB 2333687	A	04-08-1999 NONE	
US 4276321	A	30-06-1981 JP 53124638 A JP 55009185 B CA 1107562 A1 DE 2737569 A1 FR 2386270 A1 GB 1572413 A IT 1091309 B	31-10-1978 08-03-1980 25-08-1981 12-10-1978 03-11-1978 30-07-1980 06-07-1985
EP 0300948	A	25-01-1989 ES 2004149 A6 AT 90182 T AU 622864 B2 AU 2000288 A CA 1336049 C CN 1031792 A ,B DE 3881597 D1 DE 3881597 T2 EP 0300948 A1 IE 62971 B1 IN 167749 A1 JP 1043162 A JP 1761741 C JP 4046102 B PH 26003 A PT 88079 A ,B SU 1745095 A3	01-12-1988 15-06-1993 30-04-1992 27-01-1989 27-06-1995 22-03-1989 15-07-1993 16-12-1993 25-01-1989 08-03-1995 15-12-1990 15-02-1989 28-05-1993 28-07-1992 29-01-1992 30-06-1989 29-06-1992