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(54) Title: MEDICINAL-PREVENTIVE NUTRIENT COMBINATION AND FOODSTUFFS ON THE BASIS THEREOF

(57) Abstract: Food combination comprises mechanically processed corn bran and products rich with animal proteins and/or plant carbohydrates. The foodstuff comprise said combination and water or solution of acetic acid. Said combination and foodstuff is used for prevention and treatment of metabolism, digestion disorders and diseases connected with them.

MEDICINAL-PREVENTIVE NUTRIENT COMBINATION AND FOODSTUFFS ON THE BASIS THEREOF

The invention relates to food industry and medicine and concerns the medicinal-preventive foodstuffs.

The World Health Organization and the absolute majority of the professional organizations accept that, nowadays, one of the main reasons of development and increase of frequency of the most wide spread non-contagious diseases (myocardial infarction, stenocardia, atherosclerosis, essential hypertension, cholelithiasis, syndrome of irritated intestine, obesity, diabetes mellitus, etc.), the so-called civilization concomitant diseases is an incorrect feeding, in particular, high caloric value of food allowance, excess of refined hydrocarbons and fat, deficiency of vegetable fibers.

During the world history profile of diseases, illness and its prevention was always dependent on the way of life and nutrition, the same is today.

Early populations of human beings were hunters and collectors, due to this fact the most frequent reason of their illness was malnutrition caused by the starvation episodes.

At the beginning of agrocultural period, transfer from collection and hunting to farming made the episodes of starvation rare, but the less dynamic way of life was followed by the frequent infective and parasitic diseases still accompanied by the chronic malnutrition. Deficiency of nutrients was deepened by the poorness of the foodstuffs, especially, in winter.

The infective diseases was a main reason of illness and mortality during most of the periods of the humans existence. In the last century, namely, during the last decade infective and parasitic contagious diseases reduced significantly, which are spread by food, water and air and is based on the increase of education level, income, industrialization, urbanization, improvement of medical and public health technologies. Together with the reduction of infective and parasitic diseases cases of non-contagious diseases has increased occupying leading positions in view of distribution and mortality reasons.

These diseases are: myocardial infarction, stenocardia, atherosclerosis, essential hypertension, cholelithiasis, syndrome of irritated intestine, obesity, diabetes mellitus, etc. They also are called as the civilization concomitant diseases due to the reason that together with changing life conditions and rule accompanying civilization the become more frequent and is considered that these are the main reasons for development of these diseases and main factors of

pathogenesis. On the basis of mentioned above these disease form and progress emerging (or are revealed clinically) in already developed cases and their involution is limited or impossible and requires active drug therapy or surgical treatment connected, on the one hand, with considerable expenses, and, on the other hand, is characterized by complications, that very often are dangerous for life and reduce sharply standard of life.

The diseases developed on the background of metabolic disorders, which statistically occupy the first place at present, and atherosclerosis, during the last period are treated surgically (prosthetics of blood vessels, coronary artery bypass grafting, stenting of blood vessels, etc), which is expensive and the rate of lethality is high.

10-15% of the world populations suffers from cholelithiasis and this number is increasing every year. During the last 50 years in each decade the number of people diseased with cholelithiasis is doubled. In order to treat this disease the cholecystectomy (excise of gallbladder) is applied more often, which is also expensive and postoperative complications are frequent: maldugestion and disbolism, after cholecystectomy cases of rectum cancer are more frequent, etc.

Obesity by the World Health Organization is considered to be epidemic, and weight loss is deemed to be one of the decisive factors for treatment and management of the most widespread diseases today.

Obesity very often is treated by plastic operations, which are expensive and frequently is accompanied with complications. According to different data, after operation from 31% to 72% in the gallbladder the concrements are formed.

The weight loss may result in negative outcome without plastic operations. Investigations were performed at 31 centers of weight management in the USA. 1004 patients during 16 weeks with the purpose of weight loss took 520 kilocalories/per day in the form of liquid proteins. In 28% of cases at nonexistence of preventive measures concrements were formed in the gallbladder.

With the purpose of prevention and treatment of the above diseases the patients during a very long period, or during the whole life, take chemical preparations (statines, chenopreparations, antidiabetic, antianginal, hypotensive and other drugs), which again is connected with considerable expenses. These preparations have expressed side effects and contraindications, due to which they are application is limited. Together with the long clinical

course their doses increase revealing changes caused by their side effects, that further is a separate problem.

Epidemiologic transformation of diseases, in the first place, is connected with nutrition transformation linked with production of foodstuffs, technologies of production, distribution, availability, changes in dietary habits and physical activities (Glob. 2002).

The industrialization during the last 200 years caused the radical changes in food production, transportation, storage and distribution (Glob. 12). The economical development together with technological innovations and modern capabilities of marketing caused significant changes to the food content. Quantity of easily assimilated refined carbohydrates and saturated facts has increased in the food allowance and quantity of vegetable fibers has sharply reduced (Glob. 2, 3).

Popkin (2002) has studied differences of nutrition transformation between the developed and less developed countries. He separated a number of common components characterizing the nutrition transformation in the countries of low and average incomes and concluded that those deviations, in the west of 100-200 years ago, will again occur in the developed world of the last decades (24, 25).

Incursion of the west habits, way of life and commercial marketing in developing countries furthers transfer from the traditional foodstuffs to the cheap fats and refined carbohydrates, readily available to the globalization.

Demographic changes caused by the prolongation of life and reduction of birth rate are very interesting, due to which risk-factors of the diseases become more urgent, and most important amongst is a malnutrition (glob. 8, 9, 10, 11).

By analysis of the statistical data accumulated in the 20th century it was ascertained that noncontiguous diseases concomitant to civilization are most frequent in the countries population of which applies the foodstuffs rich with high-calorie, refined carbohydrate, fats and poor with vegetable fibers.

The non-starch polysaccharides and lingines are contained in composition of vegetable fibers (Beul E.A. Class. Med. 1987 No 2), as compared with starch these polysaccharides are not digested by the digestive enzymes and is utilized by small and large intestines, due to this fact from the beginning of the 19th century to 60-s of the 20th century the vegetable fibers were considered to be an unnecessary component of food and they even were called as the ballast substance. The accent was made on the production of high-calorie, easily assimilated, refined

carbohydrates and fats, and by means of different technologies the vegetable fibers were separated from the plant raw.

There were opponents to this direction. In 1861 the German chemist and specialist of nutrition Just Lybich wrote that separation of bran by sieving of the wheat flour is an excess luxury and bread baked from the groats us more useful for health that white bread. The public and scientist of that time treated ironically this declaration. At present it is recognized that Lybich was not mistaken.

By experimental, as well as clinical investigations it was determined that vegetable fibers regulate digestion and metabolism, it is physiological stimulator for digestive secretions and gastrointestinal motor activity, physiological bile-excreting, normalizes intraintestinal pressure and improves hepatoenteral cycle of bile acids. Results in sense of satiety, prevents absorption of exogenous cholesterol and eliminates toxins and slags. Due to the above noted, for normal digestion and metabolism its containment in food is necessary.

Resulting from the above mentioned, one of the main role in prevention and treatment of the most widespread diseases for today (myocardial infarction, stenocardia, atherosclerosis, essential hypertension, cholelithiasis, syndrome of irritated intestine, obesity, diabetes mellitus, etc.) is granted to restriction of calories, receiving of vegetable fibers during a long time and increase its quantity in diet (96, 150), which is very actual and requires practical solution.

Due to the above mentioned, it shall be logical, that at present one of the urgent issues of medicine are prevention and early treatment of civilization concomitant diseases without chemical preparations and surgical interventions. It is commonly accepted that healthy food and correct nutrition is one of the main means for prevention and early treatment. In the principles of correct nutrition for contemporaries shall be undoubtedly meant limitation of calories on the expense of refined fats and carbohydrates and filling the deficiency of vegetable fibers.

It was ascertained that with the purpose of normal functioning of organism and prevention of above diseases, the healthy adults during 24 hours must take minimum 35-40 g of vegetable fibers, and children age +5 g (Marlett JA 2002). At the same time, the low calorie, rich with vegetable fibers food is one of the main components for treatment of theses diseases.

Disorders caused by the deficiency of the vegetable fibers and preventive and therapeutic effect conditioned by filling of this deficiency proves again that position Hippocratus before twenty five centuries "do not harm" and "food must be a medication and take drug in the form of food" is still actual.

For modern solution of the first provision ("do not harm") it is necessary to take into account, that products rich with vegetable fibers are coarse and are difficult-to-digest in the unprocessed form. Receiving them unprocessed (grain hulls, rinds of fruit and vegetables, berries, etc.) irritates mucous coat of stomach, undesirable stimulation of secretion and motor and evacuation function, due to the mentioned filling of the vegetable fiber deficiency with the unprocessed products containing them in excess quantities, tablets and granules containing unprocessed cells, quantitatively and according to longevity is limited for healthy, and at certain diseases it is contraindicated. The problem became especially actual at the end of 20 century and beginning of the 21st century, as systematic taking of the food prepared under the widespread new technologies, the modern human beings in comparison with the ancestors are less adapted to the coarse food and the number of diseased for whom the coarse food is contraindicated is sufficiently large.

in 19-20th centuries perfection of the mechanical and thermal processing of the foodstuffs: sterilization, manufacturing of refined food, concentrated juices and invasion of unnatural substances (preservatives) in cookery, on the one side, has significantly reduced distribution of infective and parasitic diseases and prolonged the work life, on the other side, changed composition of the foodstuffs, reduced their beneficial properties and made them unnatural, which cased disorders of physiological processes, in particular of the digestion and metabolism. At receiving such unnatural food the physiological (natural) protective mechanisms of the human organism are not able to regulate digestion and metabolism, which is the basis for development of a number if diseases.

There is known a ground corn product (GE 1205, G. Sulaberidze, B. Rachvelishvili, 17.02.1998) comprising corn flour and mechanically processed bran. On the basis of said product is prepared the bread used as a healthy food rich with vegetable fibers.

There is also known improvement of the method for preparation of dough on the basis of ground product (GE 2881, G. Sulaberidze, 25.02.03).

Bread made of the dough prepared under said method is also a healthy food rich with vegetable fibers without side effects and contraindications.

From the present state of the art there is not known application of the above product and/or finished foodstuff made on the basis thereof independently or in combination with other foodstuff with the purpose of prevention and treatment of digestion, metabolism and connected with other diseases. But we should note, that independent application of said products in

treatment and preventive purposes is impossible due to the danger of deficiency of proteins, vitamins, microelements.

Technical effect of the invention is in increase of therapeutic and preventive effect, avoidance of side effects and contraindications.

Essence of the invention is that the food combination contains mechanically processed corn bran and products rich with animal proteins and/or plant carbohydrates.

In the form of corn bran the combination may contain bran of wheat, rye, maize, etc. or any combination thereof.

In the form of product rich with animal proteins, the combination may contain beef, meat of poultry, fish etc. or any combination thereof. Fatless beef is preferable.

In the form of product rich with plant carbohydrates, the combination may contain fruit (apple, peach, apricot, etc.), vegetables (carrots, beet, etc.), berries (hips, cornel, etc.) or any combination thereof.

In the preferable embodiment of the invention the combination contains in mass %:

Bran	20-80
Product rich with proteins and/or carbohydrate	20-80

The combination may have the form of entire product or its components may taken for nutrition separately.

Preparation of bran of the combination may be performed according to known technologies.

Manufacturing of the product rich with animal proteins and plant carbohydrates included in combination may be performed by the commonly known technologies.

Example 1

Combination contains in mass %:

Wheat bran	40
Beef	60

Example 2

Combination contains in mass %:

Wheat bran	30
Maize bran	20
Apple	50

A separate example of the combination embodiment is a muesli, which contains mechanically processed corn bran and a dried product selected from the following group: fruit (apple, peach, apricot, etc.), vegetables (carrots, beet, etc.), berries (hips, cornel, etc.) or any combination thereof.

In the most preferable variant of the invention embodiment the muesli contains the components in the following ratio of mass %:

Bran	20-80
Dried product	20-80

The muesli is prepared as follows: fruit, vegetable or berries are dried and crushed, after the dispersed bran is added.

Example 3

Muesli comprises in mass %:

Wheat bran	40
Apple	60

Example 4

Muesli comprises in mass %:

Wheat bran	35
Rye bran	15
Maize bran	10
Apple	15
Apricot	10
Beet	5
Cornelian cherries	5
Hips	5
Peach	10

One more aspect of the invention is a foodstuff comprising the above combination (mechanically processed corn bran, products rich with animal proteins and/or plant carbohydrates) and water or solution of acetic acid.

The foodstuff in the preferred variant of the invention embodiment contains in mass %:

Combination	20-60
Water or solution of acetic acid	the rest

In the preferable variant of the invention embodiment, concentration of the acetic acid solution is 1-5%.

A separate variant of the foodstuff is a mush made on the basis of above muesli comprising muesli and water or solution of acetic acid.

In the most preferable variant of the invention embodiment, concentration of the acetic acid solution is 1-5%.

In the preferable variant of the invention embodiment the mush comprises components in the following ration of mass %:

Muesli	20-40
Water or solution of acetic acid	the rest

The mush is prepared as follows: the boiled water or solution of acetic acid is poured in muesli and stirred up to receiving of the mush consistence, afterwards it is ready for nutrition.

Example 5

The mush comprises in mass %:

Muesli according to example 3	25
Water	the rest

Example 6

Muesli according to example 4	40
2% solution of acetic acid	the rest

Particular example of the foodstuff is a mince comprising mechanically processed corn bran, meat and water or solution of acetic acid.

In the preferable variant of the invention embodiment the mince comprises bran of wheat, rye, maize or any combination thereof. Wheat bran is preferable.

In the preferred variant of the invention embodiment the mince comprises beef, meat of poultry, fish or any combination thereof.

In the preferable variant of the invention embodiment the mince comprises components in the following ration of mass %:

Bran	4-48
Meat	4-48
Water or solution of acetic acid	the rest

The mince is prepared as follows: meat is minced in the mincing machine, the boiled water or solution of acetic acid is poured in bran and stirred up to dilution, then the minced meat

is mixed. From the obtained mince may be prepared different products (cutlets, stuffed cabbage-rolls and other meals).

Example 7

The mince comprises in mass %:

Wheat bran	35
Beef	13
3% solution of acetic acid	the rest

Example 8

The mince comprises in mass %:

Wheat bran	23
Chicken meat	15
Fish meat	10
Water	the rest

Indications of the combination and above foodstuffs:

- Obesity
- Diabetes mellitus
- Syndrome of irritated intestine
- Diverticulum of large intestine
- Constipation
- Cholelithiasis
- Hypercholesteremia
- Myocradial infarction, stenocardia
- Essential hypertension
- Pregnancy
- And others.

Effect of the combination was tested on volunteers:

1. Patient. Male 54 years old, diagnosis: arterial hypertension (II stage JNCVII); Hypercholesteremia (BMI – 33, 4), left ventricular hypertrophy.

Height – 178 cm, weight – 109 kg.

Arterial hypertension was systematically noted, normalization of the hypertension was performed by hypotensive drugs.

Common cholesterol (CHOL) – 285 mg/dl (<180)

High density lipoprotein cholesterol (HDL) – 37 mg/dl (>45)

Low density lipoprotein cholesterol (LDL) – 175 mg/dl (<130)

Triglycerides (TG) – 364 mg/dl (<200)

The patient received during 4 weeks foods rich with vegetable fibers (muesli, mince, bread).

Loss of weight 60 kg.

In the blood level of lipids was reduced

Common cholesterol (CHOL) – 217 mg/dl

High density lipoprotein cholesterol (HDL) – 58 mg/dl (>45)

Low density lipoprotein cholesterol (LDL) – 131 mg/dl (<130)

Triglycerides (TG) – 139 mg/dl

2. Patient. Male 42 years old, diagnosis: diabetes mellitus. Type II

Height – 182 cm, weight – 113 kg.

Glucose in blood: on an empty stomach 104 mg/dl

After taking of a meal – 158 mg/dl

Glycated hemoglobin – 7,3%

The patient received during one week foods rich with vegetable fibers (muesli, mince, bread).

Glucose in blood: on an empty stomach 101 mg/dl

After taking of a meal – 131 mg/dl

Glycated hemoglobin – 6,2%

3. Patient. Female 28 years old, diagnosis – obesity.

With the purpose of weight correction during 5 weeks received only the food supplied by us (muesli, mince, bread). No contraindications were noted (irritation of mucous coat, undesirable stimulation of secretion and motor-evacuation function).

4. Patient. Male 46 years old, diagnosis: syndrome of irritated intestines, constipation.

Systematically took purgatives. During one week received three times a day received 50 g of muesli. After two days everyday free defecation was marked.

5. Pregnant. Female 24 years old.

On the 12 week of pregnancy constipation was marked, sense of weight in hypogastrium. According to the ultrasonic examination on the gallbladder was marked bilious sediments. On the background of systematic receiving of muesli, mince and bread complaints, constipation

were arrested. By the ultrasonic examination on the 38th week of pregnancy increase of bilious sediments and formation of calculus were not noted.

6. Patient. Male 29 years old, diagnosis: acute viral hepatitis "B".

During his stay in hospital bilious sediments were marked in bile canaliculus. After discharge during 17 weeks took systematically muesli and bread. According to the ultrasonic examination after 17 weeks bilious sediments in the bile canaliculus were not marked.

7. Patient. Female 35 years old.

Height 174 cm, weight 97 kg, index of the body weight 32 kg/m^2.

During 5 weeks with the purpose of weight loss took 520-700 kcal in the form of food rich with vegetable fibers (muesli, mince, bread), which was supplied by us. Bilious sediments and concrements in the gallbladder were not formed.

8. Patient. Female 32 years old.

Height 172 cm, weight 92 kg, index of the body weight 32 kg/m^2.

With the purpose of weight correction took during 24 hours 520-700 kcal in the form of food rich with vegetable fibers (muesli, mince, bread), which was supplied by us.

After two weeks weight 86 kg, index of body weight 29 kg/m^2.

Thus, proposed according to the invention combinations and products prepared on their basis are efficient, safe, are ease to prepare, available and have low cost price.

The proposed mince and muesli prepared according to the technological model developed on the basis of medical sciences, the model is similar to the vegetable fibers digestion process by the human organism: mechanical processing (oral cavity), processing in the acid medium (stomach), dilution with liquid (oral cavity, stomach). The proposed technology and nutrition combination enables to maintain beneficial properties of the vegetable fibers and the raw composition, the prepared meal does not have contraindications and side effects. At the same time, the combinations supplied by us as compared with the analogous food of the same weight and volume is low-calorie, and where desired, adding of calories is not difficult. Thus, according to the proposed technology and combinations is made a healthy food rich with vegetable fibers, which may be taken without restrictions by the healthy, as well as by ill persons.

From the mince and muesli prepared according to our combination a meal may be made quickly and easily, the food may be applied by the population at cafes, as well as at home, giving a real possibility to increase sharply the practical borders of filling the vegetable fibers deficiency. At the same time, the food supplied by us, due to the composition of the vegetable

fibers and volume causes the sense of natural satiety, enabling the consumer, where necessary, to limit the calories without disturbance of the physiological processes. Conversely, the food supplied by us will promote digestion and normalization of metabolism.

Together with the vegetable fibers to the organism in the form of natural products are supplied proteins, vitamins, minerals, microelements, with which the raw (grain hulls, rinds of fruit and vegetables, berries, etc.) used for preparation of our combination is rich, and the technology supplied by us does not change its composition and preserves its beneficial properties. The technology also enables to increase the storage terms of the raw used by us without preservatives and make its sharp taste and coarseness neutral, which is a real possibility to use the healthy natural food systematically during the whole year.

Where necessary, with the combinations of products (muesli, mince) supplied by us may be fed healthy, as well as ill persons, without taking other food during a long period of time, so that deficiency of any necessary nutrient (proteins, fats, carbohydrates, vitamins, minerals, microelements, etc.) shall not be developed. The above mentioned is very important for weight correction, prevention and treatment of diseases, as well as for evaluation of efficiency and research of the low-calorie products supplied by us, that are rich with vegetable fibers.

Systematic nutrition with the low-calorie food (muesli, mince) rich with vegetable fibers will make possible for the modern healthy persons fill the deficiency of vegetable fibers enabling to regulate the physiological processes by the organism. Due to the influence on the above processes our combinations are indicated for prevention and treatment of many processes.

CLAIMS

1. A preventive-therapeutic nutrition combination, characterized in that, comprises mechanically processed corn bran and products rich with animal proteins and/or plant carbohydrates.

2. The nutrition combination of claim 1, characterized in that, in the form of the bran comprises the wheat, rye, maize bran or any combination thereof.

3. The nutrition combination of claim 1, characterized in that, in the form of product rich with animal proteins comprises beef, meat of chicken, fish or any combination thereof.

4. The nutrition combination of claim 1, characterized in that, in the form of product rich with plant carbohydrates comprises fruit, vegetables, berries or any combination thereof.

5. The nutrition combination of claims 1-4, characterized in that, comprises components in the following ratio of mass %:

Bran	20-80
Product rich with proteins or carbohydrates	20-80

6. The nutrition combination of claims 1-5, characterized in that, it has a form of entire product.

7. The nutrition combination of claims 1-5, characterized in that, its components are received for nutrition separately.

8. Use of the combination of claims 1-7 for prevention and treatment of metabolism, digestion disorders and pathologies connected with them.

9. Muesli, characterized in that it comprises the mechanically processed corn bran and dried products selected from the group: fruit, vegetables, berries or any combination thereof.

10. Muesli of claim 9, characterized in that in the form of bran it comprises bran of wheat, rye, maize or any combination thereof.

11. Muesli of claims 9-10, characterized in that it comprises the components in the following ration of mass %:

Bran	20-80
Dried product	20-80

12. Use of muesli of claims 9-11 for prevention and treatment of metabolism, digestion disorders and pathologies connected with them.

13. A foodstuff, characterized in that it comprises a combination of claims 1-5 and water or solution of acetic acid.

14. The foodstuff of claim 13, characterized in that concentration of the acetic acid solution is 1-5%.

15. The foodstuff of claims 13-14, characterized in that it comprises the components in the following ratio of mass %:

Combination	20-60
Water or solution of acetic acid	the rest

16. Use of the foodstuff of claims 13-15 for prevention and treatment of metabolism, digestion disorders and pathologies connected with them.

17. A mush, characterized in that it comprise muesli of claims 9-11 and water or solution of acetic acid.

18. The mush of claim 17, characterized in that concentration of the acetic acid solution is 1-5%.

19. The mush of claims 17-18, characterized in that it comprises the components in the following ration of mass %:

Muesli	20-40
Water or solution of acetic acid	the rest

20. Use of the mush of claims 17-19 for prevention and treatment of metabolism, digestion disorders and pathologies connected with them.

21. A mince, characterized in that it comprises mechanically processed corn bran, meat and water or solution of acetic acid.

22. The mince of claim 21, characterized in that it comprises wheat, rye, maize bran or any combination thereof.

23. The mince of claim 21, characterized in that it comprises beef, meat of chicken, fish or any combination thereof.

24. The mince of claims 21-23, characterized in that concentration of acetic acid is 1-5%.

25. The mince of claims 21-24, characterized in that it comprises components in the following ration of mass %:

Bran	4-48
Meat	4-48
Water or solution of acetic acid	the rest

26. Use of the mince of claims 21-25 for prevention and treatment of metabolism, digestion disorders and pathologies connected with them.

INTERNATIONAL SEARCH REPORT

International application No
PCT/GE2007/000003

A. CLASSIFICATION OF SUBJECT MATTER
INV. A61P1/00 A61P3/00 A23L1/29 A23L1/308

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, FSTA

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SULABERIDZE: "Milled Cereal Product "Margi"" NATIONAL INTELLECTUAL PROPERTY CENTER GEORGIA, [Online] no. P19981205B, 10 November 1997 (1997-11-10), XP002477687 Retrieved from the Internet: URL:http://www.sakpatenti.org.ge/patentsearcher/Results/Preview.aspx?xmlType=0&xmlPath=YzpcaW51dHB1Y1x3d3dyb290XFBhdGVudFN1YXJjaGVyXFNvdXJjZVwxX2dhbW9nb251YmFcMV91b1810DY4N18zNDUyLnhtbA==&ind=3> [retrieved on 2008-04-21] cited in the application	1-8
Y	abstract	1-20

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

[X] See patent family annex.

* Special categories of cited documents :

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

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Date of the actual completion of the international search	Date of mailing of the international search report
23 April 2008	15/05/2008

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Baminger, Ursula

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/GE2007/000003

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Y	abstract	1-20

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