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(54) Title: METHODOLOGY OF PREPARATION AND PRESERVATION OF SOY BEAN CURD WITH PRESERVED POLY UNSATURATED FATTY ACID

(57) Abstract: A process for preparing soy curd by an inventive method and preservation of it. The process comprising the selection of soy bean, soaking method, grinding and preparation of soy milk, making of soy curd for the fermentation, final processing of soy curd and invention of preserved polyunsaturated fatty acid, omega 3 and omega 6 in a particular proportion from soybean. When treated by an invented method, which can be used as a food supplement for the treatment of various diseases like kidney failure, HIV, diabetics, cancer high blood pressure and heart diseases, rheumatoid arthritis, psoriasis, asthma, eye disease, menopausal symptoms, eczema, tuberculosis, ulcers, weight loss and alcoholism.
METHOD OF PREPARATION AND PRESERVATION OF SOY BEAN CURD WITH PRESERVED POLY UNSATURATED FATTY ACID

FIELD OF THE INVENTION

The present invention relates to the preparation and preservation of soy bean curd and invention of preserved poly unsaturated fatty acid: omega 3 and Omega 6 in a particular proportion from soybean when treated by an invented method, which can used as a food supplement for the treatment of various diseases like kidney failure, HIV, diabetics, cancer, high blood pressure and heart diseases, rheumatoid arthritis, psoriasis, asthma, eye disease, menopausal symptoms, eczema, tuberculosis, ulcers, weight loss and alcoholism.

BACKGROUND AND PRIOR ART OF THE INVENTION

Good Health for all is a dream and only a dream in this world. To attain this, is very difficult and we can say that it is not possible. To overcome this situation, several research and studies had undergone and now it reached at Poly unsaturated fatty acids and soybean. Traditionally, soybean is used probably only as soybean curd or tofu, since it has so many negative sides. But in Soybean curd there is no negative side since it undergoes certain treatment and processing for the preparation of curd. But the traditional method of making soy curd does not include the preservation of it. It can be only for immediate use. That is, there is no chance for preparing bulk quantity.

Cell wall membranes contain large quantities of polyunsaturated fatty acids. As cells are being formed, the body uses saturated fatty acids, if it lacks sufficient amounts of polyunsaturated fatty acid. This could happen if the diet is high in saturated fats and low in polyunsaturated fats. The membrane that is formed will not have the same properties as one made up of polyunsaturated fatty acids. In long term this can lead to health problems and disease such as kidney failure, HIV, diabetics, cancer high blood pressure and heart diseases, rheumatoid arthritis, psoriasis, asthma, eye disease, menopausal symptoms, eczema, tuberculosis, ulcers, weight loss and alcoholism.
There are two distinct groups of polyunsaturated fatty acids - omega 3 and omega 6 fatty acid. Both are important components of practically all cell membranes. Omega 3 and Omega 6 fatty acid are not inter convertible in the human body. When diets are supplemented with omega 3 fatty acids, the latter partially replace the omega 6 fatty acids in the membranes of practically all cells. Therefore, getting the right amount of each group of PUFAs influences every major organ and system in our body. So there is a need of food supplement, which helps the body getting the right amount of PUFAs.

The present invention is a new and improved method of preparation of Soya curd which can be preserved for weeks, and can be used as a food supplement for the treatment of various diseases such as Kidney failure, Diabetics, Cancer, High Blood Pressure and Heart diseases, Rheumatoid arthritis, Psoriasis, Asthma, Eye Disease, menopausal symptoms, Eczema, Tuberculosis, Ulcers, Weight Loss, Alcoholism etc.

The first step of traditional method of making soy curd or tofu is making of soymilk. For soymilk, whole soybeans were soaked in water for 10 hours, drained and rinsed several times. The hydrated soybeans were combined with water (1 part soybeans to 10 parts water). The soybeans/water mixture was then ground in a waring blender on medium speed for one minute. The resulting slurry was immediately transferred into a glass flask and placed in a boiling water bath. The soybean slurry was stirred and brought to 85°C. Within 8 minutes where it was held for 15 minutes. The soymilk was then cooled to 40°C in an ice bath, filtered through cheesecloth, bottled and refrigerated (4°C). L-cystine was added directly to the process water prior to adding the soybeans to achieve an overall concentration of 300 ppm. After add citric acid or any other acid to make soy curd and drained all water from soy curd, to keep it as tofu.
SUMMARY OF THE INVENTION

The present invention is generally directed to soy curd and the process for preparation of soy curd and preservation of it. The process described herein includes the preparation and preservation of soy curd. In this new method of preparation of soy curd include a step by step procedure like selection of soy bean, soaking it in water about 6-10 hours, Keeping aside for sprouting for 5 hours, then soaking for 5-7 hours after several wash, grinding and taking the milk using machine and adding correct proportion of lemon juice, formation of Curd after 24 hours. It is not in a solid form, like the traditional type, but the semi solid just like the curd formed from the cow milk. And can consume just like other type curd along with any other food or its alone. This can be taken as a food supplement especially for the patients those who have health problems and disease such as kidney failure, HIV, diabetics, cancer, high blood pressure and heart diseases, rheumatoid arthritis, psoriasis, asthma, eye disease, menopausal symptoms, eczema, tuberculosis, ulcers, weight loss and alcoholism.

The traditional Japanese diet had, through centuries of trial and error, found ways to use soybeans in a healthy manner. They did not eat whole soybeans or soy protein isolate. They mainly ate fermented soy products. The fermentation process deactivates both trypsin inhibitors and hemagglutinin, while regular cooking does not. Soy was, in fact, only one component of a diet that included food rich with minerals, vitamins, and other essential nutrients.

Scientists are in general agreement that grain- and legume-based diets high in phytates contribute to widespread mineral deficiencies. Only a long period of fermentation will significantly reduce the phytate content of soybeans. In this situation soy bean curd is more beneficial than any other soy products. Reduced level of phytic acid is also needed.
A novel anticancer function of phytic acid has been shown both in vivo and in vitro. IP₆ is a polyphosphorylated carbohydrate, contained in high concentrations (0.4-6.4%) in cereals and legumes. The small amount of phytic acid (IP₆ or inositol hexaphosphate also InsP₆) is very useful to human body. IP₆ is found in every cell in the body and is essential for life. By virtue of its ubiquitous presence in living human cells, it is non-toxic. [Richardson DR, Critical review Oncology Hematology 42: 267-81, 2002]

Nature's most effective iron-chelating molecule is inositol hexaphosphate (IP₆), found naturally in seeds and bran. IP₆ is a selective agent against cancer cells. Because cancer cells are high in iron content, IP₆ directs most of its attention to abnormal cells. IP₆ selectively removes iron from tumors cells, which deprives them of their primary growth factor. IP₆ does not remove iron from red blood cells, which are tightly bound to hemoglobin. Unlike cancer drugs, healthy cells are not affected with IP₆, so IP₆ has very low toxicity. [Deliliers GL, British J Haematology 117: 577-87, 2002]

The obvious choice among available iron chelators is inositol hexaphosphate or IP₆. IP₆ meets all the requirements for a safe iron chelator to treat cancer. It penetrates inside cells. It is non-toxic, inexpensive, and very effective. It's just not a drug.

Only phytic acid IP₆ was found to be economical, nontoxic, and effective. [Graf E, Journal Biological Chemistry 262: 11647-50, 1987]

Dietary mineral chelators help prevent over-mineralization of joints, blood vessels, and other parts of the body, which is most common in older persons. The Journal of Environmental Nutrition (April 2004 volume 27 issue 4) has also stated phytic acid may be considered a phytounitrient, providing an antioxidant effect.

As a food additive, phytic acid is used as a preservative with E number E391.
Soy curd decreases risk for heart disease by helping to lower density blood cholesterol levels. It plays a crucial role in lowering risk for various diseases.

Soy protein can reduce plasma concentrations of total and LDL cholesterol but does not adversely affect levels of HDL, or "good" cholesterol, which at high levels has been associated with a reduction in heart disease risk.

Soybeans also contain potentially healthful compounds called phytoestrogens (also known as isoflavones), such as genestein, diadzein and others that are weak-acting estrogens. Phytoestrogens occupy estrogen receptors and thereby reduce the effect of one's potentially more potent endogenous (made in the body) estrogens.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is the test report of Soya curd fatty acid composition such as saturated, monounsaturated, polyunsaturated fatty acid.

Figure 2 is the analytical results of soy bean curd.

**DETAILED DESCRIPTION OF THE INVENTION**

The present invention is generally directed to soy curd and the new and improved method of preparation of soy curd and preservation of it, which can be used as food supplement for various diseases. Soy curd is the most popular product among all the soy products with the highest therapeutically value. The new and invented method is a series of procedure.
The first step of the process includes collection of soybeans, and it is very important step since it helps to maintain the quality of the soy curd. In this method of preparation it is better to use organic beans, especially organic seed of range 80–105 days maturity, in particular of range 85 - 95 days.

The selection of organic bean especially organic seed is essential because it maintain the quality of the curd helps skin breathing and our blood keep cool. It is necessary to collect good quality organic soy bean seed which do not have any fungus or any damage and it should be one time crop of the same size of range 4mm-5mm (i.e. it should pass through a sieve of 5mm) to get same quality seeds. Golden colour seed is preferred.

Soak the bean, herein after termed as seed or bean or soybean, for 5 hours in fresh and pure water such that all the seeds should drowned well in the water. After 5 hours drain the water and put it in a vessel with air holes and keep it aside for another 5 hours for sprouting. The temperature should be between 26°C and 32°C. After sprouting wash the seed several times (5-6 times). It help to remove the negative effects of the soybean. Repeat the soaking for another 5-7 hours. Then it is ready for the grinding. The soybean is fed into a machine for the preparation of soymilk by adding 10-10.5-litre water for 1 Kg beans. In that process it will steam the milk up to 115°C using the same machine. Let it be cool, the range of temperature be 20° -25°C and more desirable temperature is 22°C. Then add lemon juice to the milk at the required proportion. It is better if 70 -80ml of lemon juice is added to 3 –4 liters milk. More desirably 75 ml lemon juice to 3-4litre of milk. Usually some citric acid or any other acid is using instead of lemon juice. Keep this mixture without air contact or it should be packed without air in HDD pouch. Within 24 hours soy curd is ready.

This soy curd can use for further production of soy curd. That is 1 litre of soy curd is used for 12 liters soy milk. That is after the preparation of the soy milk add 1 litre and its multiple of soy curd to 121itre and its multiple of soymilk at the desirable temperature of 22°C.
The curd is ready for use after 12 hours. It should be kept without air contact. Keeping the curd without air contact will help to preserve the curd. The preservation of the curd is possible from 30 to 90 days without preservative and under normal room temperature. More accurately, it can preserve up to 60 days under a temperature of 22°C. It has a long preservation term if it is kept under 10°C.

Fat content in 500 ml soy curd is only 2% and there is no artificial sweetners or synthetic food colour is added. The solid content is 6.6%.

It has isoflavones concentration of 1.3 to 3.8 mg/g or about 37 to 108 mg per ounce. Isoflavones are metabolized by gut microflora. Stomach acid also helps in the process. Genestin, which is a healing factor stabilizes the abdominal temperature as 37°C, increases the number of CD4+ cells in blood and also eliminates uric acid.

By consuming the Soya curd it was found that the lipid peroxidation product are less. This shows the ability of soybean curd to decrease the level of lipid peroxidation products. It has an antioxidative effect and it help to prevent free radical formation.

The protein present in Soy curd is the most balanced protein for human consumption. 500 ml of Soy curd provide approximately 10 gms of Soy protein. It contains all the nine essential amino acids required for the body from the dietary source.

Soy protein causes calcium to be better utilized to minimize the risk of osteoporosis.

Also consumption of soy curd decreases menopausal symptoms i.e., hot flashes, night sweats, pain in the lower back and muscle joints and other discomforts.
Diabetes is a disorder of metabolism. Sufficient amount of polyunsaturated fatty acids like Omega 3 and Omega 6 fatty acids are very much essential for the optimum metabolism of the human system.

The Components of fatty acid in 500 ml Soy curd are saturated FA C16.0 (12.74 %) and C18.0(2.88%) , Monounsaturated FA C18.1(24.68), Polyunsaturated FA C18.2(52.92) C18.3(6.76). In soy curd fatty acids are fully preserved and can utilize it while having the curd.

In taking of soy curd corrects the metabolism and prevents and control disease like diabetes by applying the following method. Prescribed medicines have to be followed along with the intake of Soy curd. Take 250 ml in the morning and 200ml of Soy curd at noon and night. It can be taken along with the food or after the food. Food timings should be 8 AM, 1 PM, and 8 PM. It helps to maintain the concentration of digestive and slow releases of glucose to the blood stream. After the intake of Soy curd for 7 days blood test has to be made. If blood glucose exceeds 160 ml without taking food the medicine has to be increased. If visible improvements are not shown take 250 ml of Soy curd each time for 21 days, sure results can be expected.

If appetite is felt one and a half hour before the schedule time of food intake, amount has to be increased in the following days. If gas formation, acidity or chest burning is felt take 4 glasses of lukewarm water after defecation in the morning. Also take water 30 mts before food and take Soy curd along with food. Take rest after food. This curd is very effective for HIV affected patient also and it helps to improve the CD4+ cells.

Example 1

A male, 28 yrs, met with an accident and affected his nervous system and got paralyzed and has only eyes and tongue movement. He had only liquid food. After seven days of having this curd, he was able to move his fingers and after 60 days he ate food without help.
Example 2
A psoriasis patient aged 36 got a change after one month and completely cured after
6 months. Another patient of 28 yrs got relief after 15 days of having the curd.

Example 3
After suffering of Ulcers for 8yrs a male patient took this supplementary food for
3 months and got full relief from his diseases.

Example 5
A diabetic patient of age 53 had this curd for 3yrs and cured completely from
diabetics and related diseases.

Example 6
A female patient of 24yrs with a weight of 102 Kg was in a severe condition and
suggested for an operation in brain takes this curd and get a change after 30 days.

Example 7
A male patient of age 47 having a kidney failure, whose weight was 40 Kg, done 37
number of dialysis. Now he is not undergoing dialysis treatment. Another patient of
age 37 who had undergone 160 dialysis, is now free from his Kidney problems

Example 8
An AIDS Patient of age 48 takes the curd for 3 months and gained a good health. His
CD4+ cells count came to 270.
I Claim,

1. A process for preparing soy curd by an inventive method and preservation of it. The process comprising the selection of soy bean, soaking method, grinding and preparation of soy milk, making of soy curd for the fermentation, final processing of soy curd.

2. The process of selection of soy beans set forth in claim 1 wherein it includes the selection of organic seeds instead of beans which each and every seed must have same quality.

3. The selection of seeds set forth in claim 2 wherein the organic seed of range 80-105 days maturity, and in particular of range 85-95 days.

4. The selection of seeds set forth in claim 2 wherein it should be one time crop of the same size of range 4mm-5mm.

5. The process of soaking set forth in claim 1 wherein it includes soaking the bean for 5 hours in fresh and pure water such that all the seeds should drowned well in the water. After 5 hours drain the water and put it in a vessel with air holes and keep it aside for another 5 hours for sprouting. After sprouting wash the seed several times (5-6 times). Repeat the soaking for another 5-7 hours.

6. The process of soaking set forth in claim 5 wherein the room temperature should be between 26°C and 32°C during soaking.

7. The process of grinding set forth in claim 1 wherein by adding 10-10.5 litre water for 1 Kg beans and the pH level of the water should be 8.
8. The process of preparation of soy milk set forth in claim 1 wherein the process also comprising the steaming the milk up to 115°C and cooling, the range of temperature should be 20° -25°C and more desirable temperature is 22°C.

9. The process of preparation of soy curd for fermentation set forth in claim 1 wherein the process comprising of adding lemon juice to the milk at the required proportion. It is better if 70 -80ml of lemon juice is added to 3 -4 litres milk. More desirably 75 ml lemon juice to 3-4 litres of milk. And keeping this mixture without air contact.

10. The process of preparation of soy curd set forth in claim 1 is that 1 litre of soy curd is used for 12 liters soy milk for the further preparation of the soy curd at the desirable temperature of 220°C. The curd is ready for use after 12 hours.

11. The process of preservation set forth in claim 1 is that keeping the curd without air contact and the content of phytic acid will help to preserve the curd. The preservation of the curd is possible from 30 to 90 days without preservative and under normal room temperature. More accurately, it can preserve up to 60 days under a temperature of 22°C. It has a long preservation term if it is keep under 100°C.

12. The soy curd preparation claimed in claim 1 wherein the fat content in 500 ml soy curd is only 2% and there are no artificial sweeteners or synthetic food colour is added.

13. The soy curd preparation claimed in claim 1 wherein the solid content is 6.6%.

14. The soy curd preparation claimed in claim 1 wherein the soy curd contains is flavones and has concentration of 1.3 to 3.8 mg/g or about 37 to 108 mg per ounce.

15. The soy curd preparation claimed in claim 1 wherein 500 ml of Soy curd provide approximately 10 grams of Soy protein.
16. The soy curd preparation claimed in claim 1 wherein 500 ml of soy curd
Comprises of saturated fatty acid C16.0 (12.74 %) and C18.0 (2.88%)

17. The soy curd preparation claimed in claim 1 wherein 500 ml of soy curd
Comprises of Monounsaturated fatty acid C18.1 (24.68%).

18. The soy curd preparation claimed in claim 1 wherein 500 ml of soy curd
Comprises of Polyunsaturated fatty acid C18.2 (52.92%) and C18.3 (6.76%)

19. The soy curd preparation claimed in claim 1 wherein which can be used as a
food supplement for the treatment of various diseases like kidney failure, HIV,
diabetics, cancer high blood pressure and heart diseases, rheumatoid arthritis,
psoriasis, asthma, eye disease, menopausal symptoms, eczema, tuberculosis,
ulcers, weight loss and alcoholism
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. A23C20/00

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)

A23C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic database consulted during the international search (name of database and where practical, search terms used)

EPO-Internal, WPI Data, FSTA, BIOSIS, COMPENDEX, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Koch, Jürgen

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>CHOI ET AL: &quot;Pro-apoptotic effect and cytotoxicity of genistein and genistin in human ovarian cancer SK-OV-3 cells&quot; LIFE SCIENCES, PERGAMON PRESS, OXFORD, GB, vol. 80, no. 15, 12 March 2007 (2007-03-12), pages 1403-1408, XP005923324 ISSN: 0024-3205 page 1403, right-hand column, paragraphs 7,8</td>
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