

| DESCRIPTION                                                                                  |
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| A method for the production of fragrant rice drink products and related rice grains products |

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The present invention relates widely to the fragrant rice grains products and to method of producing the fragrance natural drinks, the powder or the products related to the process used. By the:soaking of the grains to produce the natural aromatic fragrance for use either as a beverage or reconstituted into powder at the time of consumption.

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The cargo fragrant rice means cargo rice obtained from paddy of non-glutinous fragrant rice varieties that are produced in Thailand such as Jasmine rice, Basmatic rice, Thai Hom Mali, Khao Hom Mali, Kao Dok Mali 105 or 105 Mali Khao or Thai Khao Dawk Mali variety, RD 15 or 15 Kor Khor variety, Klong Luang 1, Suphan, and Red Jasmine variety. Other names used in some countries are Jasmine 85, Zhong Yin 85, Bengawan solo, Jasmati and BR 1 The fragrant rice, or literally jasmine-scented rice. Many have evocative names such as Khao Dawk Makham or tamarind flower rice. This rice has natural fragrant aroma depending on whether it is new or aged. The rice grain with the bran and kernels shall have tender texture with an aromatic fragrant, when milled or polished.

Rice Drink or Rice Milk are prepared conventionally with liquefaction and saccharification of the starch to dextrin, maltose and glucose using alpha-amylase and glucosidase or alpha-amylase alone depending on the desired glucose concentration of the rice drink or rice milk. The milk or drink is usually characterised by the absence of rice-like flavour. The method adopted in this patent produce a similar or if not, even better drink or milk with its unique "pandan-soybean" aroma that is comparable or even better than soy milk.

The unique extracted pandan-soybean flavours or aromas is a result of diffusion of the solvent into the rice causing it to release the flavours. The rice in its dried form does not contribute to this unique flavour, but in the presence of the solvent, the flavours are slowly diffused releasing the fragrant volatiles. Because flavour compounds usually have a high molecular weight as compared to the molecular weight of the solvent being used, the diffusion takes a longer time and several hours are needed to extract the aromas.

Enzymatic hydrolysis results in a breakdown of large starch molecules into smaller ones known as dextrin. These saccharide polymers are characterised by non-sweet and nutritive and have a DE level (Dextrose equivalent) of less than 20. The hydrolysis conducted in the invention is partial hydrolysis and is carried



out by the action of alpha-amylase at unusual temperature of 25°C - 30°C. Most hydrolysis are carried out at a temperature above 50°C. The hydrolysis will be carried out till a 20% dissolved solids is achieved.

A filtration step was further carried out to separate the insoluble or liquefied rice and the insoluble or fiber, protein, fat, and minerals. The filter can be any cheesecloth or filter mesh than has a mesh size of 500 µm. Filtration under vacuum or through applied pressure can increase the filtration rate.

The partially dried insoluble is further dried in an oven to remove the excess liquid. In the process of drying, flavour conversion took place and the roasted cereal aroma was produced

The drink or milk can be processed directly to obtained a range of products like single strength drink, concentrated syrup, tofu, spread, or spray dried to form instant drink, condensed milk, capsules, or infant foods.

## CLAIMS

1. A fragrant rice drink product or related products produced by a method comprising of the following steps :

Extracting the aroma from fragrant cargo rice grains with distilled or deionised water and then gelatinise the rice by thermal process, followed by forming a thick paste using extrusion method and further liquefied with alpha-amylase for a period of less than two hours till the total dissolved solids reached a 20% content on a wet-weight basis producing a concentrated rice drink with high retention of the distinct aroma. The insoluble are then separated from the liquefied rice, dried at 70°C for 16 - 24 hours till a fragrant roasted cereal aroma is achieved. The liquefied rice and the insoluble can be converted into concentrated syrup, spread, cream, tofu, dehydrated form of dried particles for used in capsules, and cereal based products or infant foods.

2. The product of claim 1 wherein the aroma extracted originated from organic cargo fragrant rice.
3. The product of claim 3 wherein the rice is naturally cultivated grown without the use of synthetic chemicals, chemical fertilisers, spraying of pesticides or chemical fumigation.
4. The product of claim 3 wherein the aroma is retained when the rice is milled or polished or the bran is removed.
5. The product of claim 1 wherein the extraction process requires a ratio of 1:2 of rice and water and a extraction period of 1 - 4 hours in order to produce the distinct fragrance.
6. The product of claim 1 wherein the pressure for the thermal process is 0.5 - 1 bar and the temperature is from 100°C - 105°C in order to retain the distinct aroma
7. The product of claim 1 wherein the pressure used in the extrusion process is 0.5 bar - 1 bar in order to have high retention of the distinct pandan-soybean aroma.
8. The product of claim 1 wherein at least 1% of 800FAU/g of alpha-amylase is employed in the liquefied stage room temperature (28°C - 33°C) for not more than two hours. The soluble are separated from the insoluble, producing a concentrated rice drink with distinct aroma
9. The product of claim 8 is formed into rice drink, concentrated rice syrup, rice tofu, candy, soybean drink substitute, beverages and spread

10. The product of claim 8 produced from the method further comprising the step of dehydrating the rice drink product and thereby forming a dried rice drink product.
11. The product of claim 10 wherein the dried rice drink is formed into capsules, instant rice drink powder, infant foods, cereal-based products and instant dessert mixes.
12. The product of claim 10 has a pleasant roasted-cereal aroma.