

PROCESS FOR PREPARING A PARBOILED RICE

The subject of the present invention is a process for preparing a parboiled rice from a dehusked
5 rice.

Various processes for preparing a parboiled rice from a dehusked rice are known.

US 5,130,153 thus describes a process for preparing a parboiled rice from a dehusked rice
10 comprising numerous stages, especially stages of steeping, cooking under pressure, heating preferably by microwave, then reducing pressure and finally several stages of predrying and drying before the final stages of polishing and sorting of the grains.

15 Likewise, US 5,316,783 also describes a process for preparing a parboiled rice from a dehusked rice in which steeping and draining are carried out, the rice is exposed to a stream of hot air and/or of steam under specific conditions which are to be observed strictly
20 so as to obtain 100% gelatinization of starch, the rice is dried and the bran and the germ are separated by agitation.

The aim of the present invention is to propose a process for preparing a parboiled rice from a
25 dehusked rice which is simple, efficient and rapid.

To this end, in the present process for preparing a parboiled rice from a dehusked rice, the rice is steeped in water at 20-70°C for 45 min to 7 h so as to raise its water content to 33-40%, it is
30 drained and steamed in a bed 2-10 cm thick, preferably 3-5 cm thick. Preferably, the cooked rice is dried to a residual water content of 10-20% and the bran and the germ are separated.

The present process makes it possible, indeed,
35 to obtain, from a dehusked rice, in a small number of simple and reliable stages, a parboiled rice having numerous qualities.

The process according to the present invention makes it possible in particular to obtain a parboiled
40 rice which does not have the special taste of

traditional parboiled rice, but whose taste is similar to that of a nonparboiled rice.

The parboiled rice obtained by the present process has a shorter cooking time than traditional
5 parboiled rice. However, it can also withstand relatively long cooking times without becoming sticky, especially in a preparation of a culinary dish such as risotto, for example. It can be allowed to cook for 25 min without becoming sticky, for example.

10 Thus, it has been observed that by using this process a parboiled rice is obtained which has a white colour similar to that of milled rice and which has, subsequently during cooking, a very good stability.

In the process for preparing a parboiled rice
15 from a dehusked rice according to the present invention, the husked rice is first steeped in water at 20-70°C for 45 min to 7 h so as to increase the water content of the rice grains to 33-40%. Preferably, this stage is carried out at a temperature just below the
20 gelatinization temperature which is about 70°C for most rice varieties.

In order to drain the rice, it can be left to stand for 3 to 5 min on a screen, for example. The water thus removed, during this stage, may be recovered
25 for steeping the next batch of dehusked rice, for example.

The steaming can then be carried out under pressure for 3 to 15 min at 111-130°C, for example. This stage can be carried out in a bed 3 to 5 cm thick,
30 either in a band cooker, or in a fluidized bed, or alternatively on trays, such that the grains form only one layer or bed of the said thickness, for example. This makes it possible to avoid agglomeration of the rice grains while they are being cooked. Indeed, during
35 this stage, the starch undergoes 70-100% gelatinization.

The degree of gelatinization can be measured by a physical measurement, especially using the

"differential scanning calorimetry" method (Cereal chemistry Vol. 66 - No. 4 - 1989), for example.

5 The rice can then be dried for 20 to 60 min, in a stream of hot air at 40-80°C, to a residual water content of 10-20%, for example. Preferably, the rice is dried to a residual water content of 13-17%.

If it is desired to dry the rice to a residual water content of less than 13%, especially of 5-7%, a separate postdrying stage can be provided, for example.

10 A postdrying stage can be provided, especially in the case where it is desired to mix the rice with other components having a relatively high residual water content, so as to reduce the residual water content of the culinary dish, for example.

15 Accordingly, in one embodiment of the present process, drying to a residual water content of 13-17%, polishing then a postdrying stage can be carried out, for example.

20 But in order to obtain a residual water content of less than 13%, drying can also be carried out in a stream of hot air at 40-80°C, for 20 to 60 min, followed by a postdrying at 20-50°C, for 10 to 30 min, just before the polishing stage, for example.

25 Preferably, the rice is then allowed to cool at room temperature. The bran and the germ can be separated according to conventional techniques, especially by removing the pellicle from the rice grains by passing between two rollers, before, during or, preferably, after the drying and the cooling, for example.

30 The rice can be subjected to polishing just after the separation of the bran and the germ, for example. Sorting can then be carried out in order to remove the defective rice grains, for example.

35 In another embodiment of the present process, it is also possible to freeze the cooked rice, alone or mixed with other components of a culinary dish, after having separated the bran and the germ in the hot and wet state, for example, and it is not dried.

The process according to the present invention is described in greater detail in the examples below where the percentages are given by weight, unless otherwise stated.

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Example 1

A dehusked medium long grain rice, of the fino ribe variety, is steeped in water at 70°C for 50 min.
10 Its water content is thus raised to 37%.

The steeped rice is drained for 4 min.

The drained rice is introduced into a band cooker, in which it is steamed under pressure in a 4 cm layer at 120°C for 7 min until a degree of
15 gelatinization of starch of 75% is obtained.

The rice is then dried for 1 h in a stream of hot air at 65°C to a residual water content of 14%.

The rice is then allowed to cool at room temperature.

20 The bran and the germ are separated by milling, by passing the rice grains between two rollers, the grains are polished and then they are sorted.

Example 2

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The procedure is carried out in the manner described in Example 1, except for the fact that a postdrying stage is carried out at 50°C for 15 min, after the polishing stage.

30 A parboiled rice is thus obtained whose residual water content is 7%.

Example 3

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The procedure is carried out in the manner described in Example 1, except for the fact that the postdrying stage is carried out directly after the drying stage.

This postdrying stage is carried out in a stream of hot air at 50°C for 15 min so as to obtain a rice having a residual water content of 7%.

5 The rice is then allowed to cool at room temperature.

The bran and the germ are separated by agitation, the grains are polished and then sorting is carried out in order to remove the defective grains.

10 Example 4

The procedure is carried out in the manner described in Example 1, except for the fact that the rice grains are polished in the wet and hot state after
15 the steaming stage and that they are not dried.

The polished rice grains are then rinsed for 3 min at 15°C. During this rinsing stage, the residual water content of the rice grains increases further by 7%, such that their residual water content, after this
20 stage, is 44%.

The polished and rinsed rice grains are transported onto a vibrating screen at a temperature of -25°C, so as to avoid their sticking together during this prefreezing stage.

25 The rice thus prepared is frozen.



CLAIMS

1. Process for preparing a parboiled rice from a dehusked rice, in which the rice is steeped in water at
5 20-70°C for 45 min to 7 h so as to raise its water content to 33-40%, it is drained and it is steamed under pressure in a bed 3 to 5 cm thick.
2. Process according to Claim 1, in which the steaming is carried out under pressure for 3 to 15 min
10 at 111-130°C.
3. Process according to Claim 1, in which the cooked rice is dried for 20 to 60 min in a stream of hot air at 50-80°C, to a residual water content of 10-20%.
- 15 4. Process according to Claim 2, in which a postdrying is carried out for 10 to 30 min at 20-50°C, to a residual water content of 5-10%.
5. Process according to Claim 3, in which the bran and the germ are separated and the rice is polished
20 before or after the post drying stage.
6. Process according to Claim 1, in which the cooked rice is frozen, alone or mixed with other components of a culinary dish, after having separated the bran and the germ in the hot and wet state.