

Human Journals

Short Communication

August 2022 Vol.:22, Issue:2

© All rights are reserved by Jun Kobayashi et al.

Does Prewashed Rice Have Allow Environmental Impact?



IJSRM
INTERNATIONAL JOURNAL OF SCIENCE AND RESEARCH METHODOLOGY
An Official Publication of Human Journals



Jun Kobayashi*¹, Keiichi Ikeda²

¹*Faculty of Nutrition, University of Kochi, 2751-1 Ike, Kochi, Kochi 781-8515, Japan;* ²*Faculty of Pharmaceutical Sciences, Hokuriku University, Ho 3, Kanagawa-machi, Kanazawa, Ishikawa 920-1181, Japan*

Submitted: 22 July 2022
Accepted: 27 July 2022
Published: 30 August 2022



HUMAN JOURNALS

www.ijsrm.humanjournals.com

Keywords: Prewashed Rice, Environmental Impact, Skin Bran, Washed Rice Liquid

ABSTRACT

Prewashing is a process by which bran attached to the surface of the rice is removed. Prewashed rice need not be washed again before cooking. White/plain rice is obtained by polishing brown rice and removing the germ and surface bran. The water after washing regular rice becomes cloudy since bran is removed and suspended. Prewashed rice has both advantages and disadvantages, according to the type of cooking. In this study, we evaluated the rice characteristics and investigated whether or not, prewashing has a lower environmental impact. The results showed that the prewashed rice has a different environmental load depending on the manufacturing method. We inferred that it would be better to use different types of rice based on the cooking method.

INTRODUCTION

Prewashed rice is already polished and washed beforehand in the production stage and does not require washing before cooking. In other words, the manufacturing process is different from rice that is sold in the markets worldwide. Common rice is called polished white rice and results from polishing brown rice, removing the germ and bran that normally exists on the surface of the rice (process reduces weight from 90%–93%¹⁾) while prewashing removes bran on the surface by further processing²⁾ (85%–88% by weight³⁾). Skin bran is highly adhesive, and derives its name from peeled off skin during the rice polishing and re-attaching to the surface of the polished rice. It dissolves in water when rice is washed and makes the water cloudy⁴⁾. Therefore, it does not originally exist in brown rice itself. Prewashed rice has several advantages and disadvantages. Prewashed or regular common rice are used depending on the taste and the type of food. This study investigates into the characteristics of prewashed rice compared to that of regular rice and evaluated the environmental impact of using prewashed rice.

History and origin of prewashed rice

Prewashing of rice began in Japan in 1991²⁾. Later, it spread to general households by the co-ops in the Tokyo metropolitan area⁵⁾. At least in Japan, prewashing is actively used in many employee cafeterias and major food service industries. This practice is mainly being adopted for economic reasons since it reduces the time and amount of water used for washing. The differences in taste because of boiling rice are less likely to occur owing to variable experience in washing rice (Table 1). Prewashed rice was earlier called semi-prewashed rice because many products were sold in the market under this name, which required washing once or twice before cooking. Further, problems with the taste were also identified. However, at present, several completely prewashed rice are available, which are prepared by multiple methods (Table 2). In addition, an organization called the National Prewashed Rice Association monitors the market for inferior products by conducting quality inspections²⁾. Consequently, the problem of poor taste has been eliminated, and the production of prewashed rice is on the rise. According to a survey conducted from 1999 to 2017, the demand of rice in Japan declined from 9 Mt to around 7.4 Mt. In contrast, the production of prewashed rice certified by the National Prewashed Rice Association has risen from 0.12 Mt to around 0.43 Mt²⁾.

Conventionally, rice has always been washed before cooking. Therefore, although unnecessary, elderly people still prefer to wash the prewashed rice before cooking.

Prewashed rice is prepared by either drying or wet polishing. However, various method of preparation exist and uniform effect is not achieved using any of them (Table 2). Depending on the interpretation, prewashed rice may be regarded as a low quality product: rice that has not been washed at the time of production. This rice is sometimes manufactured and sold outside Japan. In China, it is called rice exempted from washing (rice that does not require washing before use).

Advantages and disadvantages of prewashed rice

Table 1 presents the characteristics of prewashed rice listed in previous studies and their comparison with those of the rice that is polished normally⁴⁻⁶⁾. Differences may occur depending on the content of the rice polishing itself, what occurs by the polishing, and the characteristics of the prewashed rice itself. Table 1 lists both advantages and disadvantages of prewashed rice. For example, no water is required for prewashed rice; therefore, it is environmentally friendly. However, prewashed rice have a very high nutritional value and cannot be used for other purposes (for example, washing liquid as fertilizer for plants). If wet method is used to process prewashed rice, then liquid generated after washing may affect the environment (Table 2). Bran, which is the byproduct of dry method, is used as food for livestock animals, fertilizer for crops and food ingredients.

An opinion that the taste of prewashed rice is inferior to regular rice presently exist. This disadvantage may lead to use of varying quantities of water and rice for boiling/cooking. Nutrient intake can be stabilized with prewashed rice. In contrast, when regular rice is washed, the water used for cooking can be changed in various ways depending on the degree of washing. Several rice types are available in the market with variation in pricing. Prewashed rice is generally more expensive but considering the number of grains in different types, the price difference is negligible. A small quantity of regular rice is also selected, processed and marketed as prewashed rice.

When prewashed rice is not preferred?

The prewashed rice grains becomes small because of polishing and washing the surface of rice grains in the production process. Even if the specified amount of rice is measured with a normal measuring cup, a higher weight will be recorded than regular rice. For this reason, a little ingenuity is required for boiling the prewashed rice to make it delicious. For example, it is necessary to reduce the volume of grains by a certain amount or weigh with a dedicated measuring cup⁷⁾. The amount of water used is also different from that of regular rice when prewashed rice is boiled or water added and heated in a rice cooker. In recent years, new rice cookers with a prewashed rice mode have been introduced to meet consumer needs.

Prewashed rice greatly contributes to shortening the rice boiling process, but not all rice dishes are compatible with prewashed rice. Using prewashed rice also does not mean that it will be delicious or have a higher nutritional value. When making the Spanish paella, raw rice is placed directly in a pot and heated, and the traditional boiling process does not involve washing the rice⁸⁾. Rice is washed with water to remove the skin bran when boiled normally and it is also believed that the seasoning of paella is not affected by the bran. It is assumed that absorbance of nutrients (vitamins, etc.) of rice bran from boiling increases the nutritional value of cooking. It is possible to make paella with prewashed rice, but regular rice will be better in terms of nutritional value and time taken for cooking.

Rice is the staple food in many countries other than Japan and the process of boiling is not necessarily the same in all countries. People living in Japan, China, and the Korean Peninsula often eat rice after boiling. In Southeast Asian countries such as Thailand and Vietnam, it is common to eat rice after boiling with a lot of water and then steaming. In Japan, China, the Korean Peninsula, and India; a process of making rice porridge involves slow-cooking with lot of water over a long period. In Italian cuisine, risotto and pilaf are made by the process of heating rice in oil, adding bouillon, and boiling/cooking⁷⁾. The idea of shortening the cooking time, no longer exists if rice cooked once is reused again. Cooking methods requiring long heating time and use a lot of water are also practiced. These reports indicate that it is difficult to find out the major advantages of prewashed rice; rather it is better not to use prewashed rice.

CONCLUSION

The use of prewashed rice reduces the time required for washing and the wastewater generated from washing. This is considered good because it reduces environmental pollutant load. However, this is not conceivable for all prewashed rice and is limited to that produced by some specific methods. In some cases, a lot of washed rice liquid is generated during production involving additional costs. If the environmental impact is considered, it is necessary to confirm that at the time of purchase and use. If organizations want to position low environmental impact as a feature, then, they should not use methods that increase the impact.

There are many kinds in ordinary rice itself, having differences such as nutrients, shape, and place of origin. Various dishes have also been created by using these differences based on experiences. Therefore, rather than replacing regular rice with prewashed variants, it should be used as a substitute for special needs, in new dishes, and at times of disasters.

At least in Japan, we often see that prewashed rice is sold at supermarkets. Prewashed rice mode is also increasing in household rice milling machines. Due to the recent spread of coronavirus, online shopping has increased significantly and so there are more opportunities to try prewashed rice than before. In our opinion, prewashed rice has both advantages and disadvantages compared with regular rice. However, it is believed that prewashed rice has many shortcomings because of lack of proper knowledge about their differences from regular rice. For example, if the taste or texture is bad, the amount of water added before cooking may not be optimal. Therefore, it is necessary to know these requirements well in advance before trying new things.

REFERENCES

- 1) What is rice polishing? Basic knowledge of rice and cooked rice, <https://www.okomehp.net/category/category002> (browsed August 2022).
- 2) National Pre-washed Rice Association.(2019) What is pre-washed rice? https://www.musenmai.com/about_musenmai.html (browsed August 2022).
- 3) Considering the cost performance of regular rice and pre-washed rice-Price comparison by net quantity. SYU_REI'S WEBLOG,published July 21, 2020, https://www.syu-rei.com/entry/unwashed_rice_vs_rice (browsed August 2022).
- 4) Ministry of Agriculture, Forestry and Fisheries. (2018). What kind of rice is pre-washed rice?-Also, please tell me how to cook pre-washed rice well. <https://www.maff.go.jp/j/heya/sodan/1812/01.html>(browsed August 2022).
- 5) Advantages and disadvantages of pre-washed rice. Rice Sommelier, <https://owned.kanazaki-okome.jp/tops/> (browsed August 2022).

6) What is the difference between polished rice and pre-washed rice? -Let's compare the advantages and disadvantages! Onion Late.Rice, published November 8, 2021, <https://onionoon.work/hw/rice/seimai-musenmai-chigai> (browsed August 2022).

7) In which country other than Japan is rice the staple food? -About rice dishes from around the world. Healthy population doubling plan, published May 10, 2017, <https://kenkoubaizou.com/k2k0000298-post/> (browsed August 2022).

8) Midori Foods Co., Ltd. What kind of rice is used for paella? -Should I not wash the rice? <https://midorifoods.com/blog/paeria-kome-arawanai/> (browsed August 2022).

Table 1 Advantages and disadvantages of pre-washed rice

Phenomenon	Advantages	Disadvantages
Washed rice liquid is hard to come out	Washed water contains a lot of phosphorus and nitrogen, and when it is discharged, it causes water pollution (environmental load). Reduces cleaning work for kitchen sinks, drain pipes, etc.	It cannot be used for secondary purposes, such as feeding the water to plants as a nutrient.
No need to wash	Not washing reduces the loss of nutrients (water-soluble vitamins and minerals). Less uneven taste for each cooked rice. There is no need for instruction on how to wash (when used in the restaurant industry, etc.). It saves water. It saves time and effort in washing. Pre-sharpening reduces weight, contributing to efficient transportation and space. Convenient in times of disaster (saving water, reducing wastewater).	Nutrients are preliminarily drained and cannot be regulated like rice polishing. The taste is consistent, but that does not mean it is very delicious (because it's cooked the same way as before?). Some people feel that washed regular rice is more delicious. It is sometimes said that taste is better when cooked with a little extra water, and considering that, the water needed for washing may offset taste. It is sometimes said that it is better to take a longer water absorption time.
Price and type	If you plan to store it for a long time or rarely eat it, there is a possibility that the cost can be kept down because production method extends shelf life.	The price is a little high. There are many combinations of manufacturing methods and types of rice. Not all combinations are available in the market.
Quality	Depending on the type of processing, there may be some that are as delicious as regular rice or even more delicious.	Varying in quality is because national quality standard do not exist.
Grain shape and size (when measured with a measuring cup)		When the same volume is measured as regular rice, the amount of rice (number of grains) will increase (some think that a separate measuring cup is necessary).

The underlined sentences are environment friendly.

This is because of advantages and disadvantages listed in respective columns for prewashed rice.

Based on the data in references 4–6).

Table 2 Pre-washed rice manufacturing method

Name	Explanation	Evaluation
Rice bran method, BG (Bran Grind) rice polishing method	Method of removing skin bran by utilizing the stickiness of skin bran without adding anything other than air and water. Unlike the conventional whitening process, only the rice bran is removed leaving the delicious part. All of the bran collected at this time can be used as organic fertilizer or feed. The zero-emission idea of using this waste also eliminates waste in the manufacturing process.	◎
Washing and drying method, wet method	Method of removing skin bran by washing with water and drying. At home, no more washed rice liquid is produced, but at factories, thicker water is produced. Washing away the bran as a waste does not meet the original purpose of pre-washed rice, which is to reduce the environmental load.	△
NTWP (Neo Tasty White Process) processing method	One of the wet methods. Method to absorb and remove the thick water mixed with skin bran and water with tapioca. There is a disadvantage since raw material and processing cost of tapioca are involved. Tapioca is difficult to grow in Japan and its cost is high.	○
Dry method, polishing method	Rice bran is removed by rubbing with a rice polisher or brush. No drying process is required as no water is used during manufacturing. However, since this method may not remove the bran sufficiently, it is better to wash the rice once or twice because most of the rice is almost the same as regular polished rice. Compared to the water-washing and drying method, it has the advantage of maintaining freshness and taste by not adding water.	△

Multiple names for a method are listed together.

The underlined sentences indicate deficiencies in the method.

Evaluations are our own based on the contents of reference 2).

Symbols: ◎, very good; ○, good; △, not really good.