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# A Study On Growth Of The Parboiled Rice And Its Future Trend In The Market.

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**ABSTRACT**

Rice milk bars are an emerging dairy-free alternative in the plant-based food market, offering consumers a nutritious and allergen-friendly option. This study focuses on developing and characterizing a rice milk bar formulated with natural ingredients to enhance taste, texture, and nutritional value. The bar is designed to provide a balanced macronutrient profile while maintaining a creamy consistency and appealing flavor. Key factors such as ingredient composition, production methods, sensory evaluation, and shelf stability were analyzed. The results indicate that rice milk bars can be a viable alternative to conventional dairy and nut-based snack bars, catering to lactose-intolerant and vegan consumers. Further research is recommended to optimize formulation and expand market potential.

**Index Terms** - Component, formatting, style, styling, insert.

## 1.1 INTRODUCTION

India is accepted as the world's second-largest rice producer and exporter in India, accounting to 20%. Rice is the staple crop in India in exports of rice were made to West Africa, Southeast Asia, and the Middle East. According to APEDA, India have exported 2.3 million tons of rice in 2013-2014, and it rose to 12.7 million in 2020- 2021. There are various types of rice exported from India. Basmati rice represents for 70% of global exports. Non-Basmati (Such as IR 64, IR 36 and Swarna) are majorly exported to West Africa, South Asia, the Middle East, and the Southeast. In West Africa, rice was exported to Nigeria, Canada, Denzel. Southeast Asia, and India, cater to Indonesia, Madonna. Middle East, to South America, United Arabia, and Iran. India has three major rice production states: Telangana produces 16.52 LMT per year, followed by Tamil Nadu, 12.09 LMT, and Kerala, which makes 3 3 LMT.

### 1.2 OBJECTIVE OF STUDY

To analyze the export trend of rice from India to the global market.

### 1.3 BENEFITS OF PARBOILED RICE FOR HEALTH

Parboiled rice is a nutritious option compared to white rice, as it contains higher fiber, protein, vitamins, and minerals. Its firmer texture helps prevent rice kernels from breaking during milling. This variety is also suitable for individuals with diabetes. Parboiled rice is vibrant in B vitamins, such as niacin and thiamine, which aid in sugar digestion and converting carbohydrates into energy. Additionally, these B vitamins play a vital role in producing neurotransmitters and hormones in the body.

The global parboiled and white rice market was estimated at 509.9 million tons in 2024. Projections indicate that this market is expected to grow to approximately 564.8 million tons in the coming years, driven by a rising population and evolving dietary preferences. The parboiled rice market is anticipated to experience a compound annual growth rate (CAGR) of 1.17% from 2022 to 2023. This growth is attributed to the increasing demand for hydrothermally processed rice, which enhances its nutritional profile and cooking qualities.

### 1.4 REVIEW OF LITERATURE

**Ayah., Etal.,2021,** This article finds alternatives for milk products. Many alternatives are available, such as strawberry-flavored milk, chocolate milk, and strawberry puree; these are plant-based milk rich in protein, minerals, potassium, calcium, and magnesium. This study identified three milks: brown rice milk, coconut milk, and almond milk. The author identifies three milk alternatives: strawberry milk, chocolate butter, puree, and cedar. All these plant-based milks have high nutritional value with good stability and versatility.

**Dmitrii Khrundin., (2023),** The rice is ground and mixed with and allowed for fermentation. In the process, the rice mixer is added with sugar to create enzymes and break the starch. In the process, Lactic acid and bacteria are formed. A high-quality fermentation helps to have a better vegan milk alternative. This product is highly delicious and rich in nutrients.

**F. Reyes-Jurado., Ealt., (2021),** The popular alternative for cow's milk is plant-based milk. This plant-based milk has high sources of grains, legumes, vegetables, nuts, and oil. These plant-based milk have high stability, taste, nutritional content and shelf life. The process helps to minimize nutritional loss and increase shelf life.

**Ghini Kunthala Devi., Etal (2022),** The plant-based alternative to plant-based milk, which is generated from white and brown rice, captures a good place in the market. The bran layer has to be removed in white rice, and in brown rice, the brand has to be capped to make it highly nutrient-rich. This brown rice milk helps lower cholesterol and fat levels, has a high fiber content, and has antioxidants and essential minerals. This type of milk has good taste, aroma, appearance and texture.

**Suwapat Kittibunchakul., Etal., (2021),** The present scenario is currently in good demand for rice-based and plant-based milk alternatives. Increasing Latos intolerance or creating huge dements for rice-based milk. This rice-based milk is completely free from allergy and dietary changes. This milk has chemical safety concerns arising from high-temperature processing, and additives like piperonyl butoxide prevent the growth of pathogens.

**Youngseung Lee., Etal (2019),** rice milk is generated from two types of rice. An attempt was made to find this study that explores the rheological properties of rice milk produced from various rice varieties, viz., Arhant and Bengal, and their grinding methods. Were used in the research. The gelatinization temperature of each rice variety was evaluated. The findings stated that Bengal rice showed non-Newtonian flow because of this higher density. The gelatinization temperature varied based on factors like rice variety and grinding state. The bran layer in brown rice contains a higher amount of fat and protein. Temperature plays a crucial role in determining the flow behavior of rice milk.

### 1.5 SOURCE OF DATA

The secondary data was collected through the Chamber of Commerce. Data was collected and analyzed for the past ten years to determine future trends and predict the future rice market.

**Table 1 - EXPORT OF PARBOILED RICE FROM INDIA TO VARIOUS COUNTRY FOR THE YEAR 2011 – 2024**

| YEAR | QTY IN UNITS (10000) TONS | USD PER UNIT | PERCENTAGES |
|---|---|---|---|
| 2011-2012 | 277.83 | 1101.26 | 11.51% |
| 2012-2013 | 404.42 | 742.79 | 7.77% |
| 2013-2014 | 412.74 | 751.90 | 7.86% |
| 2014-2015 | 426.57 | 727.52 | 7.61% |
| 2015-2016 | 344.18 | 762.08 | 7.97% |
| 2016-2017 | 389.91 | 707.48 | 7.40% |
| 2017-2018 | 432.57 | 701.68 | 7.34% |
| 2018-2019 | 376.25 | 877.29 | 9.17% |
| 2019-2020 | 312.89 | 1001.51 | 10.47% |
| 2020-2021 | 617.52 | 472.55 | 4.94% |
| 2021-2022 | 743.41 | 567.66 | 5.93% |
| 2022-2023 | 784.85 | 574.72 | 6.01% |
| 2023-2024 | 757.08 | 577.32 | 6.04% |
| **Total** | **6280.22** | **9565.74** | **100.00%** |

Source: Import Export Data Bank Ministry Of Commerce

Table 1 explains the export of parboiled rice from India to various countries from 2011-2024. During 2011-2012, the quantity exported was 2277.38 tons, accounting for 11.57%. During the years 2012-2013 to 2016-2017, the percentage of export fluctuation contributed to 7.77%, 7.8%, 7.67% 7.97%. It was understood that the years between 2011 – 2012 to 2015 – 2016. A huge fall was seen in the year 2014- 2015. Between 2017-2018 and 2023 - 2024, a steep fall could be seen in 2021, and a steady increase was slowly seen during 2021-2024, accounting for 5.93,6.01 and 6.04, respectively. Thus, from the table, the export quantity of parboiled rice has seen a downfall in exports.

### 1.6 REPRESENTATION PARBOILED RICE DURING 2013 – 2024 IN BAR CHART

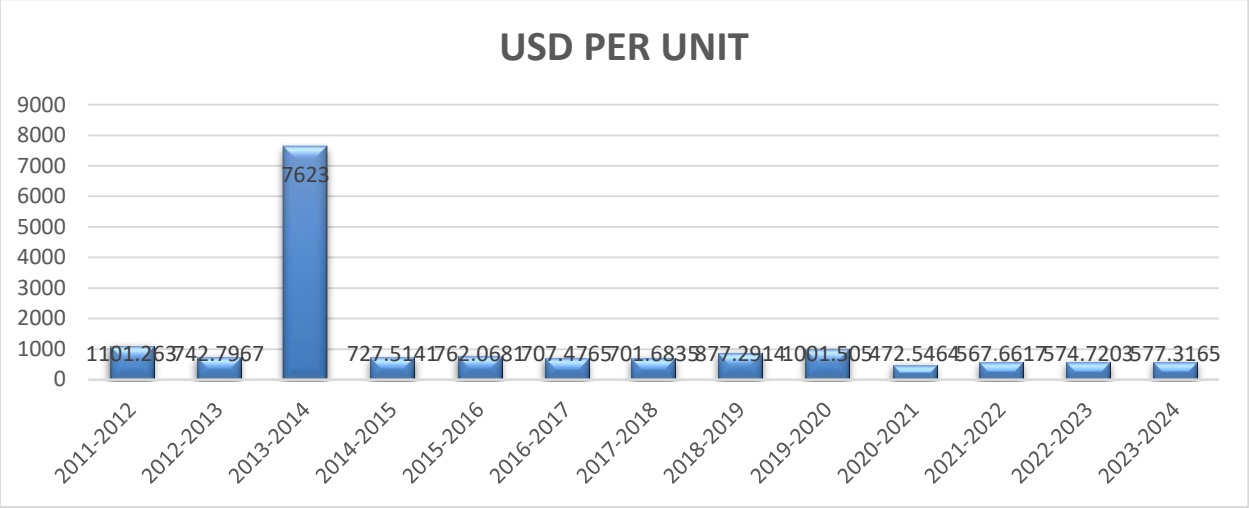



**Table 2 – COMPUTATION OF TREND ANALYSIS THROUGH LEAST SQUARE METHOD**

| YEAR | USD PER UNIT | X | XY | X^2 |
|---|---|---|---|---|
| 2011-2012 | 1101.263 | -6 | -6607.58 | 36 |
| 2012-2013 | 742.7967 | -5 | -3713.98 | 25 |
| 2013-2014 | 7623 | -4 | -30492 | 16 |
| 2014-2015 | 727.5141 | -3 | -2182.54 | 9 |
| 2015-2016 | 762.0681 | -2 | -1524.14 | 4 |
| 2016-2017 | 707.4765 | -1 | -707.477 | 1 |
| 2017-2018 | 701.6835 | 0 | 0 | 0 |
| 2018-2019 | 877.2914 | 1 | 877.2914 | 1 |
| 2019-2020 | 1001.505 | 2 | 2003.01 | 4 |
| 2020-2021 | 472.5464 | 3 | 1417.639 | 9 |
| 2021-2022 | 567.6617 | 4 | 2270.647 | 16 |
| 2022-2023 | 574.7203 | 5 | 2873.602 | 25 |
| 2023-2024 | 577.3165 | 6 | 3463.899 | 36 |

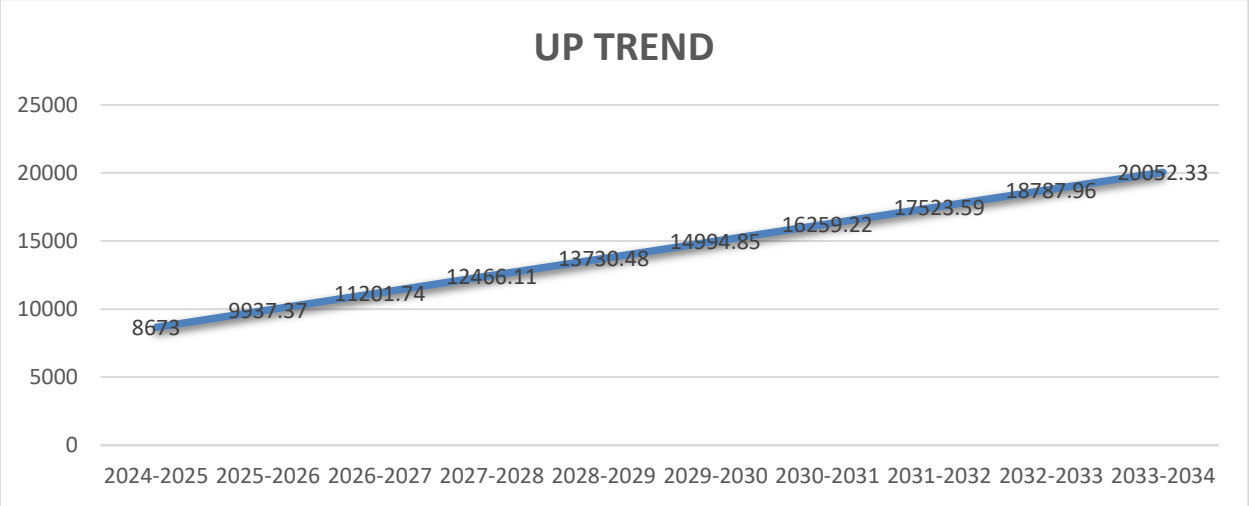
**Table 3 - FUTURE PROJECTION OF PARABOLIC RICE FOR THE YEAR OF 2024-2025 TO 2033-2034**

| YEAR | PROJECTION (VALUE) USD |
|---|---|
| 2024-2025 | 8673 |
| 2025-2026 | 9937.37 |
| 2026-2027 | 11201.74 |
| 2027-2028 | 12466.11 |
| 2028-2029 | 13730.48 |
| 2029-2030 | 14994.85 |
| 2030-2031 | 16259.22 |
| 2031-2032 | 17523.59 |
| 2032-2033 | 18787.96 |
| 2033-2034 | 20052.33 |

Table 3 presents the future projection value during 2024 – 2034. From 2011- 2021, the unit value increased in 2011 – 2012 to 1101.26 USD. In 2014 – 2015, the value earned was 727.51, 75.95, 72.92, 76.28, and 707.48 USD, respectively. It is intended to know that the minimal increase in the downfall was in 2017 – 2018. Between the years from 2018 – 2019 to 2023 – 2024, a huge hike has been seen. The value earned is 877.29 USD, 100.51 USD and again from 2021 – 2022 to 2023 – 2024. A downfall in the value gained in the year is 51.66 USD,57.22 USD, and 577.22 USD, respectively. On consolidation, the total quantity of value increased

by 62.22 times. The value stood at 7564.25 USD, respectively. The Trend Analysis in the year 2024 – 2025. The value is expected to grow, accounting for 86.73 USD. From 2025 – 2026 and 2028 – 2029, a steady increase of 1120.24,1266.11 and 1373.04, respectively. It could be seen that 2033 – 2034 will result in 205.33 USD. Thus, the study ensures the value of parboiled rice exports.

**FUTURE PROJECTION OF PARABOLIC RICE EXPORTS (2024 – 2034)**




## 1.7 CONCLUSION:

This study analyzed the export data of parboiled rice for the past 10 years and also predicted the future export trend for parboiled rice. Compared to the last years, the market for parboiled rice will increase yearly. This study suggests that the rice market will boom, so that you can introduce the rice milk bar. It will capture the future rice market. Innovative product formulation, enhanced quality standards, and strategic market expansion could pave the way for sustained growth in the parboiled rice export industry.

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