



Production Technology and Application of Fortified Rice

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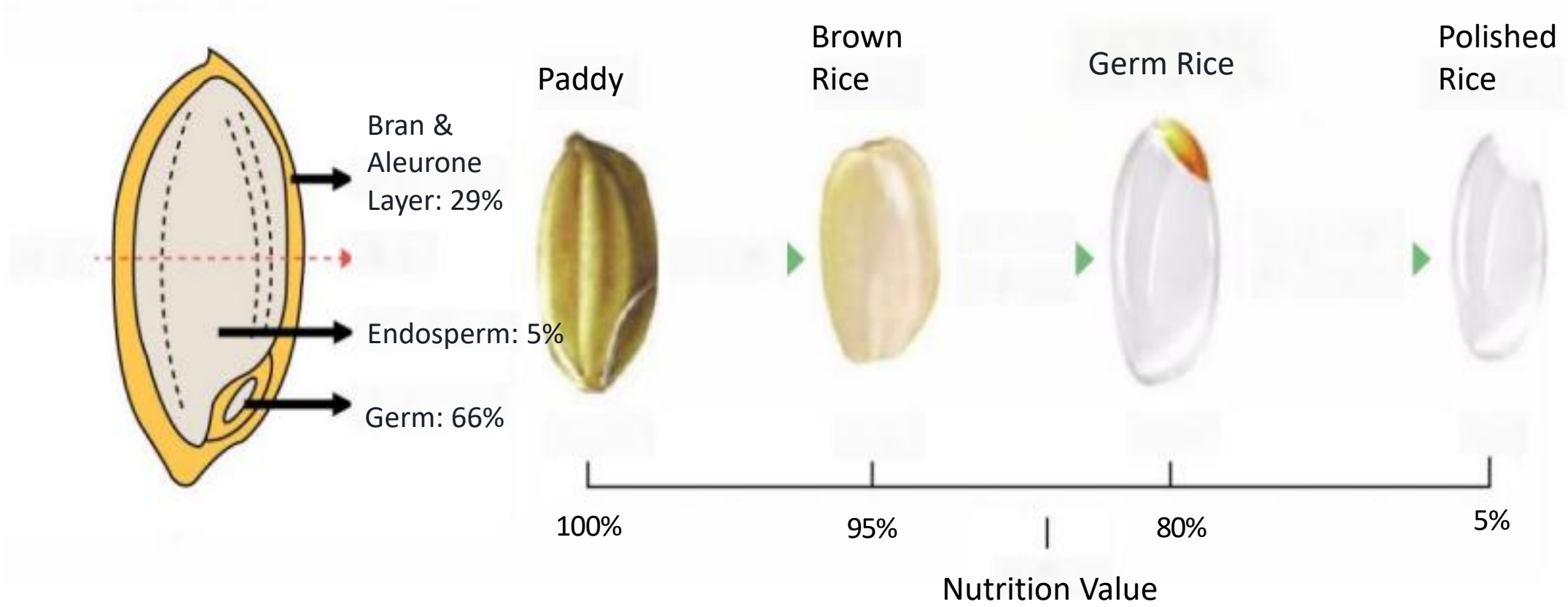
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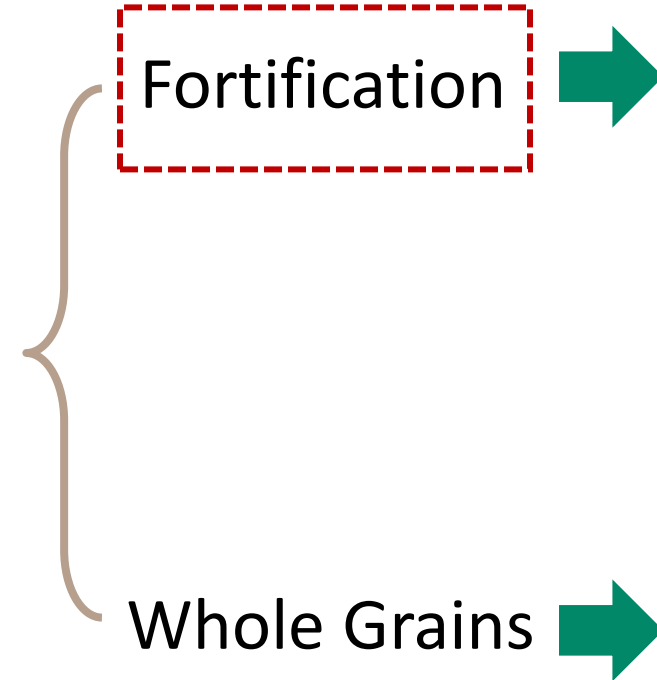
01

Fortified Rice

Nutritional Deficiencies of Polished Rice: Severe Nutrient Loss Caused by Overprocessing



Eliminating Nutritional Gaps in Staple Foods



Fortification



Nutrient-fortified rice improves and enhances the nutritional and functional profile of rice through the fortification of endogenous nutrients and the addition of exogenous nutrients.

Whole Grains



Maximize the retention of endogenous nutrients in staple foods, promote dietary diversity, reduce food waste and grain loss, and deliver balanced nutrition.

What is the Fortified Rice?

- **Raw Materials:** Scientific blend of rice flour or multi-grain flours (Rice, Corn, Cassava, Potato, Buckwheat, etc.)
- **Fortification:** Added exogenous nutrients (Vitamins B1 & B12, Calcium, Iron, Zinc, etc.)
- **Process:**
 - Extrusion
 - Blending fortified rice kernels with natural rice at a specific ratio to have the Effectively fortifies standard rice
- **Key Features:** Rice-like appearance, cooking properties, and taste

Target Consumers:

- ✓ Daily Staple Consumption: Suitable for the public
- ✓ Specialized Needs: Tailored for diabetics, the elderly, women, and infants

多种杂粮汇聚 富含膳食纤维

高科技谷物分子限制糊化技术，不用提前浸泡，和大米可以同煮同熟，大大节省了蒸煮的时间



Features of Fortified Rice

Customizable Taste

- Developing tailored products with Distinct flavours and Textures based on the specific tastes and requirements of different customer groups
- Diverse Flavour:
 - Japonica rice flavour
 - Indica rice flavour
 - Light & fresh flavour

Configurable Nutrition

- Formulating ingredients based on specific nutritional targets
- Fortifying essential nutrients
- Enhancing functional factors

Controllable Cost

- Broad availability of local starchy resources
- Utilization of low-cost processing by-products (e.g., broken rice)
- Significantly reduced overall production costs

Traceable Quality

- Food safety is the top priority in food processing.
- The full-cycle quality traceability:
 - Origin tracking
 - Process monitoring
 - End-product safety
- Ensuring the highest standards of product quality and safety.



Iron-fortified rice



Zinc-fortified rice



Vitamin B-Complex
Fortified Rice

02

The Three Paradigms of Fortified Rice



Tailored Nutrition: Customizing fortified rice designed for **individual** nutritional needs. A prime example is **Baoma Ximi**—a new rice product primarily fortified with folic acid, which is formulated with the optimal absorption ratio for **pregnant and lactating women**, standing as the staple food of choice for mothers-to-be.



Targeted Nutrition: providing targeted fortified rice to deliver precision nutrition for **specific groups**, such as customized Low-GI rice for people with hyperglycaemia, and zinc- or iron-fortified rice for those with corresponding deficiencies, and transforming chronic disease intervention into a daily staple

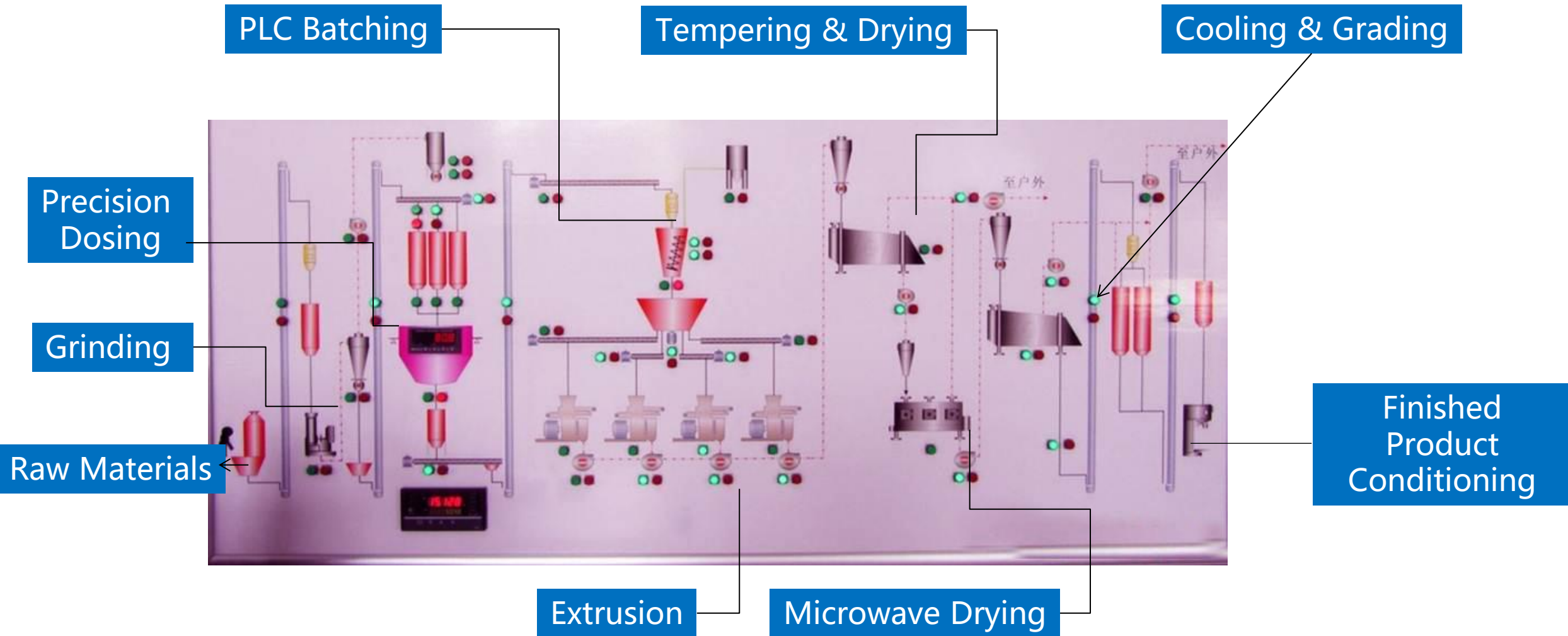


Balanced Nutrition: developing nutritionally balanced fortified rice for the **general wellness**, strictly based on national dietary guidelines

03

Processing Technology and Equipment of Fortified Rice

Fortified Rice Processing Technologies



Converting Raw Materials into Fortified Rice

Basic Process:

Raw Material Crushing → Nutrient Fortification → Conditioning → Forming → Tempering →
Drying → Packaging



Through patented controlled gelatinization and starch reconstitution technologies, starchy raw materials—ranging from rice (brown and broken), corn, cassava, and potatoes to miscellaneous grains and fruit/vegetable powders—are transformed into nutritionally fortified rice. The integration of specific nutrients and functional factors during this process facilitates the production of staple rice characterized by balanced and precision nutrition.

Complete Production Line



- 3,000 ton/year Complete Production Line for fortified rice kernels
- 5,000 ton/year Complete Production Line for fortified rice kernels
- 10,000 ton/year Complete Production Line for fortified rice kernels

Core Equipment: Extruder

- **Precision Forming:** Utilizes a co-rotating differential-speed twin-screw extruder with wide pitch. The kernel forming is achieved through strict control of pressure and a 6-zone temperature profile (70°C→90°C→100°C→110°C→90°C→80°C).
- **High Versatility:** Adapts to various raw materials by adjusting key parameters (temperature, pressure, moisture, and gelatinization degree) to produce diverse fortified rice kernels.
- **Fully Automated:** The entire extrusion process is driven by an automated control system, ensuring stability and ease of operation.



Extruding Die & Cutter

- By adopting laser drilling technology, we have developed extruding dies that accurately replicate the exterior of natural rice grains. **This is a groundbreaking achievement enabling the production of dies that can perfectly simulate the distinct shapes of long-grain and short-grain rice.**
- Based on rigorous testing of pressure and expansion coefficients, we have precisely defined all critical parameters: hole size, shape, drilling technique, and distribution density for the dies, this includes; material, blade shape, and rotation speed for the matching cutters.



Drying Equipment and Process

Adopting a combined microwave and oven drying method with a multi-stage drying process and equipped with a comprehensive automated control system.

Microwave Drying Temperature: $\leq 65\text{ }^{\circ}\text{C}$
Microwave Drying Time: $\geq 20\text{ min}$
Product Moisture Uniformity Rate: $\leq 99.9\%$
Cracked Kernel Rate: $\leq 0.1\%$
Product Moisture Content: $\leq 12\%$



Manufacturer of Complete Composite Nutritional Rice Processing Equipment

Provider of Healthy Staple Food Solutions

Hubei Huada River Sound Technology

Leader in the Whole Grain Food Industry

Producer of Low-GI Functional Staple Foods



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Thank You