

FOOD AND NUTRITION RESEARCH INSTITUTE

DEPARTMENT OF SCIENCE AND TECHNOLOGY



PROCESSED FOOD PRODUCTS

from **BROWN** RICE

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2013 National Year Rice SAPAT NA BIGAS KAYA NG PINAS



NATIONAL YEAR OF RICE

Presidential Proclamation No. 494 FNR Aims to encourage everybody to join FOOD AND NUTRITION RESEARCH

health"

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in the government's efforts towards rice self-sufficiency One of the key messages for the

public is to "Eat brown rice for better



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THE RICE IMPORTATION

The data from the Bureau of Agricultural Statistics, our top agricultural import in 2010 was well-polished rice

According to the National Food Authority, the Philippines imported 2 Million metric tons of rice in 2010 but in 2013, this went down to 350,000 metric tons







Our rice production in 2010 was 10.32 million metric tons which went up to 17.97 million metric tons in 2013

THE MICRONUTRIENT DEFICIENCIES

- Iron deficiency anemia was highest (39.4%) among infants 6 to 12 months old based on the 2013 National Nutrition Survey
- Over all anemia prevalence was 25.5% among pregnant women, which has already declined since 2003
- Zinc deficiency was noted in 21.6% of infants & pre-schoolers, 20.6% in female adolescents, and 21.5% among pregnant women





EFFECTS OF MICRONUTRIENT DEFICIENCIES

The presence of anemia is an indication of an individual's iron status

Iron deficiency anemia causes long-term cognitive impairment, poor-school performance, risk of low birthweight for infants and increased maternal mortality

Zinc deficiency causes growth retardation and stunting, impaired reproduction and immune disorder

THE EMERGING HEALTH PROBLEMS

Prevalence of high FBS (> 126 mg/dL) increased from 4.8% to 5.8%, peaking at age 60-69 years old (8th NNS, 2013)

No. of overweight individuals had almost doubled since 1993

 Overweight and obesity affected 27 in every 100 adults





ONE SOLUTION



IF WE TAKE A CLOSER LOOK ON BROWN RICE

- we will know that production of brown rice has 10% higher recovery than white rice = economics
- we will realize that our rice importation in 2010 was 13% of our national consumption = savings
- we may be able to reduce the risk factors associated with certain life style diseases = health
- we may be able to feed more with our current rice production = food security

FACTS ON BROWN RICE

- Brown rice is more nutritious than white rice
- Bran layer is rich in fiber, minerals and B- vitamins
- Brown rice has low to moderate glycemic index
- There is shorter milling time and higher output volume when brown rice is produced







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NUTRITION INFORMATION

Serving Size 67 g Servings per pack 7

Amount per Amount per	
Serving	100 g
250	370
2	3
(g) 53	79
) 2	3
5	8
0	5
Amount per Serving	% RENI
19	3
1	5
1	18
	Amount per Serving 250 2 (g) 53) 2 5 0 Amount per Serving 19 1 1

Base on RENI for Male 19 years old and above



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"BROWN RICE FOR EVERY JUAN"

In the Philippines, younger generation of Filipinos and majority of adults who grew up in the cities are not used to eating brown rice





There is a need to offer brown rice in forms which they can appreciate and enjoy – products with brown rice as the main ingredient



Production of brown rice products



PRODUCTS DEVELOPED

Brown rice bar

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DEPARTMENT OF SCIENCE AND TECHNOLOGY Brown rice baby cereals

Germinated brown rice beverage



PRODUCTS DEVELOPED









CHEMICAL ANALYSIS

BROWN RICE BAR





		Per serving (25g)	Per serving (25g)	%RENI
CERTIFICATION INTERNATIONAL ISO 9001:2008	Parameters	INITIAL	FINAL	(males 19-29)
CIP/4217/09/02/629	Total Calories, Cal	109.00	108.40	4.4
	Total Fat, g	3.55	3.30	-
ENRI	Sodium, mg	38.25	51.50	-
	Total Carbohydrates, g	16.65	17.20	-
	Total Dietary Fiber, g	0.80	0.80	-
FOOD AND	Total Sugars as Invert, g	10.35	10.15	-
NUTRITION	Protein, g	2.63	2.48	3.9
NESEARCH	Phosphorus, mg	61.00	58.75	8.7
INSTITUTE	Calcium, mg	5.75	6.05	0.8
DEPARTMENT	Iron, mg	0.45	0.45	3.8
OF SCIENCE	Zinc, mg	0.38	0.35	5.9
AND	Magnesium, mg	23.63	24.25	10.1
TECHNOLOGY	Manganese, mg	0.33	0.30	14.1
	Selenium, mg	0.53	0.70	1.7
	Vitamin B1, mg	0.07	0.11	5.6
Sector A	Vitamin B2, mg	0.04	0.01	3.1
The second second	Vitamin B3, mg	0.18	0.13	1.1
and the description of the	Vitamin E, mg	0.12	0.15	1.0
	lodine, µg	0.60	.56	0.4
Service also and	Ash, g	0.43	0.45	-
	Moisture, g	1.75	1.58	-



CHEMICAL ANALYSIS

BROWN RICE BABY CEREAL

CIT / 42 1/ / 07/ 02/ 02/	
	Total Calories, Cal
CAIDI	Total Fat, g
FNRI	Sodium, mg
5000 410	Total Carbohydrates,
FOOD AND	Total Dietary Fiber, g
RESEARCH	Total Sugars as Inver
INSTITUTE	Protein, g
DEPARTMENT	Phosphorus, ma
OF SCIENCE	Calcium mg
AND	Iron ma
TECHNOLOGY	Zinc ma
	Vitamin B1 mg
	Vitamin B2, mg
9	Vitamin B3, mg
	lodine, µg
	Ash, g

	per serving (50g)	per serving (50g)	%RENI
Parameters	INITIAL	FINAL	(6 mos to <12 mos)
Total Calories, Cal	195.50	196.7	27.2
Total Fat, g	3.40	3.5	-
Sodium, mg	149.50	210	-
Total Carbohydrates, g	36.10	36.15	-
Total Dietary Fiber, g	1.00	1.20	-
Total Sugars as Invert, g	6.70	6.80	-
Protein, g	5.15	5.15	36.8
Phosphorus, mg	184.00	184.50	61.3
Calcium, mg	64.00	83.5	16.0
lron, mg	0.90	0.95	9.0
Zinc, mg	0.75	0.80	17.9
Vitamin B1, mg	0.11	0.12	26.3
Vitamin B2, mg	0.15	0.13	36.3
Vitamin B3, mg	0.15	0.075	2.9
lodine, µg	1.25	1.20	1.4
Ash, g	1.35	1.45	-
Moisture, g	4.00	3.75	-



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CHEMICAL ANALYSIS

GERMINATED BROWN RICE BEVERAGE

Parameters	per serving (30g) INITIAL	per serving (30g) FINAL	%RENI (males 19-29 y/o)
Fotal Calories, Cal	118.14	118.14	4.7
Fotal Fat, g	1.14	1.14	-
Sodium, mg	36.90	36.90	-
Total Carbohydrates, g	24.84	24.84	-
Total Dietary Fiber, g	0.29	0.28	-
Total Sugars as Invert, g	17.88	17.88	-
Protein, g	2.13	2.14	3.2
Phosphorus, mg	1.70	1.70	0.2
Calcium, mg	58.20	58.20	7.8
ron, mg	0.99	0.99	8.3
Zinc, mg	0.26	0.264	4.1
/itamin B1, mg	0.42	0.42	35.0
/itamin B2, mg	0.09	0.09	6.9
/itamin B3, mg	0.10	0.09	0.6
odine, µg	4.10	4.10	3.41
Ash, g	0.69	0.69	-
Moisture, g	1.20	1.20	-



GABA ANALYSIS

FNRI

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GABA
acts as a neurotransmitter
fosters communication between nerve cells
helps keep stress-related nerve impulses at bay
promote relaxation and sleep
may have a role to play in

preventing seizures and allaying chronic pain



Germinated Extruded Germinated Brown Rice Germinated Brown Rice Beverage Brown Rice



Nutrition Facts

Serving Size 25g Servings Per Container 1

Daily 1	the second s
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-T. A.	5
	20
1 1	6
Sec.	39
S	1
The Course	4%*
and the second	
%	RENI**
	6%
	3%
	19
	19
	0%
	19
	4%
	9%
100	10%
	149
	2%
	6%
nd Nutrier a 2,000 c er or lowe	alorie r
000	2500
65g	80g
2,400mg	2,400mg
300g 25g	375g 30g
	2,400mg 300g 25g

Brown rice crispies, honey, dried fruits, nuts, seeds, soy protein, and iodized salt

BROWN RICE RECIPES DEVELOPED





Kalamay Balls in Ginger Ale

SUMAN DUO IN DULCE DE LECHE DIP



Output Output Pahiyas Fried Rice





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