

My rice background

- Worked in a rice farm until high school
- Winner National Essay Contest 1966: Self-sufficiency in Rice and Philippine Progress
- Developed vegetable varieties for growing in rice fields (1979-91)
- 2011-2015: Executive Director, PhilRice

The inconvenient truth about rice

E. T. Rasco, Jr.
Academician, NAST

Rice farming in the Philippines

- Uses about 1/3 of all arable lands
- Uses up more than 50% of fresh water resources
- The main source of income for 2.5 million families, including 2.1 million farmers



Rice grain

- The world's most important staple food
- Provides 20% of the calories worldwide
- Provides more than 50% of the calories of Filipinos
- Accounts for 25% of food expenditure of the bottom 30% of the population



Inconvenient truths

- Rice farming is a main contributor to global warming
- Rice farming is more wasteful of water to produce than other food
- Rice farming is a serious threat to farmers' health and well-being
- Rice farming is less profitable than other farming activities
- Rice consumption is a serious threat to the health and well-being of consumers

The fundamental truth is: We do not have to eat rice!

If we can reduce rice consumption...

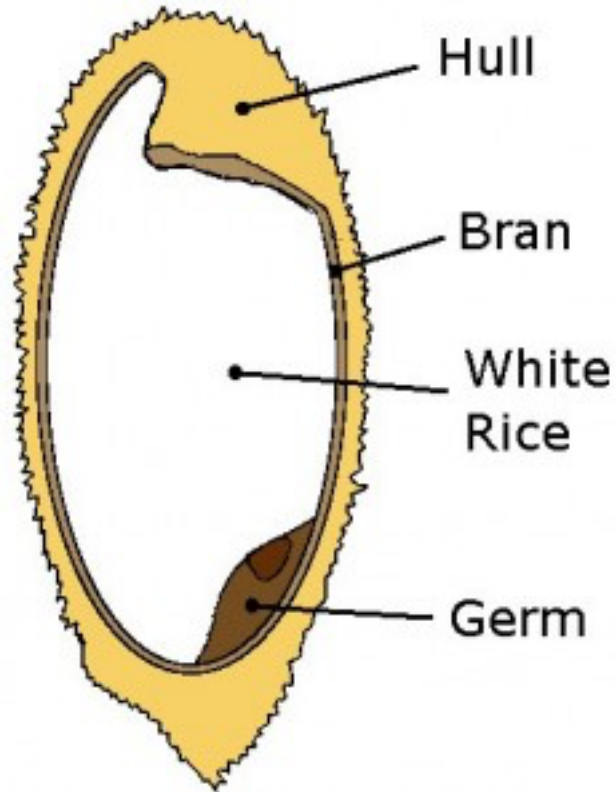
- Rice farmers will be encouraged to diversify and earn more
- Environmental problems such as global warming, pollution, and resource depletion will be reduced
- You and I can lead a happy and healthy life!!!

My immediate objectives for this talk

- Describe the dangers of rice consumption
- Suggest ways to avoid/reduce these dangers

All statements are based on verified global scientific literature up to September 2017

Fundamentals



hull: silicon dioxide, lignin,

bran: antioxidants,
vitamin B, fiber, phytic
acid

White rice:
mainly starch

germ: protein, lipids,
fiber; antioxidants

Contaminants:
As, Pb, Hg,
Cd, Cu, Mo;
pesticide
residues

Brown rice is the white
rice + bran + germ

The Philippines today



The
Philippines in
the 19th
century



UNICEF: Obesity in PH jumps 400%

By [Arra Perez](#), CNN Philippines



Updated 08:01 AM PHT Fri, April 1,
2016



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Obesity is part of metabolic syndrome

- Clustering of the ff medical conditions
 - Abdominal obesity
 - Elevated blood pressure
 - Elevated fasting plasma glucose (diabetes)
 - High serum triglycerides (fat stored by body)
 - Low high density lipoprotein (HDL) levels
- The underlying main cause is the subject of intense debate; is it fat or is it sugar (carbohydrate)?

4 of the top
6 leading
causes of
mortality in
Philippines

Debate is over? 2015 American Dietary Guideline

Inside the advisory report

"Previously, the Dietary Guidelines for Americans recommended that cholesterol intake be limited to no more than 300 mg/day.

available evidence shows no appreciable relationship between consumption of dietary cholesterol and serum (blood) cholesterol, consistent with the AHA/ACC (American Heart Association / American College of Cardiology) report.

Cholesterol is not a nutrient of concern for overconsumption."

Refined carbohydrates, such as white rice is the problem!

Other refined carbohydrates: white bread, sugary drinks, cakes,

Epidemiological evidence

1. 1999 study: Diabetes was virtually unknown in the Neolithic Age, before rice was cultivated based on archaeological records and observations of modern hunter gatherer societies (Australia aborigines and Alaska eskimos)
2. US study (2009): incidence of diabetes and obesity started to increase in 1980s, paralleled by increase in refined carbohydrate consumption

Experimental evidence


BMJ

BMJ 2012;344:e1454 doi: 10.1136/bmj.e1454 (Published 16 March 2012)

Page 1 of 9

RESEARCH

White rice consumption and risk of type 2 diabetes: meta-analysis and systematic review

 OPEN ACCESS

Emily A Hu *research assistant*¹, An Pan *research fellow*¹, Vasanti Malik *research fellow*¹, Qi Sun
instructor in medicine^{1,2}

Results

◆ A total of 13 284 incident cases of type 2 diabetes were ascertained among 352 384 participants with follow-up periods ranging from 4 to 22 years.

Conclusion

Higher consumption of white rice is associated with a significantly increased risk of type 2 diabetes, especially in Asian (Chinese and Japanese) populations.

Bad news

Boholanos eat more rice than the average Filipino

Good news

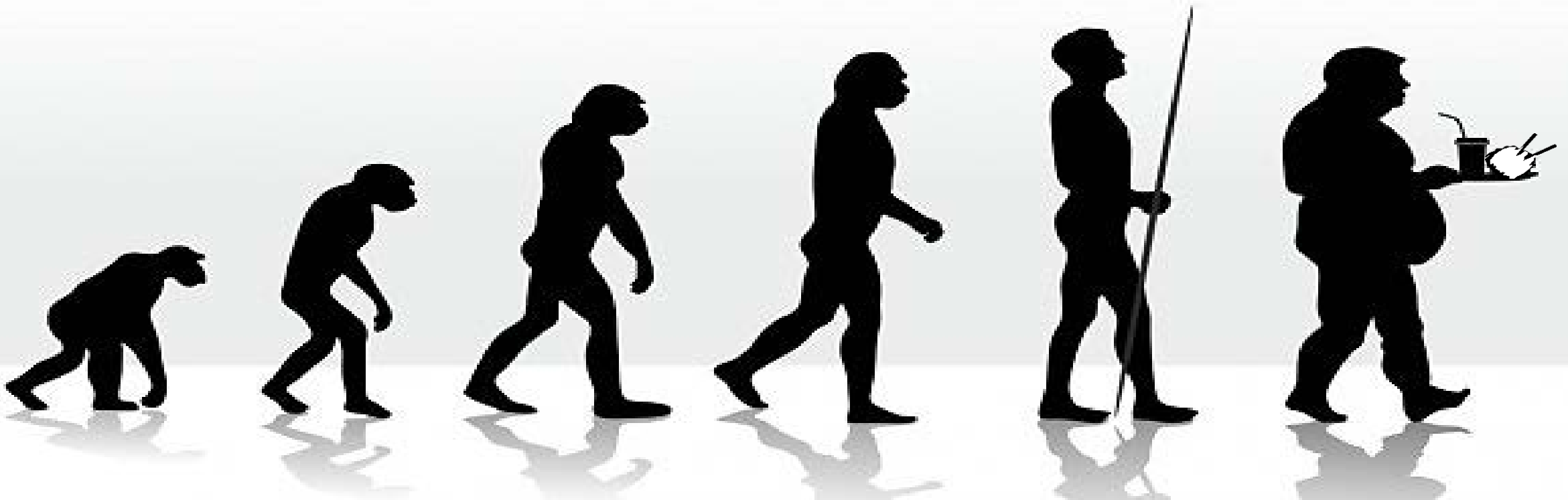
metabolic syndrome is preventable and treatable

How to prevent/treat metabolic syndrome?

Be careful with white rice

Why does white rice cause metabolic syndrome?

1. Rice (and refined carbohydrates) are relatively new to humans



What happened in the last 50 years?

- Decreasing diversity of food
- Increasing rice consumption
- Introduction of rice mills to produce highly polished white rice
- More sitting and less moving

- From more than 100 species of plants eaten by our ancestors, today, 80% of calories supplied by only 4 species

Why does rice cause metabolic syndrome?

2. White rice is essentially just starch

- *Rice has lowest protein among cereals, lysine deficient
- *Low in iron, zinc, vit A, ascorbic acid

- *Arsenic under wet condition
- *Cadmium and methymercury under dry condition
- *contamination from pesticides and fertilizers



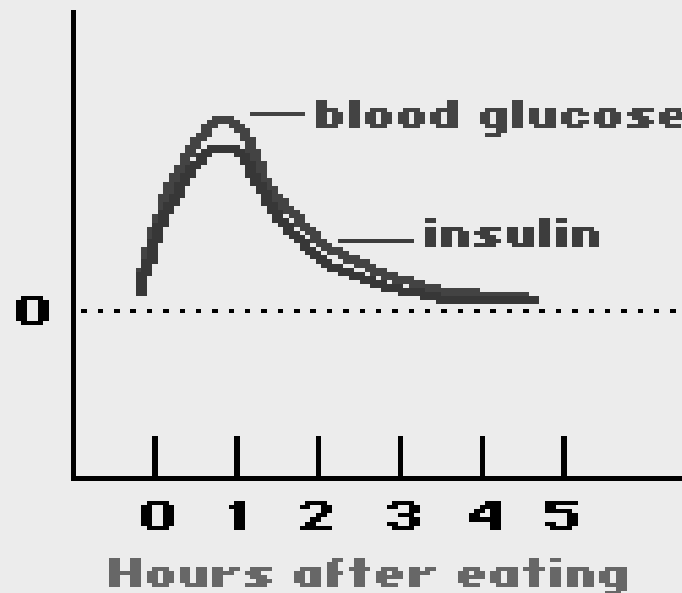
What's wrong
with rice?



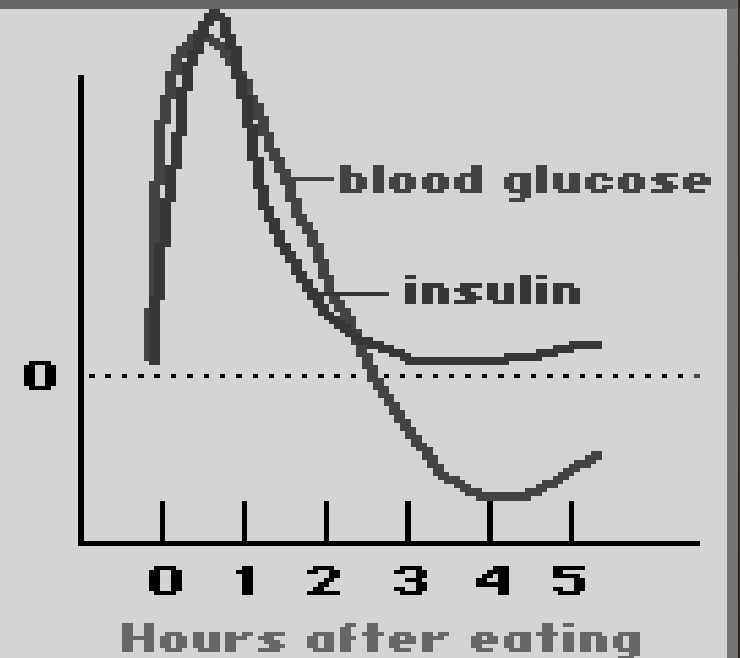
When digested, starch, the main component of a rice grain, becomes glucose, the form that goes into the blood stream

“Good” Carbs vs. “Bad” Carbs

Rise in blood levels



Rise in blood levels



Glycemic index: a measure of speed at which glucose reaches the bloodstream

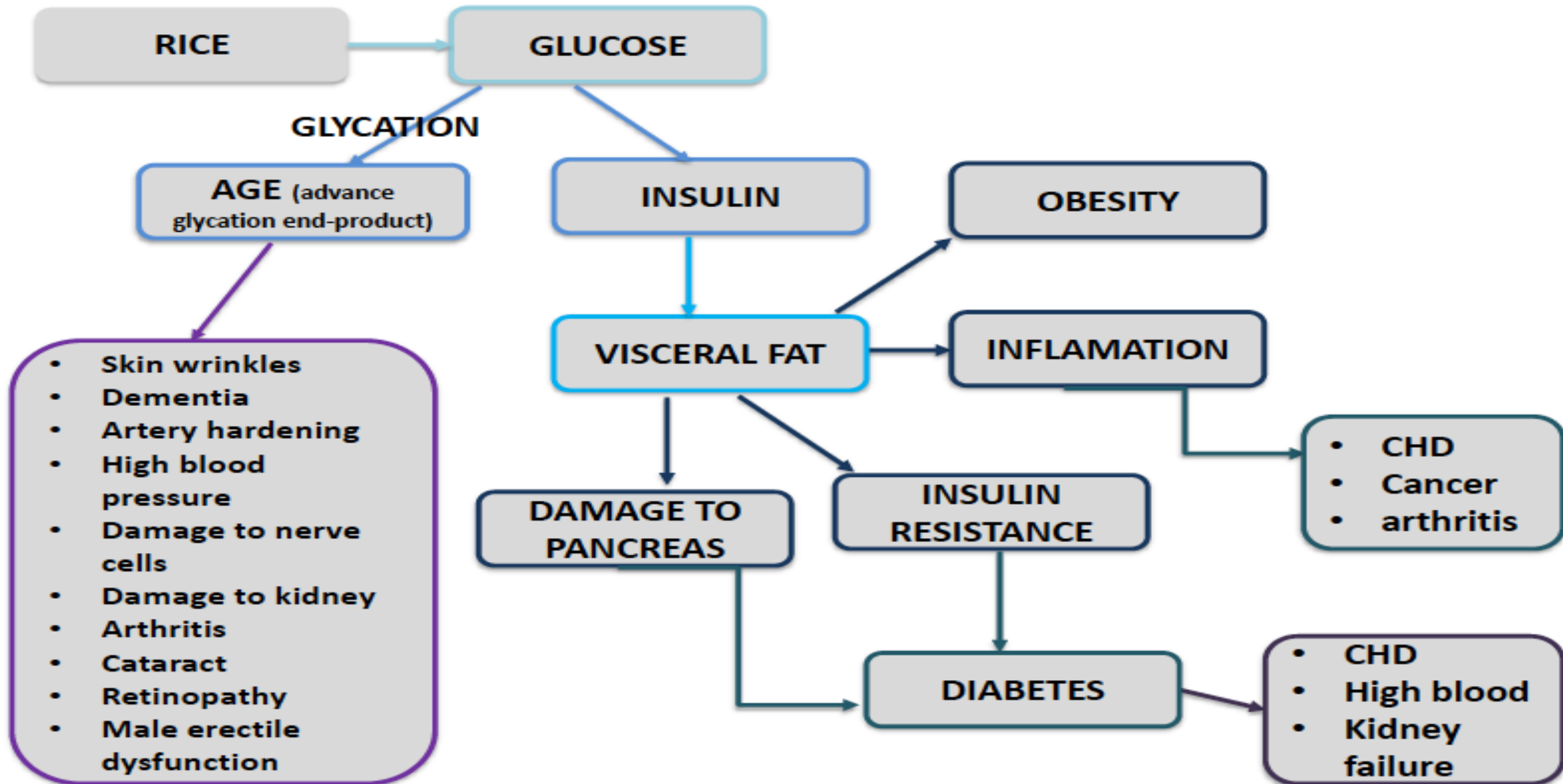
Staple food	Glycemic index
White rice (Rc 160)	70
Kamote	32
Cassava	30
Banana (saba)	53
White corn	54
Pan de sal	87
White bread	93
Sugar	65
Brown rice (average)	50
Parboiled rice (average)	38

Consequences of glucose spikes in the bloodstream

Diabetes. Hypertension. Obesity. Coronary heart diseases. Stroke. Others: gout, colon cancer, ulcer, osteoarthritis, etc.



CONNECTING THE DOTS



Why is (white) rice so harmful particularly to Filipinos?

- Filipinos eat too much boiled white rice, and little else

Years	Per capita/year (kg)
1980s-90s	92
2008-2009	111
2009-2010	119

- Global per capita consumption: 65 kg, generally decreasing
- Other Asian countries with high per capita consumption (India, Bangladesh) prefers parboiled rice, or eat other fiber-rich food (Indonesia)

Why is (white) rice harmful particularly to Filipinos?

- Most of our rice varieties are short grain with higher GI than long grain
- We prefer the sticky type, which has higher GI than the fluffy type
- Asians are more predisposed to type 2 diabetes than Europeans
- Our method of rice consumption: eating freshly boiled rice

How science can help you in...

Choosing your rice

1. Long grain is better than short grain
2. Fluffy is better than sticky
3. Brown rice is better than white rice
4. Stored rice is better than newly harvested rice
5. Rice dried at high temperature better than sun drying
6. Parboiled rice is better than non-parboiled rice
7. Germinated brown rice is best

Cooking your rice

1. Wash before cooking
2. Use a lot of clean water
3. Cook in oil before adding water to boil
4. Cook in microwave oven instead of rice cooker
5. Store cooked rice in refrigerator before eating

The latest: Germinated brown rice



Benefits of germinated brown rice

- Higher GABA (gamma amino butyric acid) content
- Promotes fat loss, stimulates immune system, lowers blood pressure, inhibits cancer cells

How to eat the scientific way

Splitting rice meals better

Chopstick better than spoon

Eating with fingers has no advantage

Fewer mastication better than more mastication

Eat rice after eating everything else

Better still: Eat alternative staples such as banana, cassava, corn

Take home messages

- White rice and similar refined carbohydrates should be avoided
- Be more selective about the form of rice you eat
- Be more scientific in the way you eat rice
- Diversify your food

White is not necessarily
beautiful