Sugar metabolism and degenerative diseases

Main actor : Insulin

Supporting actor : Resistance

Producer : Carbohydrates

Director : Willpower

Messenger : Jakob Jaggy hMD

Follow the main actors

- - Insulin imbalance (speak Insulin - resistance) is involved in almost every chronic degenerative disease known to mankind.

- - These include but are not limited to : diabetes, CAD, hypertension, osteoporosis, arthritis, hypothyroidism, elevated TG and cholesterol, hormone imbalance (estrogen dominance), metabolic syndrome, cancer...

Last but not least

- - Insulin might be, as a single marker, the best one to assess longevity.
- - What do a lot of centenerians have in common? They have a low Insulin and blood sugar level.
- - Jean Calumet of France was the oldest recorded human to have lived (122 years old).

What's aging anyway?

- - Chronological vs biological age
- - Biological age is determined by : genes , rate of aging(Insulinresistance), rate of damage to the tissue (oxidation and glycation).
- - Sugar sticks to protein and transforms it in the process = glycation.

As we age we become rancid and caramelized

A.G.E.s ??

- - A.G.E.s stands for advanced glycated end products.
- - DNA repair enzymes can get glycated also.

Back to Insulin

- - Insulin was the first hormone made in any organism.
- - Insulin primarily was a hormone that helped humans get through feast and famine periods. (No waste glucose hormone).
- P.S. 4 hormones to upregulate bloodsugar, 1 to downregulate?

Insulin and its roles

- - At a cellular level :
  glucose transport, anabolic hormone (muscle builder), magnesium transport, calcium transport, conversion of T4 to T3 (in the liver), GH efficacy through production IgF's (somatomedin c), nitric oxide production

Further functions

- - On a non cellular level :
  store glucose (glycogen, saturated fat), sodium retention, stimulant of the sympathetic NS, blood lipid production, mitogenic hormone, blood clot formation, cholesterol, sex hormone (mostly estrogen) and SHBG production

Colorectal cancer

- "Food groups and risk of colorectal cancer in Italy", Int J of ca
- Glycemic overload, from either refined sugar or starch intake, increases blood insulin, an important growth factor in the human colonic mucosa and therefore increases colorectal cancer risk.

Insulin resistance

- - The higher the amount of sugar in the blood as a result of low fiber carbos and stress, the higher the overall amount of circulating insulin and over time the lower the sensitivity of the cells to insulin.

The efffects of stress

- - increases Cortisol , blood sugar elevation
- - decreases DHEA production
- - loss of Testosterone
- - blocks TSH production and conversion of T4 to T3
- - Estrogen dominance through loss of progesterone
- - increase in free radical production

Progression of resistance

- - first the liver decreases production of sugar during the day, increases at night
- - next the muscles can't burn sugar
- - then fat cells quit storing sugar as fat
- - finally the endothelial cells don't proliferate anymore
- WHEN ALL THE CELLS ARE RESISTANT, YOUR WEIGHT REACHES A PLATEAU.

Why do we eat ?

- - to produce energy (carbos and fats) good fats can be the primary energy source.
- - to maintain and repair (fats and proteins)

Are carbohydrates useful?

- - It is the fiber, vitamin and mineral content that determines if a carb is useful or not.

- - 2 TG molecules = 1 glucose molecule (you can live without eating carbos)

How to reverse Insulin resistance

- - one keyword is CRON (caloric restriction with optimum nutrition)
- - other keyword NUTRIENT DENSE FOODS
- - little carbos, mainly in the form of fresh above ground vegetables
- - learn to distinguish between physical and emotional food cravings
- - exercise, exercise....

The Top 15

- - Minerals : magnesium, chromium, vanadium, selenium
- - Vitamins : ALA, B1, D, A, E
- - Herbs : gymnema, milk thistle,
- - Others : cinnamon, arginine, fiber, fish/olive oil

No surprise here!

- - Caffeine and smoking have a negative effect on Insulin sensitivity.
- - Caffeine also is a major culprit in hypoglycemia

Some mineral studies

- "Magnesium deficiency is associated with insulin resistance in obese children," Diabetes care
- "Chromium, glucose tolerance and diabetes", Biological trace element research

Some vitamin studies

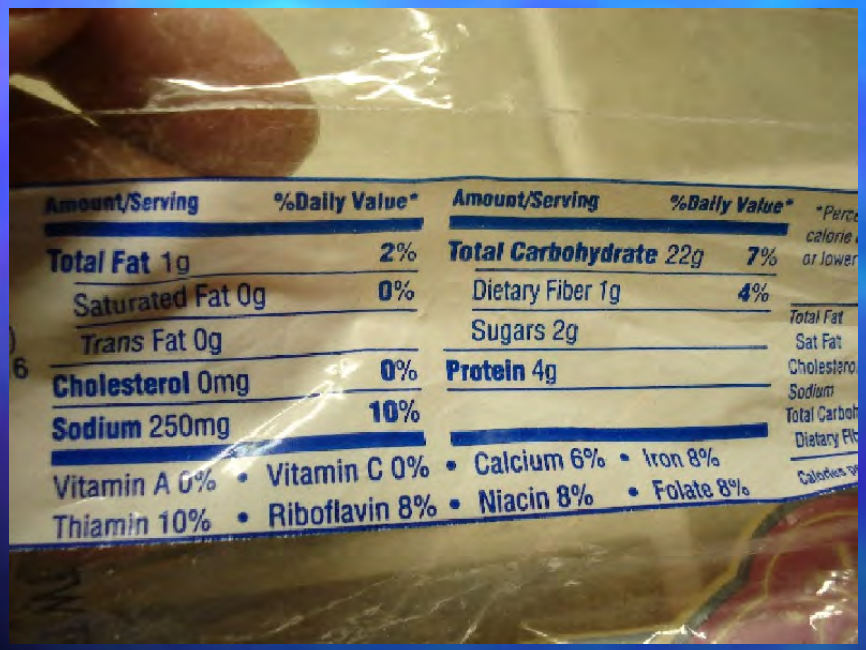
- "Effect of thiamine on glucose utilization in hepatic cirrhosis", J of gastroenterology and hepatology
- "Correlation between vitamin D3 deficiency and insulin resistance in pregnancy", Diabetes metab res review
- "Relation between dietary vitamin (A) intake and resistance to insulin-mediated glucose disposal in healthy volunteers", Am J clin nut
- "Pharmacological doses of vitamin E improve insulin action in healthy subjects and in non-insulin-dependant diabetic patients", Am J clin nut

Herbal studies

- "Silymarin reduces hyperinsulinemia and daily insulin need in cirrhotic diabetic patients", Curr ther res
- "Asian herb for diabetes to be tested in clinical trial", Fam pract news

Other studies

- " Is insulin resistance influenced by dietary linoleic acid and trans fatty acids", Free radical biol & med
- "A MUFA-rich diet improves postprandial glucose in insulin-resistant subjects", J Am coll nut
- "Mechanisms of the effect of grains on insulin and glucose responses", J Am coll nut



Amount/Serving	%Daily Value*	Amount/Serving	%Daily Value*
Total Fat 1g	2%	**Total Carbohydrate** 22g	7%
Saturated Fat 0g	0%	Dietary Fiber 1g	4%
Trans Fat 0g		Sugars 2g	
Cholesterol 0mg	0%	**Protein** 4g	
Sodium 250mg	10%		

Vitamin A 0% • Vitamin C 0% • Calcium 6% • Iron 8%
Thiamin 10% • Riboflavin 8% • Niacin 8% • Folate 8%

Amount/Serving	% Daily Value*	Amount/Serving	% Daily Value*
Total Fat 4g	6%	**Potassium** 225mg	6%
Saturated Fat 0g	0%	**Total Carbohydrate** 26g	9%
Trans Fat 0g	0%	Dietary Fiber 10g	40%
Cholesterol 0mg	0%	Sugars 2g	
Sodium 195mg	8%	**Protein** 14g	

Vitamin A	0%	• Vitamin C	0%	• Calcium	4%	• Iron	16%
Thiamin	12%	• Riboflavin	28%	• Niacin	16%	• Vitamin B6	28%
Folic Acid	16%	• Pantothenic Acid	12%	• Phosphorus	12%	• Magnesium	12%
Zinc	4%	• Selenium	8%	• Vitamin E	4%		

Organic Sprouted Grains(Organic Kamut, Organic Spelt, Organic Barley, Organic O
Stoneground Organic Wheat Flour(Wheat Germ Restored), Stoneground Organi
Organic Oat Fiber, Dates, Organic Pumpkinseed, Organic Hulled Millet, Organic

Finally

- - Check fasting Insulin and blood sugar level
- - Eat high fiber carbos
- - Choose quality proteins and fats
- - Eat as much nutrients in as little calories as possible
- - De-stress
- - Exercise
- - Avoid caffeine and tobacco

THANK YOU