

# Insulin Function and Its Effect On Metabolism & Basal Metabolic Rate

## To Improve Weight Control & Better Health: A Case Study

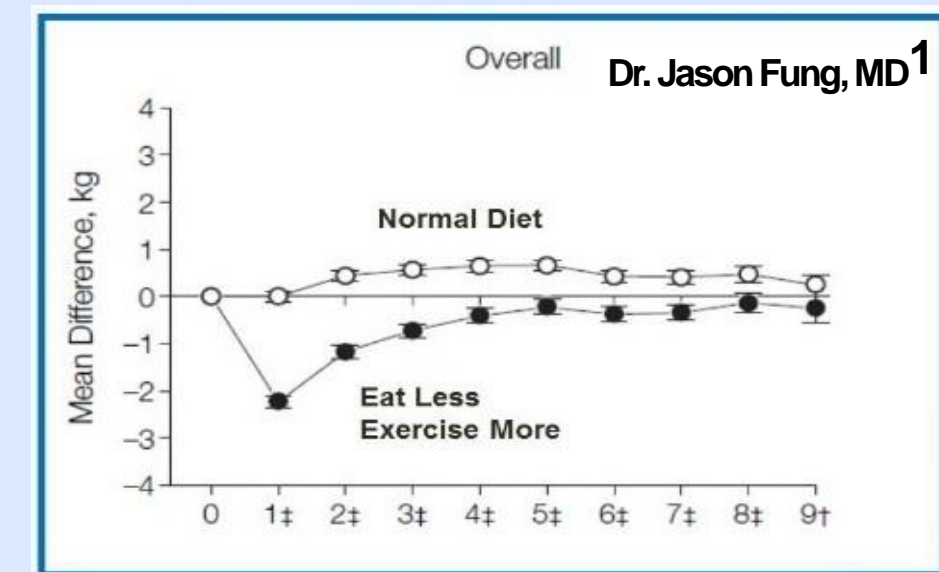
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### Introduction

Reducing weight and visceral fat is difficult because the body can go into “survival mode” and reduce basal metabolic rate (BMR) and satiety.

**Studies: “Eat Less & Exercise More” Diets Fail 98% Of The Time.**



Previous “Eat Less & Exercise More” Diets Failed



Insulin Levels, Visceral Fat, Liver Function, Hunger Cravings, and Basal Metabolic Rate ... “Out of Control”

### Objectives

1. To investigate if controlling insulin levels might help control BMR and satiety.
2. To determine if measures “friendly” to insulin could eliminate hunger cravings, improve liver function and metabolism, boost energy levels, and help lose weight permanently.

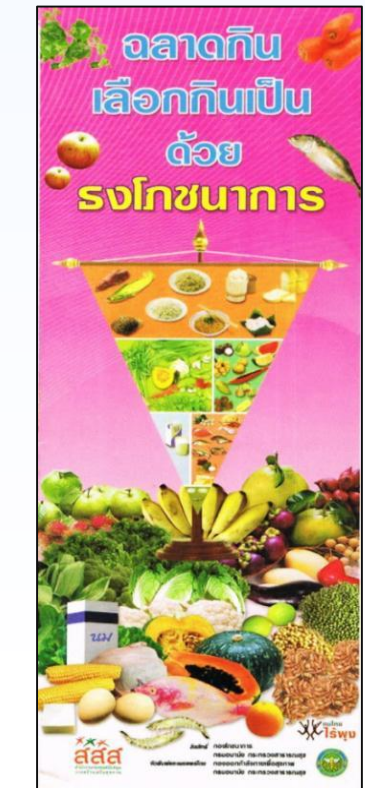


### Methods

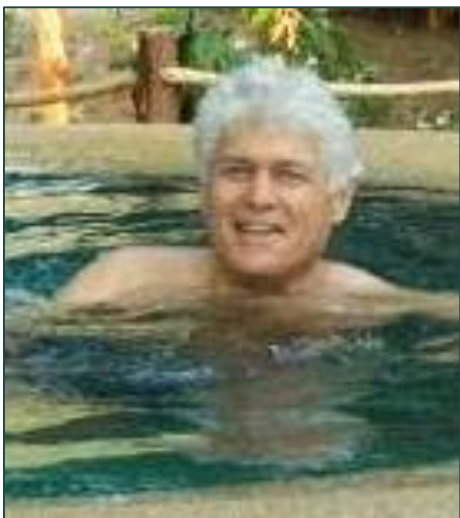
“Insulin Friendly” Healthy Lifestyle:

- An obese 58-year-old man (now 64), suffering from fatigue, mild fatty liver, and metabolic dysfunction, following many Thai Health Promotion Foundation recommendations, experimented with diet, exercise, and various healthy lifestyle measures to mimic cycles of “feast or famine” to lower insulin levels and improve metabolism;
- No medications or supplements were used;
- “Insulin Friendly” measures included healthy whole natural foods, food preparation methods, and scheduling of meals and exercises;
- Such measures were compared to previously failed diets – one losing 30 kg (which he regained) and another losing only 10 kg; and,
- Blood tests and disease risks were also compared over a 19-year period. The prior diets never addressed insulin levels.

“Insulin Friendly” ... Healthy Food, Beverage, & Exercise



Ozonated  
Drinking Water



Daily Exercise In Chemical-Free Ozone Pool



### Results

The subject’s waist/height ratio, TG/HDL ratio, liver function, and visceral fat returned to normal levels. He lost 20 kg (in addition to the 10 kg mentioned above) ... down to normal weight. Compared to previously failed diets, he no longer had hunger cravings and his BMR was stable. He noted increased energy levels and immune function. Fasting blood glucose and blood pressure levels were (as since youth) normal, about 90 and 107/68, respectively.



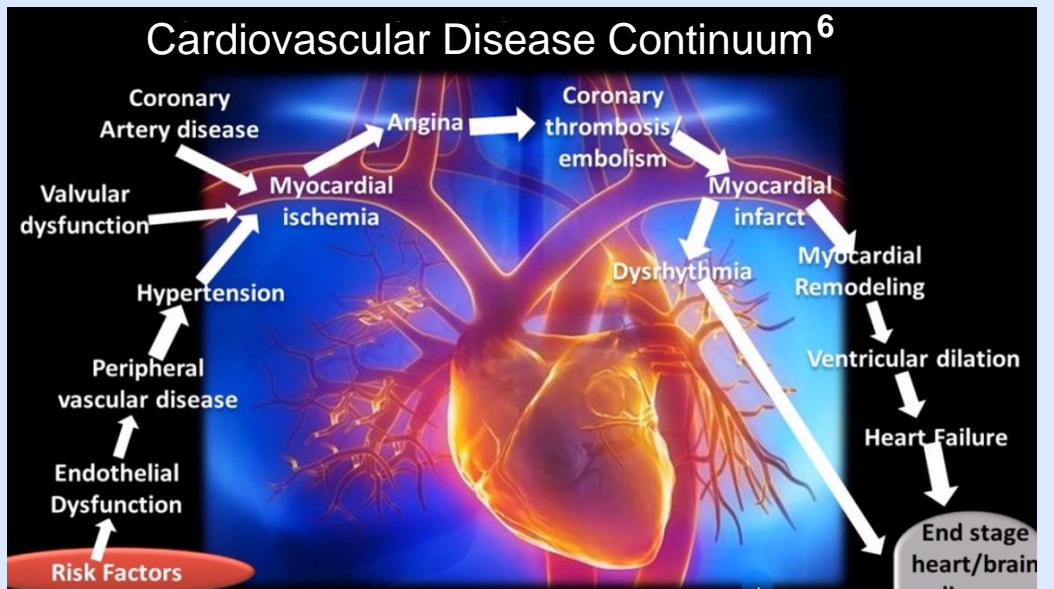
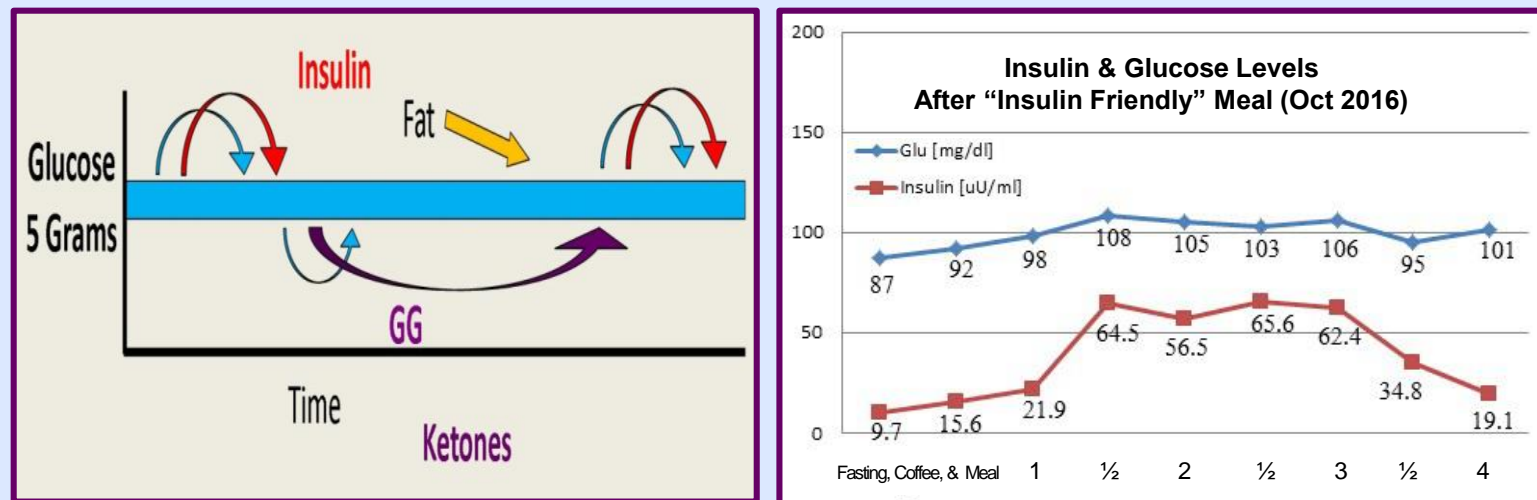
“Insulin Friendly”  
Healthy Lifestyle

Date	1997	2003/4	2008	2014	2016
TG mg/dl	242	163	129	42	63
HDL mg/dl	-	-	35	56	53
AST (SGOT) U/L	33	-	36	20	22
ALT (SGPT) U/L	54	-	50	16	18
HbA1c (%)	-	-	-	5.3	5.2
hs-CRP mg/L	-	-	-	0.95	0.69
Fatty Liver (US)	-	Mild	Mild	Neg	Neg
Waist"/Height"	-	-	-	-	34/68

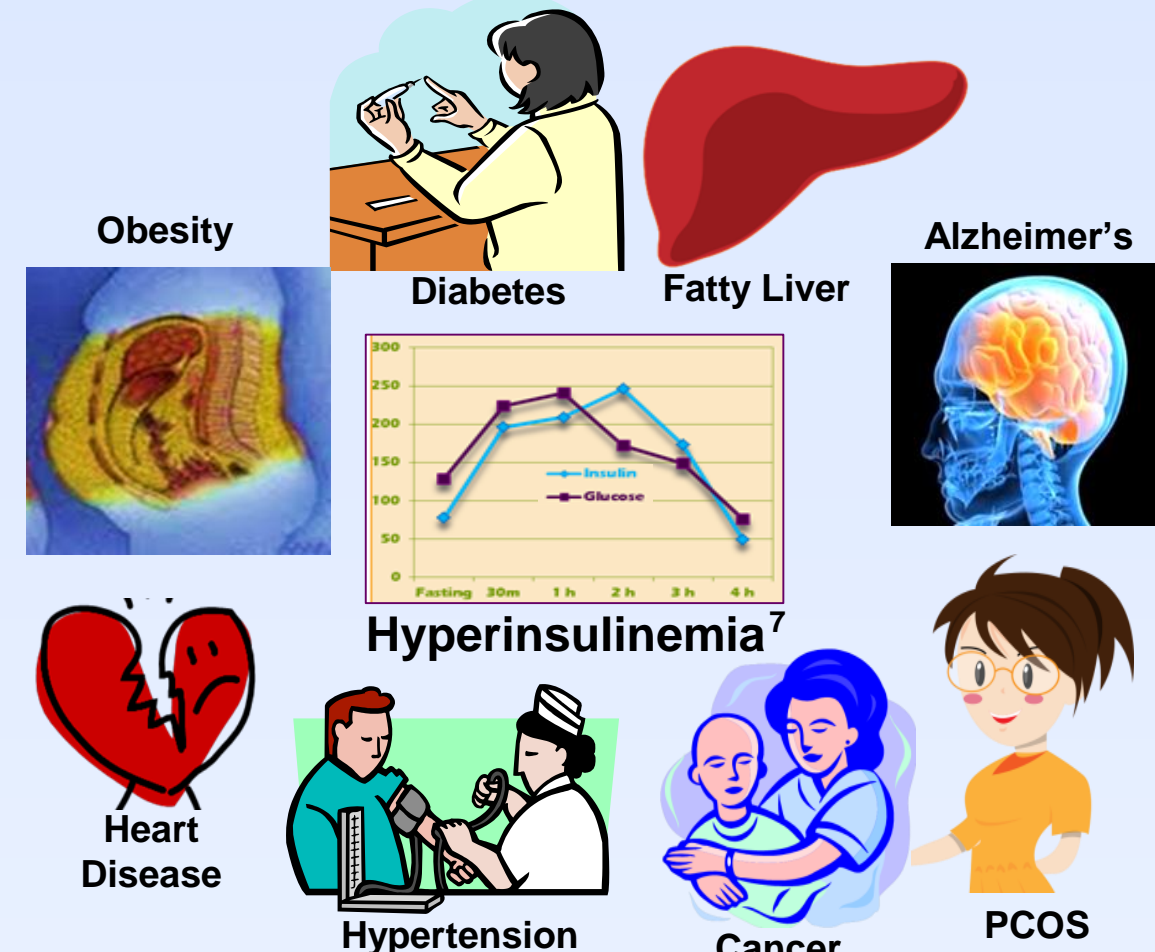
\* Health Experts: Cholesterol & LDL-C As Risk Factors Under Review

### Discussion

Chronic elevated insulin contributes to oxidation, inflammation, aging, obesity, metabolic syndrome, diabetes, heart disease,<sup>3</sup> and other NCDs.<sup>4-5</sup> This case study showed that controlling insulin levels might be able to improve health by helping to stabilize BMR, reduce oxidation and inflammation, improve metabolism and liver function, and improve lipid levels.



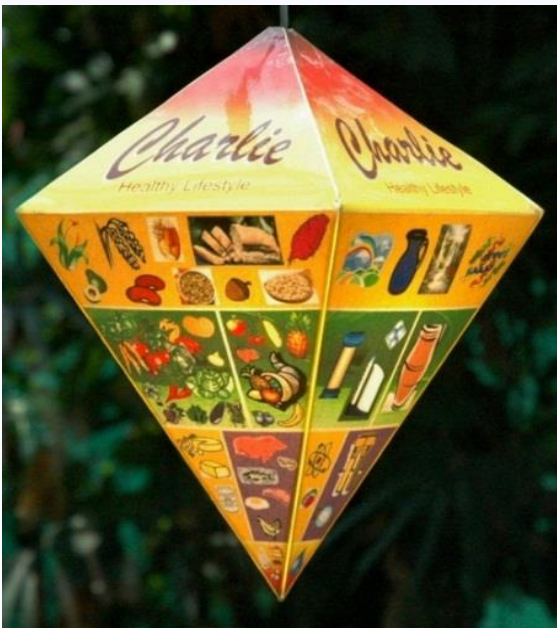
Above: Permanent weight loss results from keeping insulin levels low, using stored energy from fat, and maintaining a normal BMR ... a process mediated by glucagon (GG) ... the “survival” hormone. Elevated insulin inhibits GG and prevents “burning” fat for energy, as well as preventing other survival signaling pathways such as DNA and cell repair, leptin sensitivity, and the expression of many longevity metabolites.



**Chronic Elevated Insulin Is The Leading Cause of Chronic Diseases ... “The NCD of All NCDs”**

### Conclusions

This case study illustrates the benefits of following an “insulin friendly” healthy lifestyle to improve metabolism, stabilize BMR, control weight, and reduce body fat. Hunger cravings were eliminated. Liver function returned to normal. To validate these findings, more study subjects and optimal study designs need to be done in future research.



For A Long & Healthy Life

#### References

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