Ancient Healing

Ketosis
Fasting
Diet Variation
Put It All Together and It’s a MTA
What is Ketosis?

Shifting the body from using GLUCOSE as its major fuel to using FAT for FUEL

When you burn fat you make KETONES and ketones are needed for the brain when glucose is not available.
HOW DOES KETOSIS WORK?

TRADITIONAL DIET: HIGHER CARB

- Glucose levels rise
- Pancreas secretes insulin
- Insulin shuttles glucose into cell

KETO DIET: HIGHER FAT

- Glucose levels fall
- Lipase releases stored triglycerides
- Fatty acids travel to the liver
- Liver produces ketones

ENERGY
Change Your Cellular Fuel (Ketosis)

Glucose

Fat and Ketones

Or

Which do you want burning in your cells?
History of Ketosis

Fasting, which increases ketones, was used as treatment for seizures and epilepsy since biblical times.

- In the early 1900’s Ketosis was popular and being used for multiple conditions, specifically brain disorders and seizures.
- Ketosis fell out of popularity when anti-convulsant drugs hit the market.
- A recent resurgence is due to many new studies on the benefits of ketones for incurable conditions and weight-loss resistance.
My Prediction

“I predict a 5-8 year surge of the keto craze before a new shift takes place”

▪ A ketogenic diet alone will not fix most serious, chronic health conditions
▪ It’s never just one diet that gets the sick well

“Ketosis is a tool and should be used as such”
Benefits of Ketones

- Raise GSH and protect all cells and the DNA from oxidative stress*
- Reduce inflammation and its markers*
- Protect and repair the inner mitochondrial membrane*
- Increase cellular energy*
- Burn cleaner metabolically than glucose or fat*
- Turn on the SERT-1 gene that extends life

Ketosis can be used as an ancient healing tool for many conditions on the rise today:

▪ Diabetes
▪ Thyroid
▪ Hormone dysfunction
▪ Autoimmune
▪ Neurodegenerative (PK, MS, Alzheimer's)
▪ Cancer
▪ Many others, however studies are numerous for these
### Diseases With Decreased Glucose Uptake into Brain/Nerve Cells

<table>
<thead>
<tr>
<th>Conditions</th>
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<tbody>
<tr>
<td>- Alzheimer’s disease</td>
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<td>- Parkinson’s disease</td>
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<tr>
<td>- Multiple Sclerosis</td>
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<td>- Huntington’s disease</td>
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<td>- ALS/Lou Gehrig’s disease</td>
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<td>- Duchenne Muscular Dystrophy</td>
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<td>- Some forms of autism</td>
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<td>- Down syndrome—develop Alzheimer’s disease by ages 30-40</td>
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<tr>
<td>- Acute brain injury, accompanied by lack of oxygen</td>
</tr>
<tr>
<td>- Diabetes Types I and II</td>
</tr>
</tbody>
</table>
Alzheimer's

“Diabetes of the Brain”
Pet Scans for Glucose Uptake

By 2050, the number of patients over 65 with Alzheimer’s in the U.S is predicted to be 1 in 3

Ketones can be taken up by neurons that do not use glucose.

Ketone bodies can bypass the block in glycolysis resulting from impairment of insulin function.


Ketones are Neuroprotective

- Dietary interventions that increase levels of ketone bodies, including intermittent fasting and a ketogenic diet, can **protect neurons against oxidative, metabolic, and excitotoxic insults relevant to the pathogenesis of Alzheimer's**


The Ketogenic Diet as a Treatment Paradigm for Diverse Neurological Disorders

Carl E. Stafstrom¹,² and Jong M. Rho³,⁴,*

Author information ▶ Article notes ▶ Copyright and License information ▶
Parkinson's

Insulin Degrading Enzyme (IDE) gets rid of dangerous insulin in the brain, as well as breaking down Amyloid proteins that are associated with PK IDE.

Insulin-degrading enzyme prevents α-synuclein fibril formation in a nonproteolytical manner

Sandeep K. Sharma,1 Erik Chorell,1 Pär Steneberg,2 Emma Vernersson-Lindahl,2 Helena Edlund,2 and Pernilla Wittung-Stafshede1,1

Published online 2015 Jul 31. doi: 10.1038/srep12531
Ketone Bodies, Potential Therapeutic Uses

Richard L. Veech, Britton Chance, Yoshihiro Kashiwaya, Henry A. Lardy, George F. Cahill Jr

First published: 1 April 2001  Full publication history
DOI: 10.1080/152165401753311780  View/save citation
Cited by (CrossRef): 123 articles  Check for updates  Citation tools

Abstract

Ketosis, meaning elevation of D-β-hydroxybutyrate (R-3-hydroxybutyrate) and acetoacetate, has been central to starving man's survival by providing nonglucose substrate noted in the isolated working perfused rat heart and in sperm. It has also been shown to decrease cell death in two human neuronal cultures, one a model of Alzheimer's and the other of Parkinson's disease. These observations raise the possibility that a number of neurologic disorders, genetic and acquired, might benefit by ketosis. Other beneficial effects from βOHBD include increases in the rates of ATP hydrolysis (ACoA) and lipid hydrolysis.
Nutrition and Alzheimer's disease: The detrimental role of a high carbohydrate diet

Stephanie Seneff, Glyn Wainwright, Luca Mascitelli

http://doi.org/10.1016/j.ejim.2010.12.017
Glucose (Insulin) + Toxins

= Neurodegenerative disease

HUGH FUDENBURG, MD - the world's leading immunologist and 13th most quoted biologist of our time, with nearly 850 papers in peer review journals:

- “If an individual has had 5 consecutive flu shots between 1970 - 1980 (the years of the study) his/her chance of developing Alzheimer's Disease is 10 times greater than if they had one, two, or no vaccinations”.

- When ask why, he said the gradual mercury and aluminum build-up in the brain

Dr. Fudenberg's comments are from his speech at the NVIC International Vaccine Conference, Arlington VA September, 1997. His Alzheimer's to quadruple statement is from the John's Hopkins Newsletter of November 1998.
**Conclusion:** Dietary interventions have not been effective in the treatment of MS. Here we show that **periodic 3-day cycles of a fasting mimicking diet (ketosis)** are effective in resolving autoimmune driven demyelination and its symptoms.
Low-carb, high-fat diet could replace dialysis

Ketogenic diet reverses kidney disease in mice with Type 1 and Type 2 diabetes

By Amanda Chan


A type of low-carb, high-fat diet that's typically used to manage seizures for children with epilepsy could reverse kidney disease in Type 1 and Type 2 diabetics, a new animal study suggests.
Ketosis and Cancer

- **Otto Warburg** was a pioneer in biochemistry and a **Nobel Prize winner**
- Warburg first discovered what is now known as the **Warburg effect** in the early 1900’s

*Simply put*…Cancer cells will use glucose in the presence of oxygen for energy and not fat and ketones.
“It is my opinion that targeting glucose and glutamine under energy restriction will be more effective long-term therapy than any of the current drugs used to treat these cancers.”

Thomas Seyfried

He is referring to the “incurable,” no hope metastatic cancers
Fat Adapted Athletes

Running 100 Miles on Fat - CHTV 154

Dr. Daniel Pompa

with Zach Bitter

Western States 100 – Low Carber Wins Ultramarathon
Your Stored Fat is Like A Bottomless Tank!

2,000 cal max

40,000-80,000 cal avg.
Rowed from California to Hawaii in ketosis (fat adapted)
Fat Adapted Athletes
How To Keto-Adapt

- Low Carb, below 50 gms a day (to accelerate adaptation follow my 10-20-30-40-50 carb phasing method)
- High fat, around 65-80% of calories (follow my 2-2-2 rule)
- Electrolytes are very important
- Moderate protein (no more than half your lean body weight at most)

Weekly Diet Variation is key after a few months
“When first thrown wholly upon a diet of reindeer meat, it seems inadequate to properly nourish the system and there is an apparent weakness and inability to perform severe exertive, fatiguing journeys. But this soon passes away in the course of two or three weeks.”
“In 1906 I went to the Arctic with the food tastes and beliefs of the average American. By 1918, after 11 years as an Eskimo among Eskimos, I had learned things which caused me to shed most of those beliefs…. However, what finally impressed the scientists and converted many during the last 2 or 3 years, was a series of confirmatory experiments upon myself and a colleague performed at Bellevue Hospital, NYC, under the supervision of a committee representing several universities and other organizations.”
How Do You Know When You Keto-Adapt (Break Through)?

- Nutritional Ketosis is defined by blood ketones between 0.5 – 5.0
- Urine strips are not accurate
- The breath meters are OK but not as specific
When and Why To Test

- First thing in the AM on empty stomach test both Glucose and Ketones for adaptation
- Testing different foods or drink
- In conjunction with I.F.
- See how many grams of carbs or protein you can tolerate
What If NOT Adapting?

1. Too much protein
2. Too many carbs
3. Low Electrolytes
4. Neurotoxicity
5. **Need more restriction**

Diet Variation (Feast/Famine Cycles) is the bio-hack for adaptation
Is Being in Ketosis Enough?

- According to these studies, it is not enough to just be in ketosis, but **caloric restriction is a must to decrease glucose**…
- **If no restriction nor drop in glucose, ketones will not be used**, and get flushed out in urine as well as the benefits from the ketones*
- In human and mouse studies, there **was no significant weight loss** in most cases without restriction*
- **No anti-cancer and anti-tumor effect** without restriction
- Under restriction, glucose is low and ketones are high and tumors shrink*… so does your fat

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Fasting with Ketosis: Restriction is Key for Chronic Disease and Weight-loss

- According to Seyfried’s work, when it comes to weight loss and chronic disease, **caloric restriction is key to results.**
- Most people in ketosis release **cholecystokinin** in response to the high fat, which **naturally decreases appetite.** But some do not release this and, therefore, do not naturally eat less.
- **The key is combining fasting (I.F. or block) with ketosis.**

**KEY POINT!**
If no restriction, there is no drop in glucose and insulin…and less results.
Adaptation is Key

Cells are placed under **metabolic stress** when glucose levels are reduced and ketone levels are elevated...**This forces Adaptation and...**

**BAD CELLS DON’T ADAPT**

**Important Note:** I do not believe in calorie restriction diets...Therefore, to create metabolic stress and force adaptation...

**Don’t eat less, eat less often...Fasting is the Key**

*Seyfried Cancer as a Metabolic disease; pg 341
What About Exogenous Ketones?

The jury is still out....
- Seem to help athletes
- Can help hunger, blood sugar and, therefore, weight loss
- May help brain

My concerns...
- Sold as ketosis in 30 min...it’s not
- In nature do we see ketones up and glucose up at the same time? (only in a broken state)
- Could shut down fat metabolism (we are seeing this)
Question & Answer
Ancient Healing

Ketosis

**Fasting**

Diet Variation *(Feast/Famine Cycles)*
“Our food should be our medicine. Our medicine should be our food. But to eat when you are sick is to feed your sickness.” Hippocrates
5 Reasons Why Fasting Increases Life Span

1. Turns on longevity genes and turns off inflammation genes (resets the DNA)
2. No glucose and insulin spikes
3. Bad cells do not adapt (cancer, etc)
4. Elevated ketones burn clean (less inflammation), heal the brain and change DNA for better
5. Activates stem cells and healing
Fasting Myths

- Deprives body of nutrients
- It’s starvation
- No energy
- Weight loss from muscle
- Causes hypoglycemia
- “Yo-yo” diet
- Overwhelmed with hunger
3 Phases to Fasting

1. A shift from food energy to fat (hours to days)
   • Characterized by a rapid decline in daily protein loss
   • Ends with what is referred to as “protein sparing mode”

2. Ketosis begins in apx 2 days (can last months to years)
   • Full protein sparing mode (growth hormone rises)
   • Most of the energy is derived from fat (2% of energy from protein, but it’s bad proteins)
   • Takes 3-4 days to adapt to using ketones for energy - why a fast should last at least 4 days (i.e. Simon)

3. Terminal fasting phase (pre-mortal rise starts after all energy stores are depleted)
   • Increase in nitrogen
   • Rapid increase in protein loss
   • Drop in ketones and glucose
   • Increase in uric acid
Feeding and Fasting

There are only 2 states the body is in…

1. Feeding- High insulin and storing Fuel (FAT)

2. Fasting- Low insulin and burning Fuel (FAT)
Types of Fasts: “Block”

**Block Fasts (aka extended)** 4 days is a min
- Water (H₂O)
- Whey water
- Broth
- Partial (500-1000 cal of fats, fibers, fruits and veggies)

**Benefits:**
- Autophagy
- Change in microbiome
- Massive ketone benefit
- Increase in stem cells
- Massive anti-inflammation effect
- Hormone optimization-increases hormone sensitivity
- Raise growth hormone 1300-2000%
Types of Fasts:
“Daily Intermittent”

Daily Intermittent
- 12-24 hours (I prefer 15 hours or more)
- Can be utilized with any diet
- Oftentimes we start with skipping snacks b/w meals
- Eat dinner 1 hour earlier; next step breakfast 1 hour later

Benefits:
- Studies show still some **autophagy** with 13 hours or more
- Forces up ketones even when not in ketosis (**keto benefits**)
- Drops in all **inflammation** markers
- Hormone optimization - **increase sensitivity**, esp over 15 hours
- Studies show **growth hormone rise** still as high as 2000%
What About “Block Fasts”?

- “In general, a 7-day, water-only fast done once per year would be sufficient for the body to consume dysplastic or precancerous tissue.” *Thomas Seyfried*

- This happens via *autolytic and autophagic* activity independent of the metabolic effect*

- Seyfried says that *several shorter 4 day fasts* would be just as effective*

*The Hunza People (fasted every spring)*

“During the summer, they eat fresh vegetables and fruit and when winter comes they consume apricots, corn and sheep’s milk cheese. There is a time when the Hunzakuts eat nothing, a period known as “starving spring.”

*Seyfried Cancer as a Metabolic disease; pp381 and 383*
“Autophagy becomes especially intensive when an organism is under stress, for example, when it fasts. In this case a cell produces energy using its internal resources, that is, cellular rubbish, including pathogenic bacteria.”
Bad Cells Can Not Adapt

This occurs in 4-10 day block fasting as well as 18- 42 hour fasts
Dr Longo’s research shows that a water fast of 4 or more days can trigger a reset of the immune system. As we get older, our blood contains too many memory T-cells, each programmed to combat a particular microbe, and not enough naive T-cells, which respond to new challenges. **Fasting purges and rebuilds the immune cell population with naive T-cells.**
What About the Brain?

TED Talk: Neuroscientist Shows What Fasting Does To Your Brain

April 7, 2016

Mark Mattson professor of neuroscience at Johns Hopkins univ.
Lifelong brain health is a lifelong challenge: From evolutionary principles to empirical evidence

Mark P. Mattson


Highlights

- Exercise, fasting and intellectual challenges improve brain function.
- Energetic challenges stimulate synaptic plasticity and neurogenesis.
- Intermittent challenges may protect the brain against injury and disease.
- Society-wide changes will be required to implement brain-healthy lifestyles.

increase the risk of cognitive impairment and Alzheimer's disease. It is therefore important to embrace the reality of the requirements for exercise, intermittent fasting and critical thinking for optimal brain health throughout life, and to recognize the dire consequences for our aging population of failing to implement such brain-healthy lifestyles.
Fasting Increases Growth Hormone

Growth Hormone:
- Increases availability and utilization of fats for fuel
- Preserves muscle mass

Fasting enhances growth hormone secretion and amplifies the complex rhythms of growth hormone secretion in man
Genetic switch turned on during fasting helps stop inflammation

Date: May 17, 2016
Source: Salk Institute
Summary: A key molecule that keeps gut bacteria in check has been discovered by a team of scientists. The study shows a molecular pathway by which the brain communicates with the gastrointestinal (GI) tract to prevent unnecessary activation of the immune system during fasting by strengthening the barrier against gut microbes.
How Long Can One Fast?

A 27 year old obese Scotsman who weighed 456 lbs. water fasted 382 days and lost 276 lbs. and hit his target weight of 180lbs… Never gained it back

All nutrition markers remained normal

Electrolytes eventually normalized and became stable without supplementation

Depression lifted, neurotransmitters and hormones all became normal
Multiple Block Fasts For Breakthrough

- Those who struggle to control insulin or glucose
- Not losing weight even in ketosis or with the perfect diet
- Hormone dysregulation
- Low cellular energy
- Autoimmune
- Cancer (Seyfried’s work)

The answer could have been as far back as 1912… JBC study and Oscar the dog…with every fast Oscar got better results
They stopped the fast after 170 days because they were not achieving the “pre-mortal rise” (inc. in nitrogen)…

- **Day 101** he was still jumping in and out of his cage
- **With every fast** the dogs became more efficient and grew stronger…”all around better physical condition”
Is Daily Intermittent Fasting Just as Effective?

Benefits:

▪ Studies show still some autophagy with 13 hours or more
▪ Forces up ketones even when not in ketosis (keto benefits)
▪ Drops in all inflammation markers
▪ Hormone optimization - increase sensitivity, esp over 15 hours
▪ Studies show growth hormone rise still as high as 2000%
1300-2000% GSH Increase

Even in a 24 hour “daily intermittent fast”
The Key To Living Longer Healthy

All of the studies are numerous and clear; the only thing that works is to eat less!

▪ WAIT! Dr Pompa we know that eventually slows metabolism
▪ What they don’t make clear is that NO ancient culture ate less by pushing food away
▪ They did it by eating less often

Therefore, to live a long healthy life…
“Eat less by eating less often”
In an interview with AFP last year, she put her longevity down to her diet. She eats 1x a day.

"I eat two eggs a day, and that's it. And cookies. But I do not eat much because I have no teeth," she said in her home at the time, where the Guinness World Records certificate declaring her to be the oldest person alive held pride of place on a marble-topped chest of drawers.
Mr Gotho eats little (caloric restriction). His diet was mainly cereal grains, fruits and vegetables. He lived in a rural area with clean air and clean water from the mountains...
Daily Intermittent Fasting: The How To

It’s simple, skip breakfast everyday (or push out later)…What? Isn’t breakfast the most important meal of the day? “It’s another 180 degree solution.”

The how to…Start with NO snacks (3 meals a day)

- Daily (15-24 hours b/w dinner and breakfast)
- Small lunch of fat and protein (very low carb)
- Big dinner
- Some like big lunch and small dinner…OK too
- A big meal is very important to prevent starvation mode (eat like a king)
Eating Window Examples

- An 18 hour fast leaves a **6 hour eating window**...ie. (1pm-7pm)
- For **growth**: eat a lot in this window
- For **heath**: 2 meals or 1 small meal and one big meal

- **I typically eat B/W 3-7pm** (a small meal first due to busy schedule and big dinner with family)
- I prefer the **biggest meal to be eaten between 12pm-4pm** esp. for weight loss resistance
- With social norms it is not always possible, therefore **eat at least 3 hours before bed**
- **Warning**: highest insulin release is at 7:50pm = Fat stores
What About 5-6 Meals a Day?

- All studies show more frequent snacking and eating speeds aging, increases inflammation and doesn't work for long term weight loss
- 6 meals a day had worst outcomes
Studies For Weight Loss

- Insulin drops
- Hormone sensitivity increases
- Decrease in blood pressure
- Decrease in inflammation markers
- Increase in lipolysis (fat loss)
Intermittent Fasting Improves Insulin Sensitivity

**Effect of intermittent fasting** and refeeding on insulin action in healthy men
• 20 hours of water fasting was enough to increase insulin sensitivity, the key for healthy weight-loss and most diseases.
Intermittent fasting prevents the progression of type 1 diabetic nephropathy in rats and changes the expression of Sir2 and p53

Edited by Varda Rotter

Kulbhushan Tikoo, Durga Nand Tripathi, Dhiraj G. Kabra, Vikram Sharma, Anil Bhanudas Gaikwad

doi:10.1016/j.febslet.2007.02.006
What About Muscle loss?

I.F. was more effective for muscle retention with weight loss than was straight caloric restriction.

Once again: don’t eat less, eat less often!
I.F. Preserves Lean Muscle Mass

Improvements in Coronary Heart Disease Risk Indicators by Alternate-Day Fasting Involve a loss of Adipose tissue and preservation of muscle

<table>
<thead>
<tr>
<th></th>
<th>Baseline control phase</th>
<th>Weight loss/ADF controlled feeding phase</th>
<th>Weight loss/ADF self-selected feeding phase</th>
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<tr>
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<td>Day 1</td>
<td>Day 14</td>
<td>Day 41 Feed day</td>
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<tr>
<td>Body weight (kg)</td>
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<td>96.5 ± 5.2</td>
<td>93.8 ± 5.0*</td>
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<td>Fat mass (kg)</td>
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<td>43.5 ± 2.5</td>
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<td>Fat-free mass (kg)</td>
<td>52.0 ± 3.6</td>
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<td>Waist circumference (cm)</td>
<td>109 ± 2</td>
<td>109 ± 3</td>
<td>106 ± 3</td>
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*Varady, KA (we interview her on Cell TV)

*Obesity (2010) 18, 2152–2159*
My son Daniel in summer 2015

Daniel summer 2016 after 4 months of IF
What About These Guys?

The Hodge twins intermittent fast 19 hours every day and a periodic 24 hour fast
A short-term fast increased luteinizing hormone by a staggering 67% in non-obese males. In obese males a 26% increase.

180% increase in T in the non-obese group

It had a dramatic effect on the pituitary-testicular axis
Eating Decreases T

This is what I found in studies...

▪ Eating **over 300 cal** causes a significant **drop in T** that lasts more than 3 hours

▪ **5:30am – 8:00am** is the highest T and the worst time to eat

▪ **Chronic high fat** intake had a **slight increase in T**

▪ **Chronic high protein** intake had a **decrease in T**

▪ **Carbs, esp in the morning**, had a **dramatic drop** in T (75gms in study)

▪ **Exercise while fasting** had a **dramatic increase** in T

Fasting by far had the greatest increase in growth hormone and T
I.F. and Exercise

- When done together, the greatest hormone optimization and sensitivity occurred for growth hormone and T in all studies.

Exercise while fasting increases T and HGH massively. Try it for yourself, or take the Hodge twins advice!
Is I.F. for everyone? You must test!

When to test:
First thing in AM and before the first meal….

The glucose should drop and the ketones rise

It Takes Time!
But block fasting could be a faster way to breakthrough…
What About a Morning Coffee?

- Does this raise blood sugar and break a “daily intermittent fast”?

- What I found…
Merily

0 = Waking Glucose

FAT

NO FAT

Chart Area
Now it’s your turn!

- Everyone can test blood sugar and ketones in morning and before first meal
- Note ketone and blood sugar results on card provided
- Note whether a beverage was consumed (with or without add-ins) prior to testing
- Results will be discussed during Q & A session
Seyfried’s Target Zone for Cancer and Life Extension

Glucose (mmol/L) / Ketones (mmol) = 1

The closer you get to 1 the more autophagy occurs (glucose in mg/dl must be converted to mmol/L)

Simply put (without converting the glucose):

- Glucose range of 50-70 during fasting (below 70 still huge benefits)
- Ketone range of 3.0 - 4.0 mmol/L
- Block fasting is the fastest way to get there
More importantly...

What about wine?
Ancient Healing

Ketosis
Fasting
Diet Variation
(Feast Famine Cycles)
Problem!

- Reduced quality of life
- Loss of muscle
- Reduced...
  - Energy expenditure
  - Anabolic hormones
- Increased...
  - Stress
  - Hunger
- Starvation mode
- No weight loss
- Unwanted weight gain
During low carb the body can try to preserve its precious fuel supply...

- It will slow lipolysis by taking up more water in the fat cell, creating a loose cellulite looking fat... *not pleasant*
- It will blunt insulin receptors to hold on to its precious fat; **all in the name of survival**
Can Low Insulin Increase Glucose?

One of the main functions of insulin is to turn off gluconeogenesis in the liver.
Therefore, **chronically low insulin can cause glucose to actually rise**.
This can lead to muscle loss and fat stores.
The solution is random feast days, aka **Diet Variation**.
What is Diet Variation & Why It Works

Adapt or Die
Survival is the #1 priority of the innate intelligence. This can work for us or against us

▪ Major dietary shifts drive survival adaptation mechanisms
▪ This drives **hormonal optimization**: Increases hormone sensitivity, raises growth hormone, changes DNA and strengthens the microbiome
▪ Ancient cultures were forced into dietary shifts from environmental factors, seasonal changes and simply the lack of food.
▪ We can mimic these shifts weekly, monthly and seasonally
“Metabolic pressure could also involve carefully executed diet-cycling strategies.” Thomas N Seyfried pg.383

1. **Daily**: meal timing in I.F.
2. **Weekly**: 5-1-1 rule or modified (4-2-1 or 3-2-2)
   - **Example**:
     5 days of I.F. (16-20 hours)
     1 day of 24 hour fast (dinner to dinner)
     1 day of a feast (3 meals and increase carbs and/or protein)
3. **Seasonally**: Rotate 3-4 months in ketosis and I.F. with 3-4 months higher healthy carb (100-150gms daily) and I.F.
Diet Variation
(Feast Famine Cycles)

When and why to use “diet variation”…

▪ Not fat adapting (not going into ketosis)
▪ Not losing weight
▪ Losing weight (muscle) but getting “skinny fat”
▪ Gain muscle and, therefore, weight
▪ No energy in ketosis
▪ Hormone conditions (esp. thyroid)
▪ Cancer, according to studies
“The last half century has brought stark changes in lifestyle that depart from normal diurnal cycle and periodic fluctuations in food availability. Thus, modern times may be characterized as being constantly in a “feast” environment. The cellular consequences may be an increase in risk for several diseases including cancer.”
The cycling of the caloric restriction with normal eating forces adaptation and is believed to be the reason for the outcome.

The effects of intermittent or continuous energy restriction on weight loss and metabolic disease risk markers Int J Obes (Lond). 2011 May; 35(5): 714–727 Harvie MN
Intermittent 24 hour or partial fast was more effective for muscle retention and weight loss than straight caloric restriction.
Conclusion: Dietary interventions have not been effective in the treatment of MS. Here we show that periodic 3-day cycles of a fasting mimicking diet (ketosis) are effective in resolving autoimmune driven demyelination and its symptoms.
Alternating days of normal feeding and fasting (IF) can enhance brain function

- Improvements in performance on behavioral tests of sensory and motor function (Singh et al. 2012)
- Learning and memory (Fontan Lozano et al., 2007).
- The behavioral responses to IF are associated with increased synaptic plasticity and increased production of new neurons from neural stem cells (Lee et al., 2002).

It’s All About Adaptation

The temperature change forces adaptation by altering the microbiome causing a hormonal shift (Hormone optimization).

Notably, a microbe called *Akkermansia muciniphila*, which is associated with obesity and diabetes, virtually disappeared, the researchers report online today in *Cell*. 
Examples of Weekly Diet Variation (Feast Famine Cycles)

5-1-1: (Feast Famine cycles)
- 5 days of CHD or Ketosis while intermittent fasting
- 1 day of a 24 hour fast (22-23 really)
- 1 day of a feast consisting higher healthy carbs, protein and calories

Benefits:
- Forces adaptation (hormone optimization)
- Feast day reminds the body it’s not starving
- Feast day temporarily raises insulin and stops gluconeogenesis
- Fast day forces lower glucose and insulin and more time using your body fat as fuel
“Weekly” Diet Variation

4-2-1 or 3-2-2:
- 4 days of CHD or Ketosis w/ I.F
- 2 days of a 24 hour fast per week
- 1 or 2 feast days (AKA high carb day)

Benefits & Who
- Better for **weight loss resistance** due to more variation (adaptation), more time with lower insulin and more fasting lowers glycogen stores
- This means more fat used as fuel
- More autophagy
- Some do better with 2 feast days ie. 3-2-2
3-3-1: (more time fasting = more metabolic pressure)

- 3 days of 16-20 hour I.F...ie. tuesday, thursday and sunday
- 3 days of fasting; 1 fast of 42 hours, and 2 fasts of 24 hours

i.e. Monday and Friday, 24 hour fasts (dinner to dinner)

Wednesday is a 42 hour fast, meaning no food that day and eat again the next day at 12pm starting a regular I.F. day

Saturday is a feast day (some could add another feast)

Tuesday, Thursday and Sunday are regular I.F. days

Dr Jason Fung (author of the Complete Guide To Fasting) uses 42 hour fasts for his **Type 2 diabetes cases**

- Lower insulin and more time to empty glycogen tank is key
“Monthly” Diet Variation

7 days a month of increased carbs, and the remainder of the month in a low carb or ketosis diet

- Works magic for premenopausal women or thyroid cases
- Theory is the increase in insulin helps T4 to T3 conversions, and possibly other hormone conversions where insulin plays a role

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**T₄ to T₃ Conversion**

- Type I deiodinase
  - Produces T₃
  - Liver, kidney, thyroid, intestines
  - Se, Zn dependent
  - Inhibited by:
    - Methyl Hg (high susceptibility)
    - Caloric restriction
    - Polychlorinated biphenyls (PCBs)

- Type II deiodinase
  - Produces T₃
  - Brain, pituitary, brown adipose
  - NOT Se dependent
  - Alcohol enhances in rats
▪ 5 days a month on a low calorie 800-1100 partial fast
▪ Low protein, low carb, high fat
▪ 25 days of eating whatever they wanted
▪ Beta cells in pancreases regenerated
Examples of Seasonal

- In winter months, move into ketosis (3-4 months)
- Summer could be the CHD (moderate carbs, moderate protein, high to moderate fat) or a vegetable focused diet (i.e. root vegetables, berries, yams, sweet potato, quinoa)
- Spring and fall I transition by eating a week of ketosis then go higher healthy carb for a week or split my week. I change it up.
During the summer, they eat fresh vegetables and fruit and when winter comes they consume apricots, corn and sheep’s milk cheese. There is a time when the Hunzakuts eat nothing, a period known as “starving spring.”
American Indians

- They ate the whole animal, and the **saturated fat** was the most cherished
- **Ketosis in winter** was a must for survival
- **Fasted in the spring**
- **Higher carb in summer** - roots and berries, prickly pears, tepary beans, wolfberries, mesquite pods, mustard seeds, cholla blossoms, acorn squashes, pumpkins and a variety of gourds (a much higher in carbohydrates)

This is diet variation.

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4-20- 2015 Decolonizing the Diet: synthesizing NativeAmerican history, immunology, and nutritional science. Gideon Mailer University of Minnesota - Duluth, gamailer@d.umn.edu Nicola Hale

Footnote in the article (53) Samuel Hearne, A Journal from Prince of Wales’ s Fort in Hudson Bay to the Northern Ocean (1769-1772), ed. J. B. Tyrell (Toronto, CA., 1911): 171.
Diet Variation in Africa
Question & Answer