

Consumer Trends in Diabetes: What Does the Evidence Say?

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Faculty Disclosures

Drs. Woo, Murali, and Hashmi declare that neither they nor members of their immediate family have a financial interest/arrangement or affiliation with one or more organizations that could be perceived as a real or apparent conflict of interest in the context of the subject of this presentation.

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Consumer Trends in Diabetes: What Does the Evidence Say?

Complementary and Alternative Medicines

Bariatric Surgery

Dietary Trends

Traditional Medicines/Treatments and Your Patients

What You Need to Know

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Objectives

- Increase knowledge of the cultural roots of traditional medicines
- Improve confidence in partnering with patients and incorporating their complementary and alternative treatments with prescribed treatment and lifestyle modification
- Know how to access evidence-based information on complementary and alternative agents for use in discussion with patients



According to the 2007 National Health Interview Survey (NHIS)

In the United States, approximately 38 percent of adults (about 4 in 10) and approximately 12 percent of children (about 1 in 9) are using some form of CAM



Cultural Roots in Traditional Medicine









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之圖也
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Working With Your Patients

- Traditional medicines may be deeply rooted in your patient's culture.
 - Discounting these treatments may alienate patients
- Have discussions with the patient regarding what specific therapies may or may not do
 - Consider benefits/efficacy
 - Consider Safety and Contraindications
- Be willing to partner with your patients
 - Often traditional medicines can be used together with allopathic treatments and lifestyle modification.



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EXTERNAL REFERENCES

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- ClinicalKey
- ClinicalKey for Nursing
- e-Books + e-Journals
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Scientific Name

Background

People Use This For

Safety

Effectiveness

Dosing & Administration

Adverse Effects

Toxicology

Drug Interactions

Herb Interactions

Food Interactions

Lab Interactions

Disease Interactions

Mechanism of Action

Pharmacokinetics

Classifications

References

Scientific Name

Opuntia ficus-indica, synonym Cactus decumanus, Cactus ficus-indica, Opuntia albicarpa, Opuntia amyclaea, Opuntia cordobensis, Opuntia decumana, Opuntia ficus-barbarica, Opuntia gymnocarpa, Opuntia hispanica, Opuntia joconostle, Opuntia maxima, Opuntia megacantha, Opuntia paraguayensis..

Family: Cactaceae.

Background

Prickly pear cactus is native to Mexico and widely distributed in regions of Africa, Australia, the Mediterranean basin (65297,92147). Unlike most crops, prickly pear cactus can be cultivated in arid and semi-arid climates (65297). Prickly pear cactus fruits, which are oval berries with a thick peel and seedy pulp, are edible (65297,92146,92147). The color of the fruit varies depending on the pigment concentration, and can be lime green, purple, orange, or red (92146). The pads of prickly pear cactus are also edible (92146,92147). The immature form of prickly pear cactus pads is used, as mature stems are fibrous and tough and not appropriate for consumption (7028). Prickly pear cactus is primarily used in Mexican and Mexican-American cultures as a part of the diet and as a treatment for type 2 diabetes (12551).

Also known as: Barbary Fig, Cactus Flowers, Cactus Fruit, Cactus Pear Fruit, Figue d'Inde, Figuier de Barbarie, Fruit du Cactus, Fruit de l'Oponce, Indian Fig, Indian Fig Prickly Pear Cactus, Indien-Figue, Nopal, Nopal Cactus, Nopales, Nopol, OPI, Oponce, Opuntia, Opuntia ficus, Prickly Pear, Spineless Cactus, Tuna Cactus.

CAUTION: See separate listings for Caralluma, Cereus, and Hoodia.

+

History

People Use This For

Orally, prickly pear cactus is used for diabetes, hypercholesterolemia, obesity and other cardiovascular disease risk factors, alcohol-induced hangover, and as an antiviral agent. It is also used for colitis, diarrhea, and benign prostatic hyperplasia (BPH).

In foods, the prickly pear juice is used in jellies and candies.

Excerpts From Monolog - Nopales

Effectiveness

[See detailed evidence summary](#)

POSSIBLY EFFECTIVE

Diabetes: The... patients with type 2 diabetes. Single doses can decrease blood glucose levels by 17% to 48% in some patients (14807,65322,65326). Single doses... meal (92147). However, it is not known if extended daily use can consistently lower blood glucose levels and decrease glycated hemoglobin (HbA1C) levels.

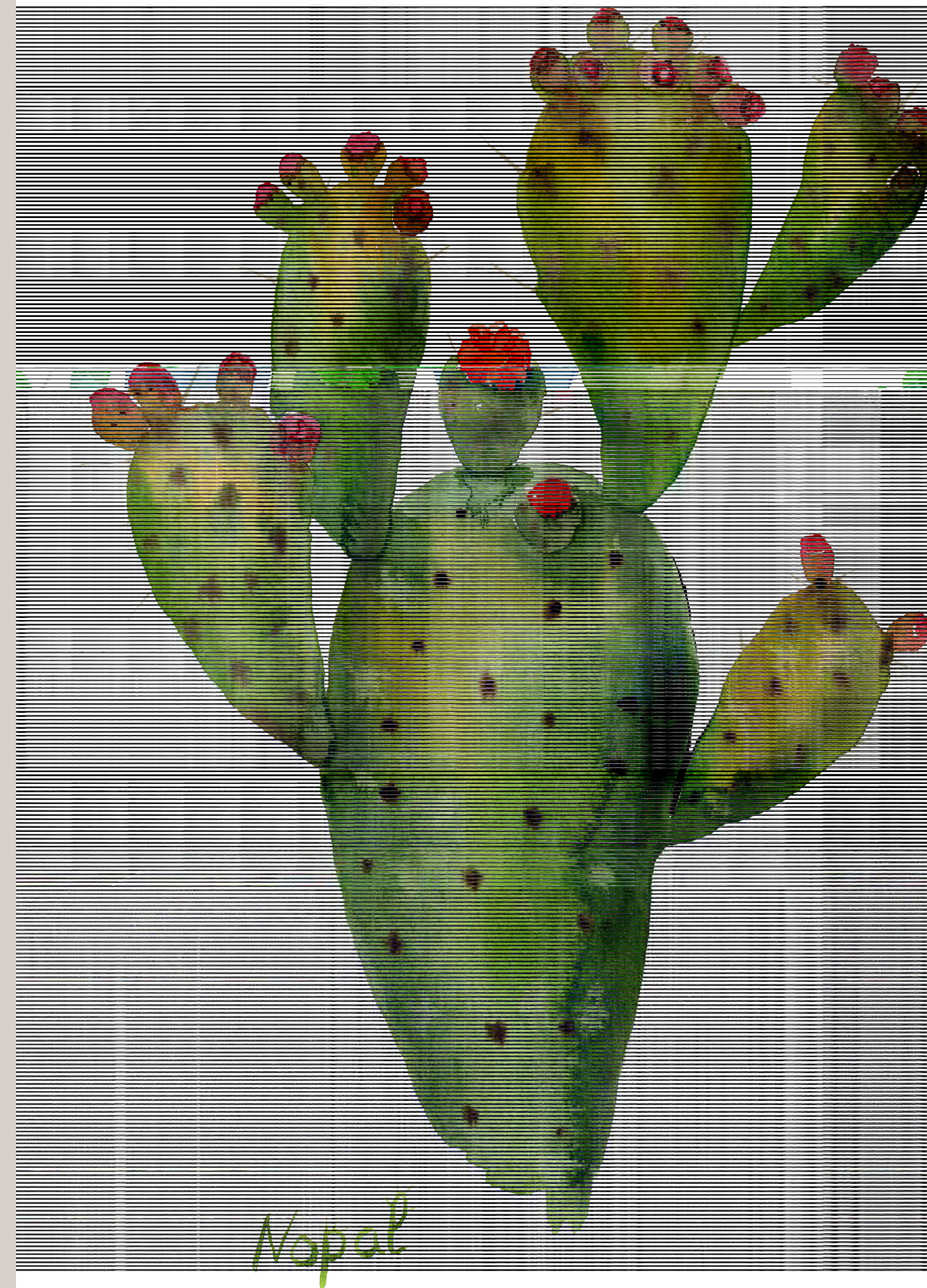
• Adult

Oral:

(12175).

Diabetes: Steamed prickly pear cactus 500 grams in addition to either a high carbohydrate or high soy protein meal has been used (92147). Broiled prickly pear cactus stems up to 500 grams has been used as a single dose (65322,65326).

Antidiabetes effects: Prickly pear cactus can lower blood glucose and lipid levels (((14807,65322,65326))). This effect is often... However, some researchers suspect prickly pear might also have an insulin sensitizing effect (7028,92148).



Información y Educación para el Consumidor

Proporcionado por su
Profesional de la Salud y
Basado en la Base
Exhaustiva de Datos de
Medicamentos Naturales.



NOPAL

¿Qué es?

El nopal es una planta. Es parte de la dieta en la culturas mexicana y mexicana-americana y se lo utiliza para hacer medicinas.

El nopal se muy comúnmente usado para tratar la diabetes.

¿Es Eficaz?

Natural Medicines (La Base Exhaustiva de Datos de Medicamentos Naturales) clasifica la eficacia, basada en evidencia científica, de acuerdo a la siguiente escala: Eficaz, Probablemente Eficaz, Posiblemente Eficaz, Posiblemente Ineficaz, Probablemente Ineficaz, Ineficaz, e Insuficiente Evidencia para Hacer una Determinación.

La clasificación de la eficacia para este producto es la siguiente:

Posiblemente Eficaz para...

- **Diabetes.** En algunas personas, una sola dosis de nopal puede disminuir los niveles de azúcar en la sangre en un 17-46%. No se sabe si el uso continuo diario puede bajar de forma consistente los niveles de azúcar en la sangre.

Insuficiente Evidencia para Hacer una Determinación para...

- **Displasia prostática.** La investigación preliminar muestra que la ingesta de las flores de nopal podría reducir los síntomas de agrandamiento de la próstata como la urgencia de orinar o la sensación de tener la vejiga llena.
- **Colesterol alto hereditario (hipercolesterolemia familiar).** La investigación preliminar muestra que la ingesta diaria de pulpa de nopal comestible durante 4 semanas mientras se sigue una dieta adecuada disminuye el colesterol total y el colesterol de lipoproteína de baja densidad (LDL o "malo") en personas con



Take Home Points

- complementary and Alternative treatments have deep roots in many cultures
- Avoid discounting complementary and Alternative treatments outright
- Partner with your patients to help them understand these treatments
 - There may be weak evidence for some of the treatments (not first line)
 - Consider allowing use in conjunction with your recommendations for treatment and lifestyle modification
 - Caution your patients about medication interaction or contraindication



Healthy Eating Patterns

Sean Hashmi, MD, MS, FASN

Regional Physician Director, Weight
Management and Clinical Nutrition



High Protein/Low Carbohydrate Diet

High-Protein/Low-Carb Diets

- Meta-analysis of 6 trials

RESULTS:

- Low and very low carb **MORE** effective in short-term (< 6 months) weight loss than low fat
- **NO difference at 12 months** for low carb vs. low fat
- Low carb: TG (↓ **22.1 mg/dl**), HDL (↓ **4.6 mg/dl**) vs low fat
- Low fat: Total cholesterol and LDL (↓ **5.4 mg/dl**) improved more in low fat

High-Protein/Low-Carb Diets

Short term studies (3-6 months)

- ↑ weight loss, ↓ waist circumference, ↑ HDL, ↓ TG, ↓ BP
 - Meta-analysis 24 trials; duration 12.1 ± 9.3 weeks

Long term studies (≥ 12 months)

- No significant differences in weight, waist circumference, BP, LDL, HDL, TG, CRP, FBG, HbA1c
 - Meta-analysis (2013) 15 RCTs with ≥ 12 months duration evaluating high vs. low protein

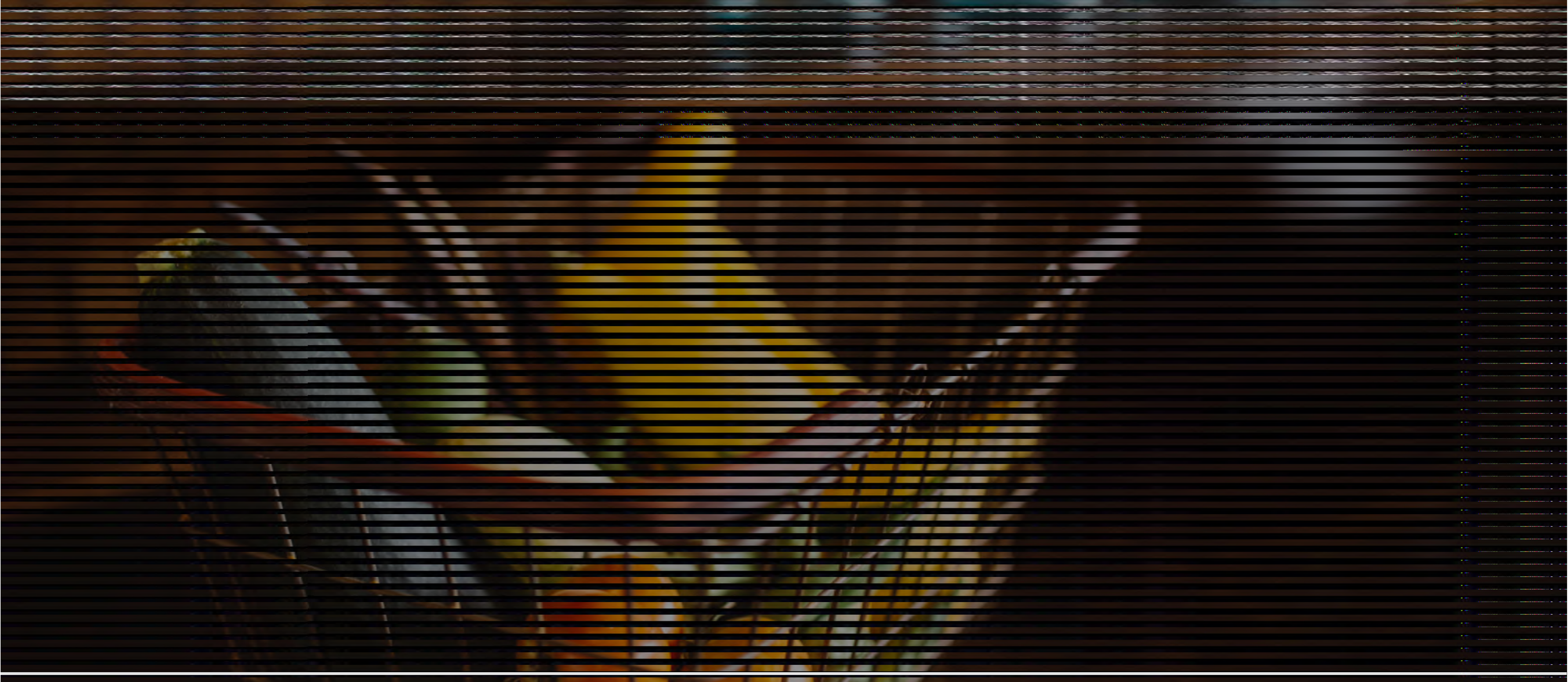
High Animal vs. High Plant Protein and Low-Carb

STUDY

- Nurses' Health Study and Health Professionals Study; 85,168 women (34–59 years), 44,548 men (40–75 years); 26-year follow-up (1980–2006)

RESULTS

- Replacing animal protein with plant protein in a low-carb diet associated with:
- **20% ↓** all-cause mortality
 - (HR 0.80 [CI 0.75 to 0.85]; P for trend ≤ 0.001)
- **23% ↓** cardiovascular mortality
 - (HR 0.77 [CI 0.68 to 0.87]; P for trend < 0.001)



Paleo Diet

Paleo Diet

- Based on foods like paleolithic era (~2.5 million to 10,000 yrs ago)

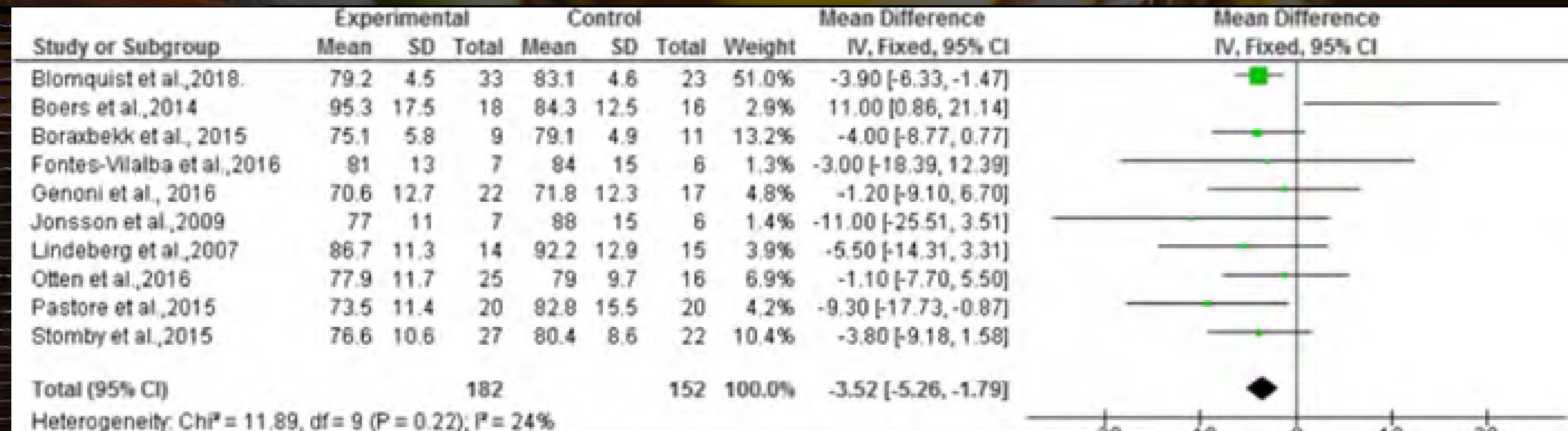
Foods to eat	Foods to avoid
Fruits	Grains (wheat, oat, barley)
Vegetables	Legumes (beans, lentils, peanuts, peas) and potatoes
Nuts and seeds	Dairy
Lean meats, especially grass-fed animals or wild game	Refined sugar
Fish, especially those rich in omega-3 fatty acids, such as salmon, mackerel and albacore tuna	Salt
Oils from fruits and nuts, such as olive oil or walnut oil	Highly processed foods

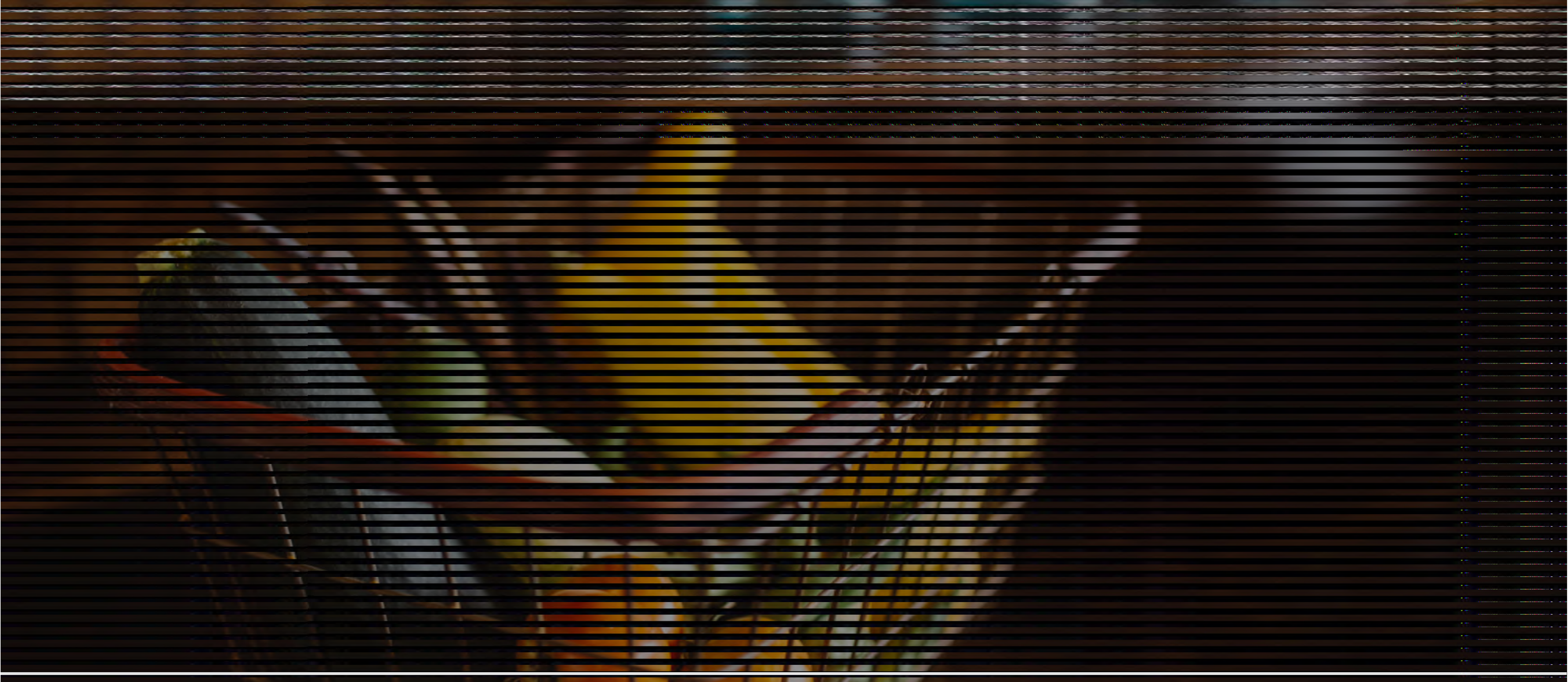
Paleo Diet and Weight Loss

Meta-analysis, 11 studies

Results:

- ↓ 3.52 kg in mean weight for Paleolithic over standard diet-based recommendations





Ketogenic Diet

Ketogenic Diet

- Published reports from 1920's on Keto diet for epilepsy
- High-fat, low-protein, low-CHO diet
- **Classic KD**: 4:1:1 (fat : protein : CHO)
- **Modified Atkins**: 1:1 (fat : protein and CHO)
 - CHO ~10-20g/day
- **Low glycemic index treatment (LGIT)**: 40-60 g/d CHO w/ glycemic index < 50; 60% fat; 20-30% protein
- Also variants with ketone esters, salts, MCT (from coconut oil or palm kernel oil)

Ketogenic Diet and Cancer

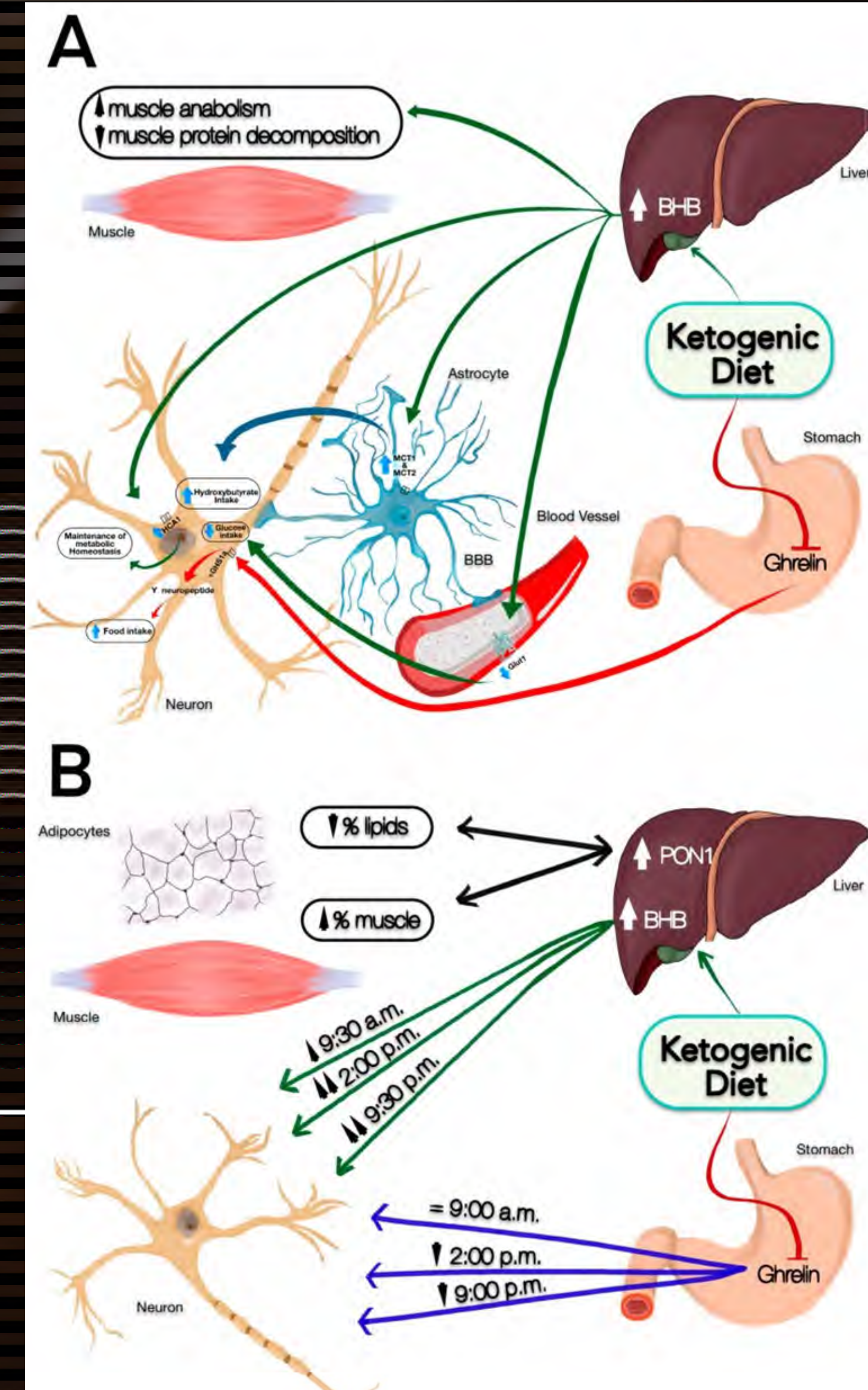
- Meta-analysis 11 studies, n=102, duration 2.4 – 134.7 weeks
- Results
 - Inconclusive evidence on nutritional status, tumor effects, QoL
 - Diet adherence ~49%
 - Adverse effects: fatigue, constipation, diarrhea, vomiting, hyperuricemia

Ketogenic Diet and Parkinson's Disease

- Randomized, control trial; n=47; 8 wks.
- Keto (<16g CHO) vs low-fat (<42g fat) CHO diet
- International Parkinson and Movement Disorder Society UPDRS (MDS-UPDRS) assessment by diet-blinded neurologist
- All participants continued l-dopa
- KD group had greater improvement in nonmotor sx

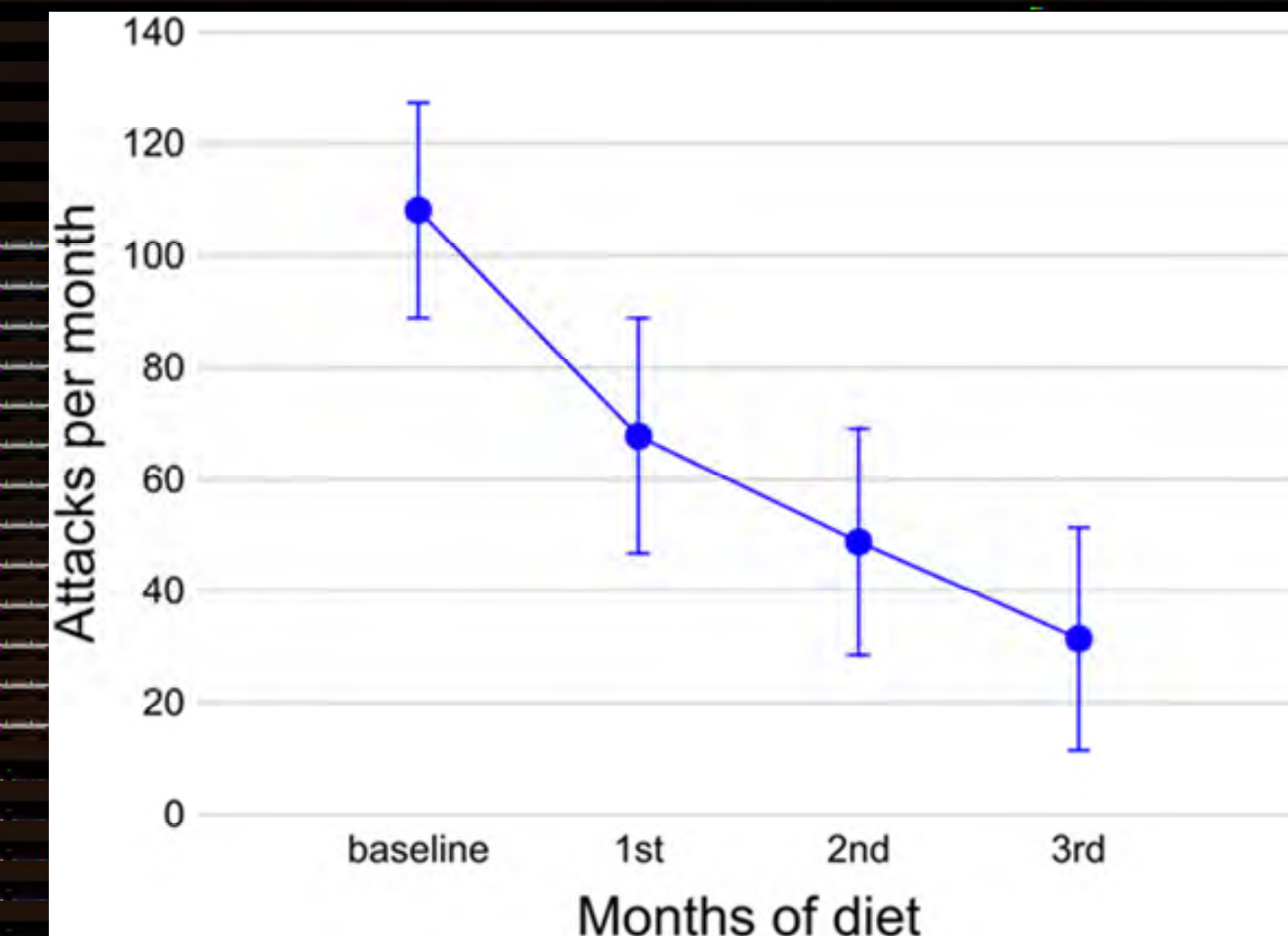
Ketogenic Diet and Multiple Sclerosis

- Pilot study, 27 MS patients, hybrid Mediterranean ketogenic diet x 4months (20% protein, 40% CHO, 40% lipids; 60ml coconut oil daily)
- Significant increase in muscle mass ($p=0.003$), BHB ($p=0.045$), satiety ($p=0.001$), PON1 ($p=0.000$)
- Significant decrease in fat mass ($p=0.000$)
- PON1: paraoxonase
 - Oxidation marker, inhibits LDL oxidation
 - Prevents production of cytokines, inflammatory mediators, cell adhesion molecules



Ketogenic Diet and Cluster Headaches

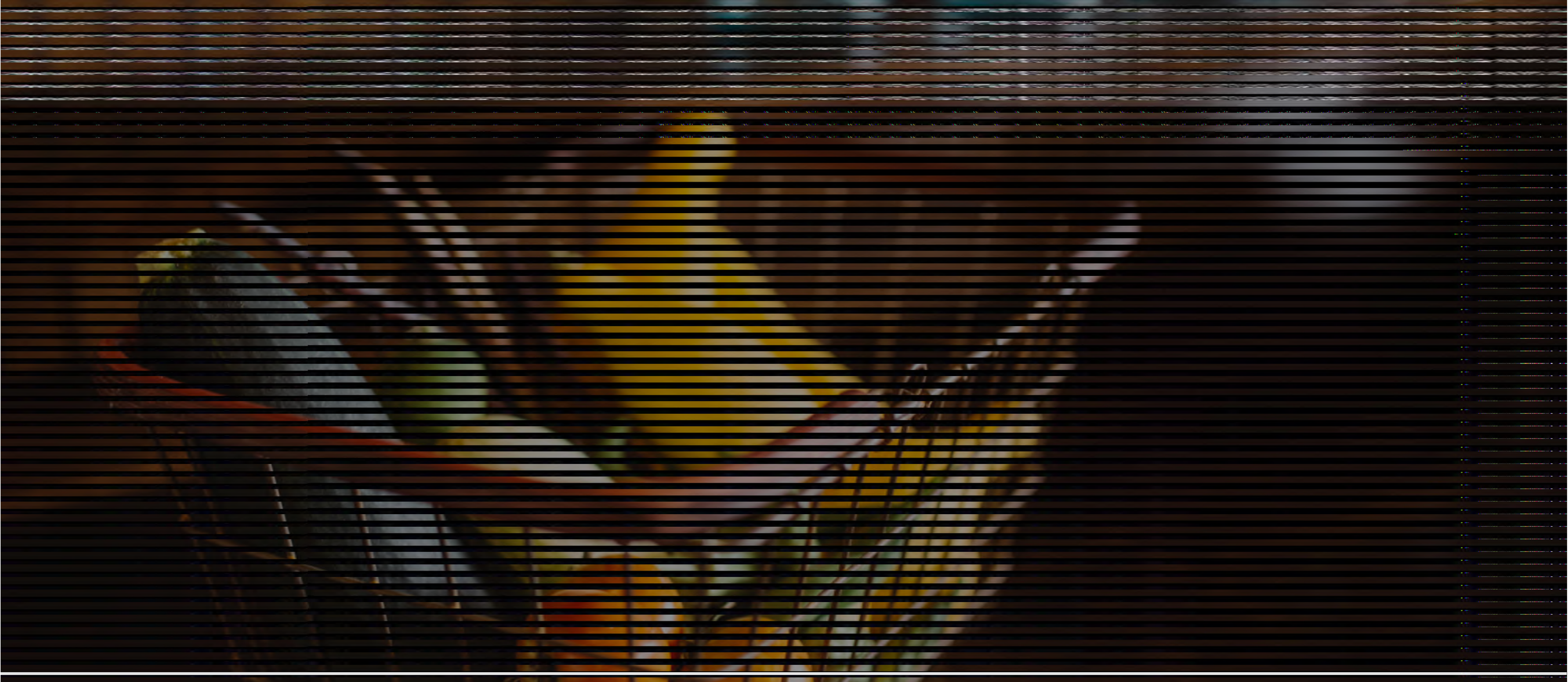
- Prospective, **open-label, single-arm** clinical trial; n=18, 12-week Modified Atkins Diet (CHO 15g/d; protein 0.7-1.2g/kg/d), response defined as $\geq 50\%$ attack reduction
- Cluster headache: unilateral trigeminovascular and autonomic system co-activation
 - HA persist weeks or months
 - If no remission then defined as chronic cluster headache (CCH)
- 11 pts experienced **full headache resolution**, 4 had **50% ↓ in monthly attacks**.
- Mean attacks went from **108.71 to 31.44 at 3rd month**



Ketogenic Diet and Weight Loss

- 45 obese pts randomly assigned to VLCKD or standard low calorie diet; 24 mo. f/u

	VLCKD	LCD	
Bodyweight	↓ 12.5 kg	↓ 4.4kg	P < 0.001
Waist Circumference	↓ 11.6cm	↓ 4.1cm	P < 0.001



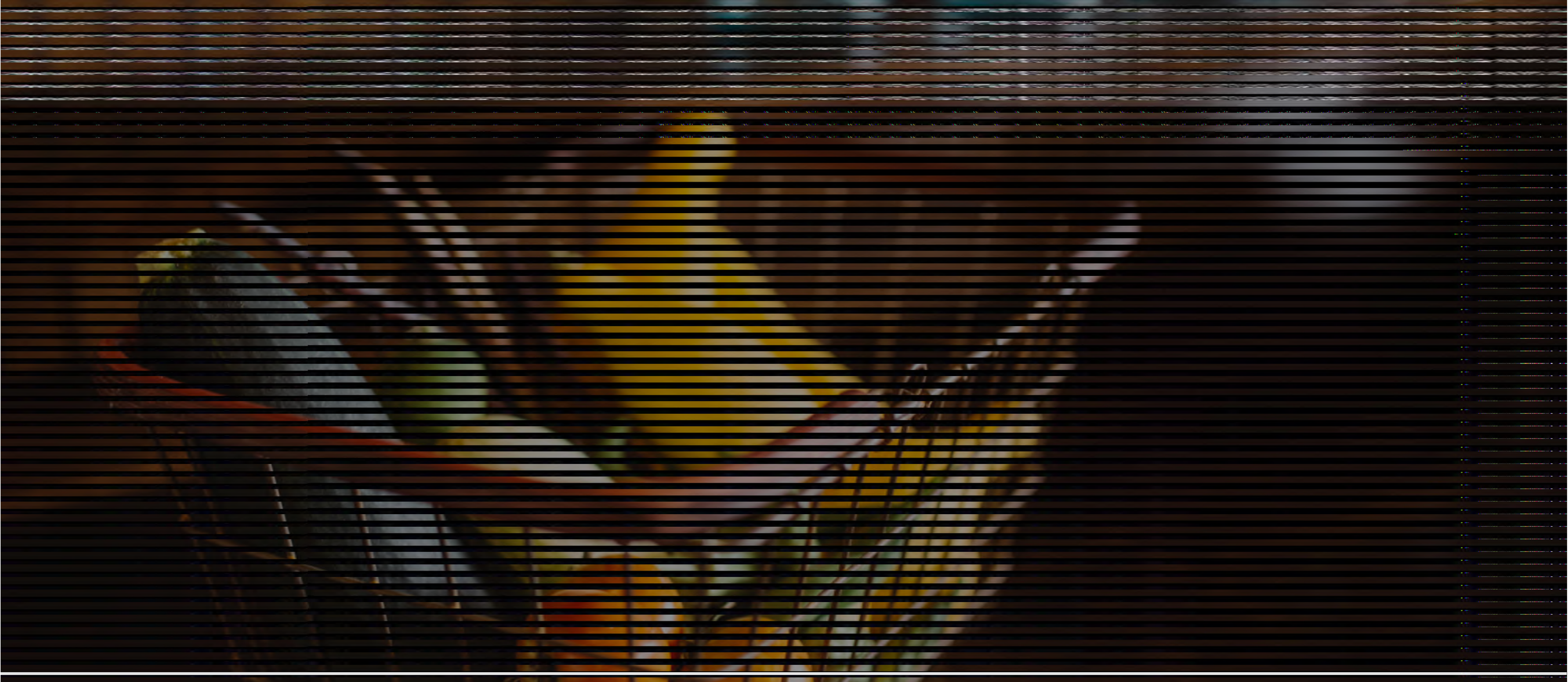
Intermittent Fasting

Intermittent Fasting

- Types
 - **Alternate Day:**
 - Alternate fasting day (no energy-containing foods/beverages consumed) with eating day
 - **Modified fasting:**
 - Eat 20-25% on fasting days;
 - 5:2 fasting: 5 ad libitum eating days and 2 nonconsecutive fasting days per week
 - **Time restricted feeding:**
 - Ad libitum eating within specific time frames (i.e. 8 hours eating, 16 hours fasting)

Intermittent Fasting

- In rodent models:
 - ↓ Total cholesterol, TG
 - ↓ liver steatosis
 - ↓ inflammatory gene expression
 - ↓ cell proliferation
- In human studies, results **same** as caloric restriction for reduction in:
 - Weight
 - Fasting insulin
 - Glucose concentration



Mediterranean Diet

Mediterranean Diet

NO SINGLE DEFINITION

- **Primarily plant based foods:** fruits, vegetables, whole grains, beans, nuts and seeds
- **Healthy fats:** e.g. Olive oil instead of butter.
- **Red meat:** Limit to few times per month.
- **Dairy products, fish and poultry:** low to moderate amounts
- **Wine:** low to moderate amounts

<http://www.heart.org/> Accessed 11/16/2017

<http://www.mayclinic.org> Accessed 11/17/2017

Mediterranean Diet

STUDY:

- Meta-analysis; 12 studies, n=1,574,299 subjects, avg f/u 3–18 years

RESULTS:

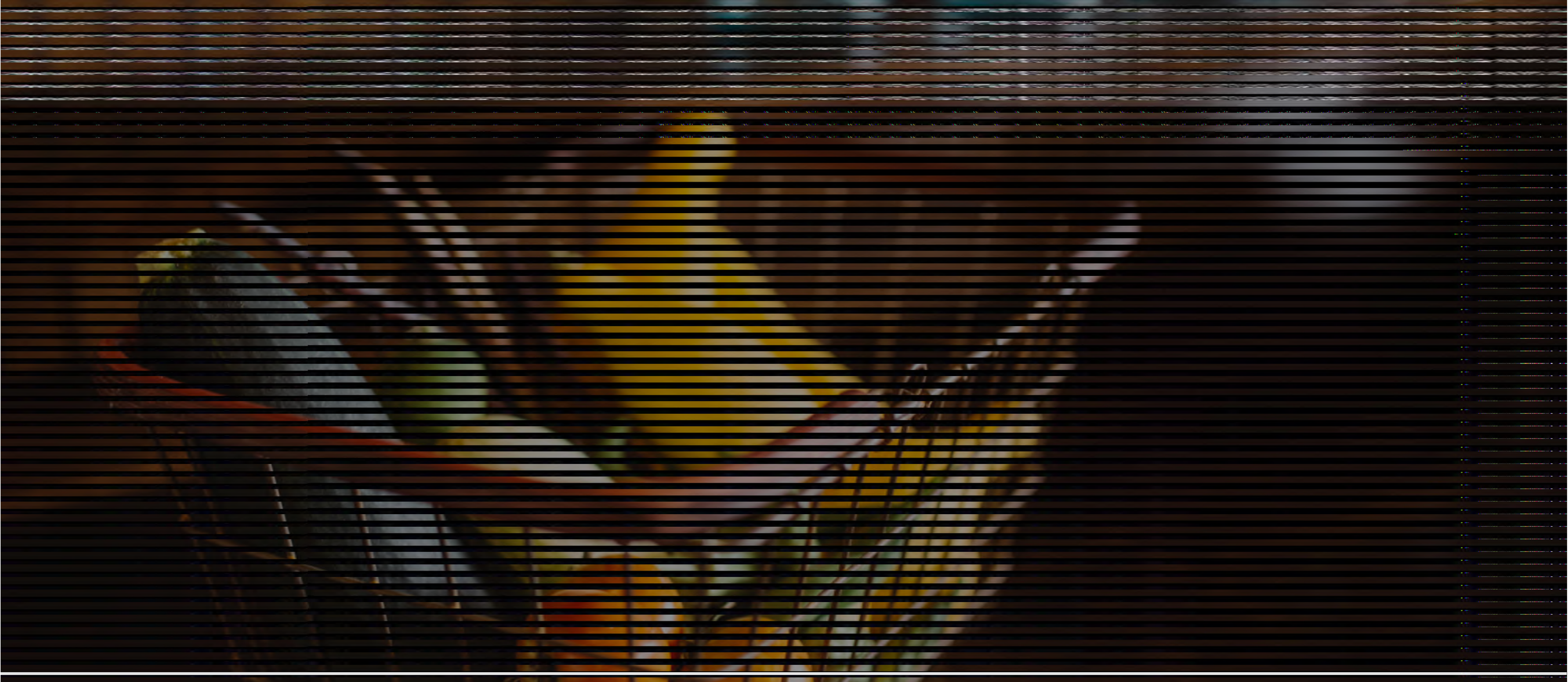
- Each **2 point ↑ in adherence to Mediterranean diet** associated with:
 - **9% ↓ all-cause mortality risk** (pooled RR 0.91, 95% 0.89-0.94)
 - **9% ↓ cardiovascular mortality** (pooled RR 0.91, 0.87-0.95)
 - **6% ↓ incidence of cancer mortality** (RR 0.94, 0.92-0.96)
 - **13% ↓ incidence of Parkinson's and Alzheimer's** (RR 0.87, 0.8-0.96)

Mediterranean Diet

PREDIMED trial; multicenter, randomized; n=7447; MD vs low fat; 4.8 yr. f/u

Primary prevention of CV Events:

- **30% ↓** in MD + EVOO
- **28% ↓** in MD + nuts
- **40% ↓** in T2DM incidence



Vegetarian Diet

Vegetarian Diets

Vegan:

- No eggs, dairy/milk, or any animal products
- Some vegans do not use honey

Vegetarian

- Pollotarian: Only meat is poultry/fowl.
- Pescatarian: Only meat is fish/seafood
- Flexitarian: Occasional meat only
- Lacto vegetarian: dairy products okay
- Ovo vegetarian: eggs okay
- Lacto-ovo vegetarian: Eggs, dairy/milk okay but no meat

Vegetarian Diets

STUDY:

Prospective cohort study; 131,342 participants from Nurses' Health Study (1980-2012), Health Professionals Follow-Up Study (1986-2012)

RESULTS:

- ≥ 1 unhealthy lifestyle factor (smoking, heavy alcohol, obesity, physical inactivity):
 - **Animal protein** (processed/unprocessed red meat only)
 - **8% \uparrow CV mortality** (HR 1.08 per 10% energy increment, 95% CI 1.01-1.16, $p=0.04$)
 - All-cause mortality NOT statistically significant
 - **Plant protein:**
 - **12% \downarrow CV mortality** (HR 0.88 per 3% energy increment, 95% CI 0.79-0.98, $p=0.02$)
 - **10% \downarrow all-cause mortality** (HR 0.90 per 3% energy increment, 95% CI, 0.86-0.95, $p<0.01$)

NOT evident in healthy participants

Vegetarian Diets

Adventist Health Study 2 (AHS-2); n=73,308; f/u 5.79 yrs

	ALL CAUSE MORTALITY	CANCER MORTALITY	DIABETES
Vegan	15% ↓	8% ↓	62% ↓
Lacto-Ovo Vegetarian	9% ↓	10% ↓	38% ↓
Pesco-Vegetarian	19% ↓	6% ↓	21% ↓
Semi-vegetarian (all meat >1x/month but ≤ 1x/week)	8% ↓	6% ↓	51% ↓

Orlich et al. *JAMA Intern Med.* 2013

Vegetarian Diets and Environment

- **70%** of ALL water pollution in rivers/lakes from animal farms
- **20%** overall U.S. methane generation from cattle
- Green house gas emissions
 - Red meat **10-40x** ↑ vs plants
 - Vegetarian diet: **63%** ↓
 - Vegan Diets: **70%** ↓

Raphaely et al. IGI Global. 2016

Marlow et al. Public Health Nutr. 2015

Sranacharoenpong et al. Public Health Nutr. 2015



Evidence Based Eating Recommendation

Bottom Line

- No perfect diet...
- Strive for lifestyle
- For optimal health, follow the lessons from the blue zones
 1. Sleep more
 2. Move more
 3. Love more, practice gratitude, kindness, and meditate
 4. Eat mostly plants

