



Fad Diets: Rad or Bad?

Marshall University On-site Dietetic Interns

Today's Objectives

- Identify concepts for weight loss in “fad diets” (ketogenic, intermittent fasting, paleo, and lectin-free diets)
- Analyze current evidence-based research and form your own opinion of the fad diets discussed
- Communicate benefits/barriers of fad diets and their concepts with future patients



Intermittent Fasting

Erin Robison & Taylor Bonn

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Overall concept

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**In the past year,
has a patient
asked you about
Intermittent
Fasting?**

Intermittent Fasting

The Basics

<p>Focused on the timing of food consumption (Kunduraci & Ozbeck 2020)</p>	<p>Alternate periods of fasting and normal intake (Keenan et al., 2022)</p>	<p>Lack of evidence for an ideal regimen (White, 2021)</p>
<p>Aimed at increasing calorie restriction compliance (Durgeon et al., 2021)</p>	<p>Lowering calorie intake can lead to beneficial health effects (Duregon et al., 2021)</p>	<p>Rodent research</p>

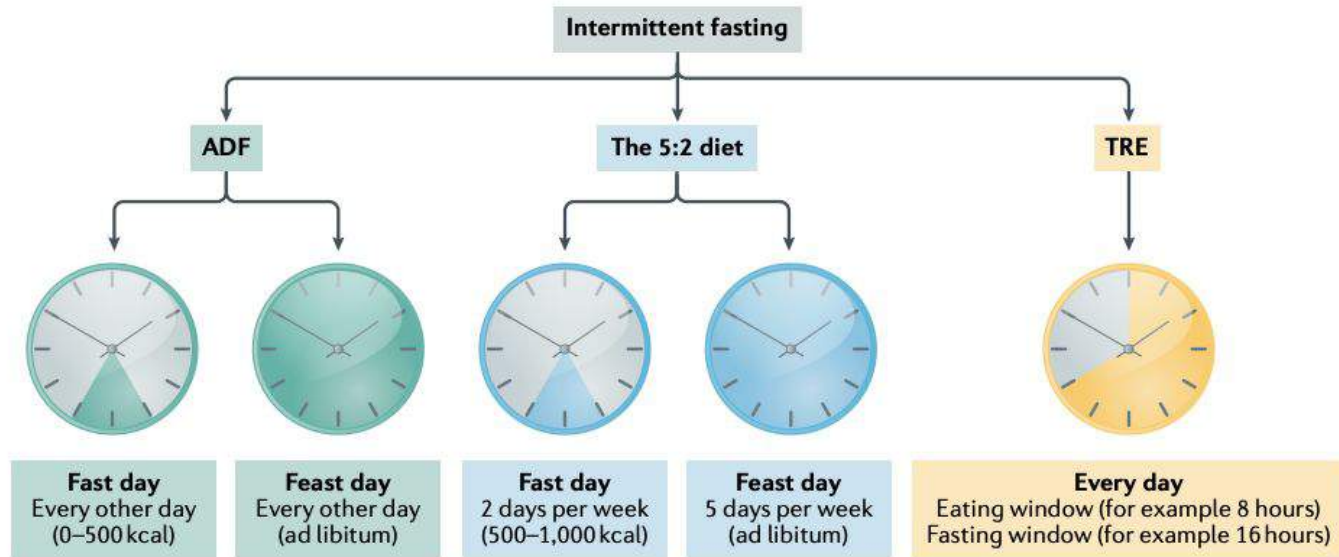


Fig. 1 | Types of intermittent fasting. Timing of food intake during alternate day fasting (ADF), the 5:2 diet and time-restricted eating (TRE). Periods of food intake are depicted by the shaded portions of the clock icon. For TRE, in the majority of trials the suggested eating window is 8 h. For ADF and the 5:2 diet, the suggested food intake window is 17:00 h to 19:00 h. However, the fast day meal can be consumed all at once or spread throughout the day, based on individual preference.

Other Strategies Promoted

Stress Management No specific guidelines provided in IF regimens

No specific guidelines provided in IF regimens

Exercise Practicing exercise alongside this diet has shown positive results for weight loss (Kunduraci & Ozbeck, 2020; Keenan, 2022)

Healthy People 2030

Foods Included/Excluded There are no standard meal guidelines for this diet (White, 2021)

Dietary Guidelines for Americans 2020-2025

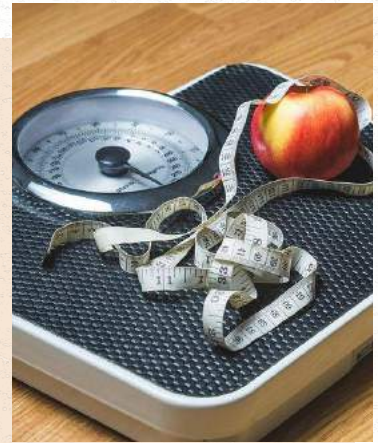
Weight Loss

Proposed processes:

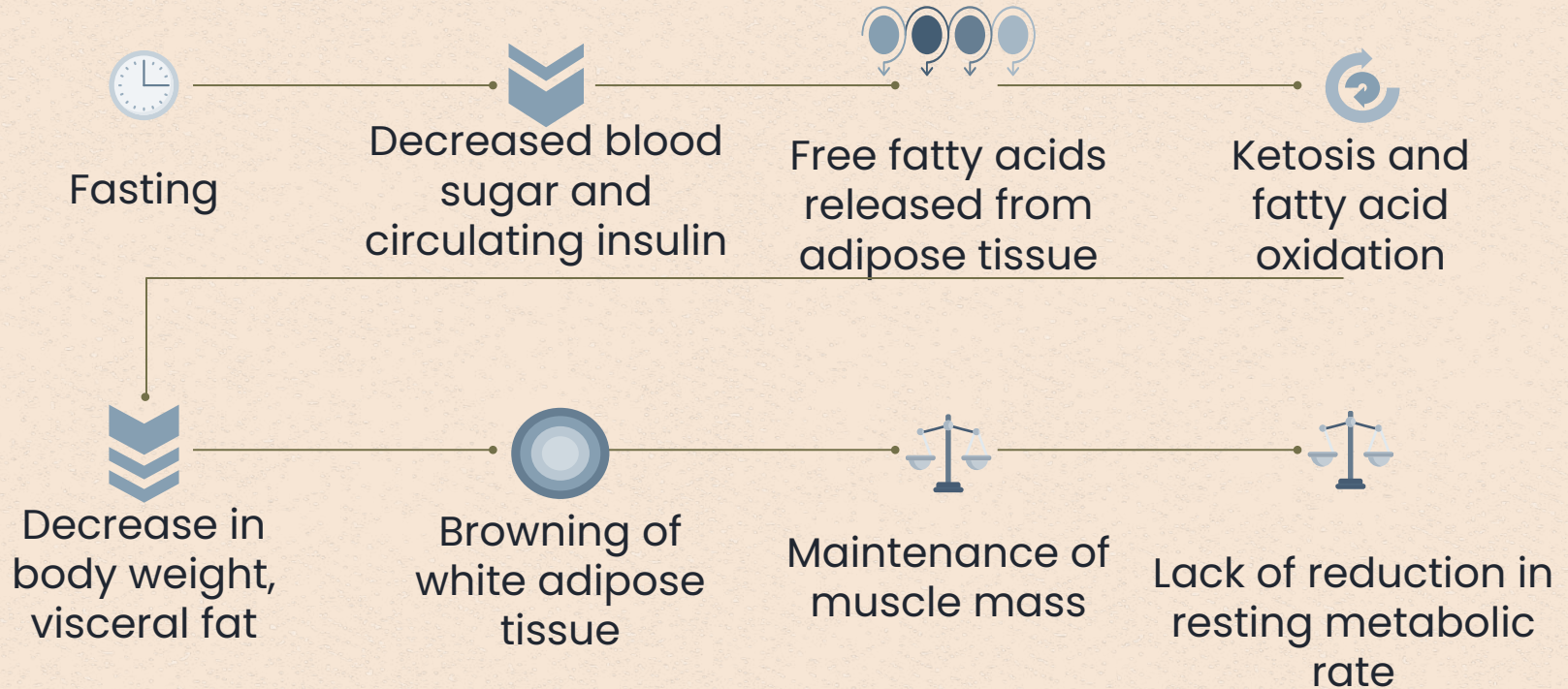
- Alternative method for a reducing total energy intake (Keenan et al., 2022)
- Potential changes in metabolic markers (Keenan et al., 2022)
 - BMI, W/H ratio, cholesterol, LDL, TG (Kunduraci & Ozbeck, 2020)
- May help the struggle with nighttime eating (White, 2021)
- Lower blood glucose and improve insulin sensitivity (Durgeon et al., 2021)

Other evidence:

- Extended overnight fast (18-24hr) more effective at reducing BMI than shorter periods (Durgeon et al 2021)
- Healthy adults have shown weight loss up to 0.2kg/week and improvements in cardiometabolic health
 - No impact on insulin sensitivity (Varady et al, 2022; Duregeon et al, 2021)
- Shorter eating periods has shown to be an effective behavioral intervention in managing metabolic disease complications (Durgeon et al, 2021)
- An eating window < 6 hours/day has shown no additional benefits



Weight Loss Flow Chart



Current Research



Does the Energy Restriction Intermittent Fasting Diet Alleviate Metabolic Syndrome Biomarkers? A Randomized Controlled Trial

Authors: Yasemin Ergul Kunduraci & Hanefi Ozbeck

Participants

70 participants, 18-65 years old with metabolic syndrome, referred to diet clinic

Duration

12 weeks

Intervention

Continuous Energy Restriction (CER) *or* Intermittent Energy Restriction (IER)

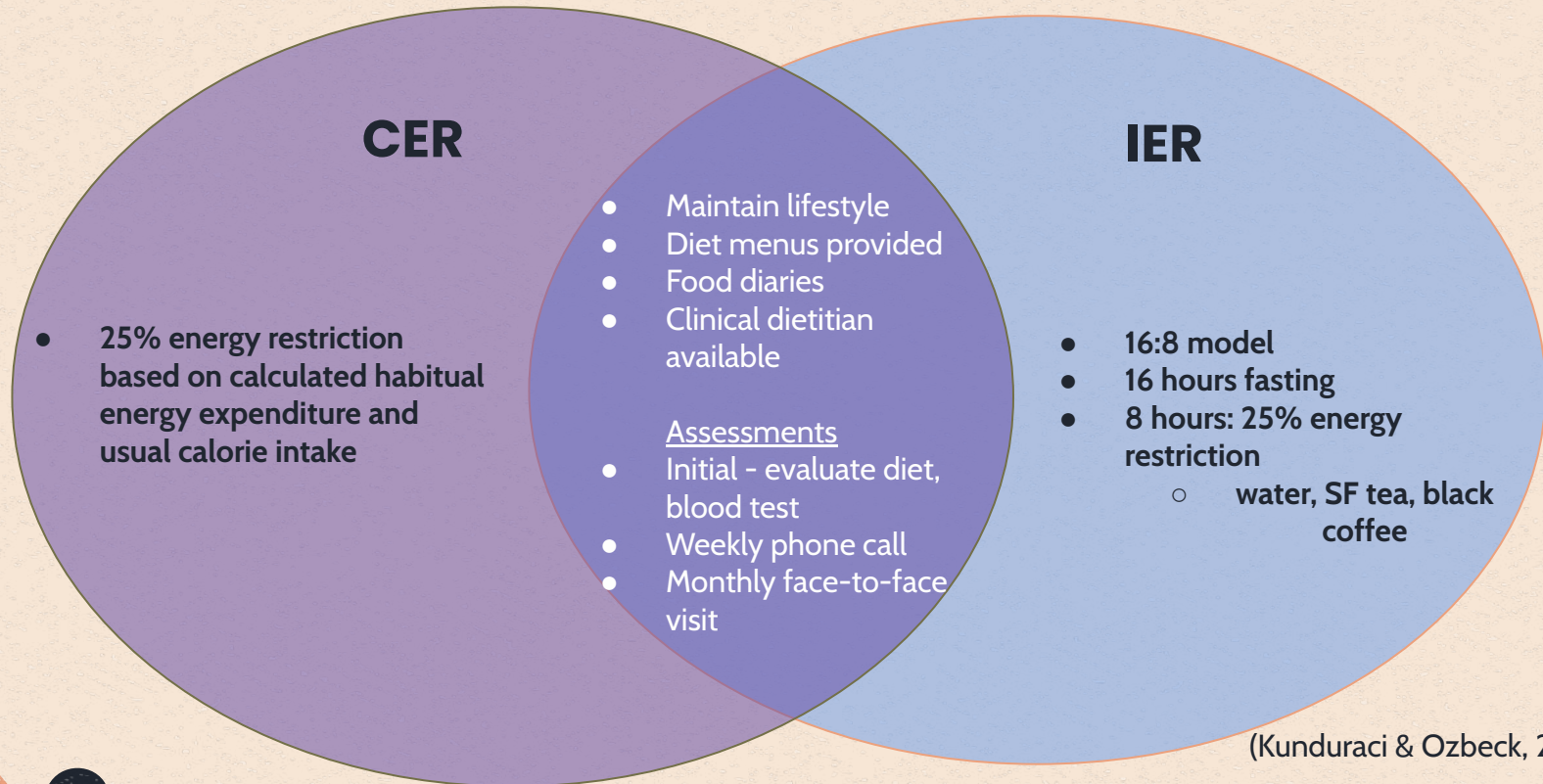
Assessment

24hr diet recall - Healthy Eating Diet Index 2010 - Homeostatic model assessment of insulin resistance (HOMA-IR)

Lipid Profile, Body Composition, Blood Glucose, BP

(Kunduraci & Ozbeck, 2020)

Interventions



(Kunduraci & Ozbeck, 2020)

Results & Implications

Table 3

Changes in blood pressure, lipid profile, and glycemic measures in the IER and CER groups.

	IER Group			CER Group			p-Value ^{##}
	Baseline	12th Week	p-Value [†]	Baseline	12th Week	p-Value [†]	
SBP (mm Hg)	131.88 ± 2.49	124.53 ± 2.11	<0.001	140.73 ± 2.69	127.73 ± 1.85	<0.001	0.146
DBP (mm Hg)	83.97 ± 1.36	79.22 ± 1.15	<0.001	89.06 ± 1.66	80.85 ± 0.95	<0.001	0.277
HDL (mg/dL)	42.50 ± 1.77	43.03 ± 1.78	0.173	46.65 ± 2.24	46.27 ± 2.10	0.175	0.244
LDL (mg/dL)	147.19 ± 5.96	130.19 ± 4.80	<0.001	148.12 ± 5.80	132.15 ± 4.28	<0.001	0.761
TC (mg/dL)	226.88 ± 8.14	197.56 ± 6.58	<0.001	230.09 ± 8.66	200.73 ± 6.15	<0.001	0.726
TG (mg/dL)	212.31 ± 23.52	170.47 ± 12.60	<0.001	197.61 ± 29.95	157.61 ± 13.53	<0.001	0.362
Glucose (mg/dL)	119.19 ± 7.63	103.72 ± 2.70	<0.001	115.06 ± 5.97	101.94 ± 2.40	<0.001	0.777
Insulin (IU/L)	14.40 ± 2.69	12.17 ± 1.81	0.118	15.81 ± 0.34	13.42 ± 1.57	0.046	0.462
HOMA-IR	4.88 ± 0.74	3.59 ± 0.50	<0.001	4.09 ± 0.80	3.15 ± 0.51	0.004	0.369
HbA1c (%)	6.56 ± 0.31	6.24 ± 0.26	<0.001	6.41 ± 0.25	6.10 ± 0.16	<0.001	0.777

*Between group differences were only seen in **serum insulin** levels with the CER group being lower.

Table 2

Body composition measurements in both groups.

	IER Group (n = 32)			CER Group (n = 33)			p-Value ^{##}
	Baseline	12th Week	p-Value [*]	Baseline	12th Week	p-Value [*]	
Weight	97.53 ± 2.82	89.26 ± 2.41	<0.001	88.43 ± 2.00	82.62 ± 1.76	<0.001	0.029
FM (kg)	38.79 ± 1.80	33.27 ± 1.59	<0.001	32.89 ± 1.56	28.80 ± 1.51	<0.001	0.045
FM (%)	39.53 ± 1.23	37.10 ± 1.35	<0.001	37.06 ± 1.34	34.61 ± 1.40	<0.001	0.207
FFM (kg)	58.73 ± 1.85	55.98 ± 1.80	<0.001	55.54 ± 1.59	53.83 ± 1.44	<0.001	0.352
TBW (kg)	43.43 ± 1.34	40.80 ± 1.33	<0.001	40.77 ± 1.06	38.98 ± 1.02	<0.001	0.281
BMI (kg/m ²)	36.58 ± 0.93	33.52 ± 0.87	<0.001	32.82 ± 0.72	30.69 ± 0.65	<0.001	0.011
W/H	1.05 ± 0.02	1.01 ± 0.02	<0.001	1.04 ± 0.02	1.00 ± 0.01	<0.001	0.904
TWL		8.27 ± 0.81			5.80 ± 0.65		0.020
TWL (%)		8.32 ± 0.64			6.42 ± 0.64		0.041
TIW (cm)		6.84 ± 0.57			5.15 ± 0.55		0.015

*No significant between group differences were seen in weight loss markers.

* Both techniques alleviated metabolic syndrome biomarkers via weight loss. Daily food records showed no significant difference in total energy, or macronutrient intake between the diets.

(Kunduraci & Ozbeck, 2020)

Efficacy and Safety of Intermittent Fasting in People with Insulin-Treated Type 2 Diabetes (INTERFAST-2) – A Randomized Control Trial

Participants	46 participants with insulin-dependent type 2 diabetes with HbA1c greater than or equal to 7% and daily insulin dose greater than or equal to 0.3 IU/kg body weight
Intervention	Participants were equally split into a control group and an intermittent fasting (IF) group. The IF group reduced their calories 3 nonconsecutive days of the week by only consuming 25% of their calories. On days where restriction did not occur, participants of the IF group could consume any foods. All participants wore FreeStyle Libre CGM systems.
Duration	12 weeks
Assessment	Analysis of HbA1c, insulin dosage, weight reduction, and fat mass reduction

(Obermayer et al., 2023)

Results

Intermittent fasting in people with insulin treated type 2 diabetes

THE INTERFAST-2 STUDY – A RANDOMIZED, CONTROLLED TRIAL

Participants

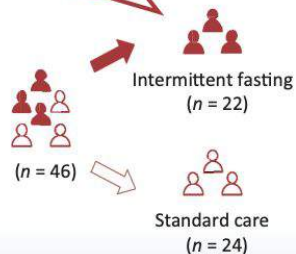


Type 2 diabetes
Insulin therapy
 $HbA_{1c} \geq 7.0\%$
Total daily insulin dose
 ≥ 0.3 IU/kg body weight

Study duration 12 weeks

Intervention

3 nonconsecutive days of
intermittent fasting per week



Results



Intermittent fasting

- ▶ HbA_{1c} ↓
- ▶ Insulin dose ↓
- ▶ Body weight ↓

Diabetes Care.



Funded by the Austrian Science Fund (FWF)
Programme Clinical Research KLI 851-B

Medical University of Graz | Interdisciplinary Metabolic Medicine
Trials Unit

| 1



Connected for Life

(Obermayer et al., 2023)

Intermittent Fasting and Continuous Energy Restriction Result in Similar Changes in Body Composition and Muscle Strength when Combined with a 12 week Resistance Training Program

Participants

34 participants who were 18-45 years old with a BMI of 22-35, body fat percentage greater than 18% for males and 25% for females, and weight stable for 3 months prior to study.

Intervention

Participants were split into 2 groups, one following IF diet and the other following a continuous energy restriction (CERT) diet. The IF group followed the 5:2 method. The CERT group consumed 80% of energy needs daily. Exercise intervention for all participants included 3 training sessions/week.

Duration

12 weeks

Assessment

DEXA, bioelectrical impedance scales, ultrasounds, strength testing, and dietary intake



Results

Both IF and CERT induced comparable increases in lean body mass and strength with comparable reductions in weight and fat when combined with a 12 week resistance training program.



(Keenan et al., 2022)

IF could lead to an increase
in appetite

Not recommended for those
with or those at risk for an
eating disorder

May cause poor side effects

The Con(traindication)s

Overall Assessment

Intermittent energy restriction is a feasible weight loss strategy to improve metabolic biomarkers and is well tolerated although it may pose a risk for certain populations.

An alternative and comparable diet would be continuous energy restriction.

Adherence to IF depends on the individual and varies greatly

IF vs. Continuous Calorie Restriction

RDN in Practice

Talk to doctor prior to starting

Risk for nutrient deficiencies

Conclusion

Individualized
implementation &
recommendations

Positive results
for weight loss

More research is
needed



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Ketogenic Diet

Kenlee Bonecutter and Wendy Chan

Marshall University Dietetic Interns

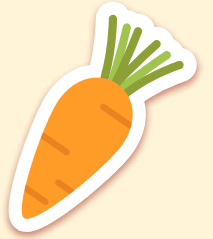




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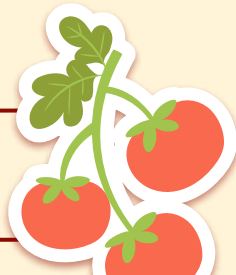
- 2 Understanding the Ketogenic Diet

- 3 Strategies for Diet

- 4 Assessment of the Ketogenic Diet

- 5 Our Assessment

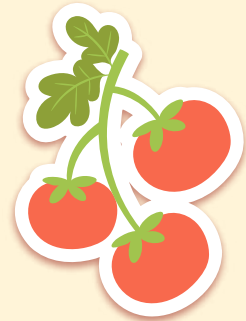
- 6 References





Introduction

- The ketogenic diet has become more and more popular among the general population
- Social media has helped push this diet
- Quick weight loss
- Is it worth it?





Do you know anyone who's tried the keto
diet?

Understanding the Ketogenic Diet

Origin

The Keto diet was first introduced in the 1920s to treat pediatric epilepsy patients

(John Hopkins, 2024)

Goal

The diet aims to facilitate weight loss, enhance mental clarity, and boost energy levels

(Masood et al., 2023)

Nutrients

High fat, moderate protein, restrict carbohydrates

(Gordon, 2019)

Strategies for the Diet

1

Carbs

Consume no more than 50g of carbohydrates per day



2

Fasting

The keto diet is a partial fast, which is why the brain needs the ketones to function



3

Exercise

Burns fat stores



KETO Food Pyramid

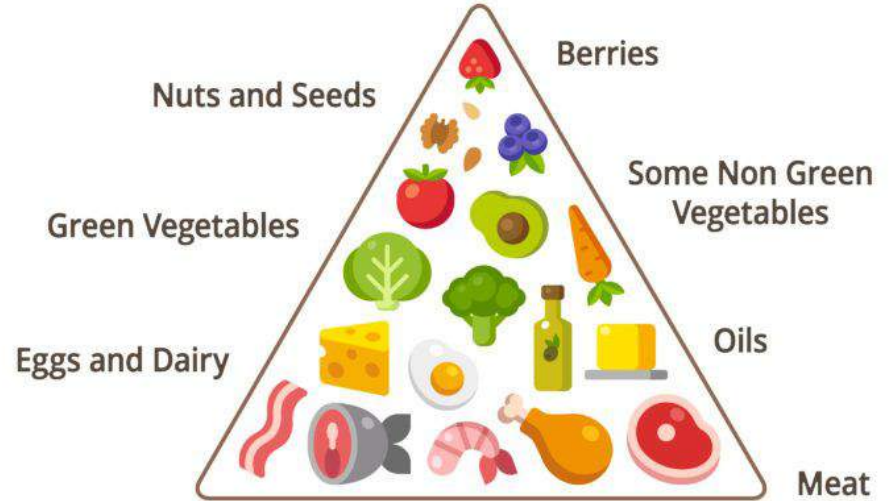
Typical Ketogenic Diet

Protein 30-35%

Carbohydrates 5-10%

Fats 55-60%

(Harvard School of Public Health, 2024)



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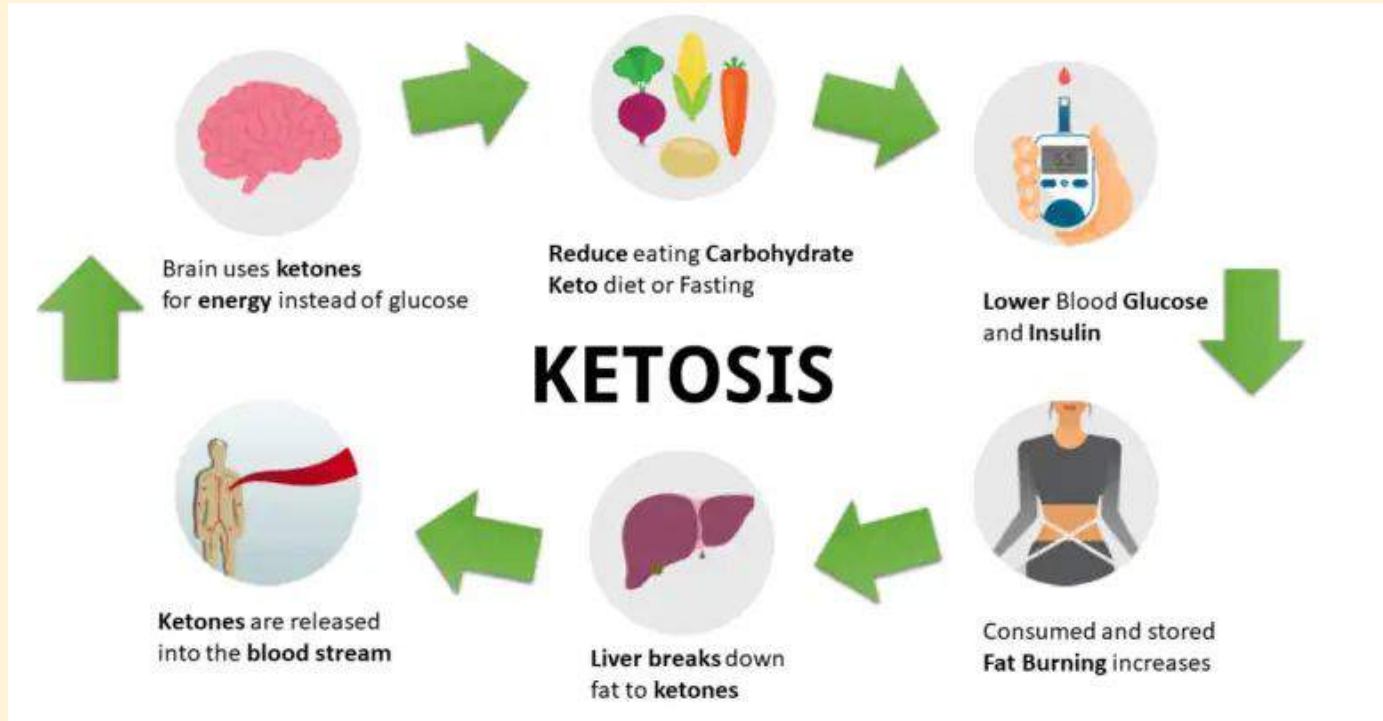


4 Types of the Ketogenic Diet

- Standard ketogenic (SKD) → strictest keto diet
- Targeted keto diet (TKD) → allows extra carbs intake for active individuals
- Cyclical Keto diet → in and out of ketosis (5 keto days followed by 2 "off days")
- High-protein keto diet → similar to SKD, but allow a higher protein intake

(Upton, 2023)

Understanding the Ketogenic Diet: Ketosis

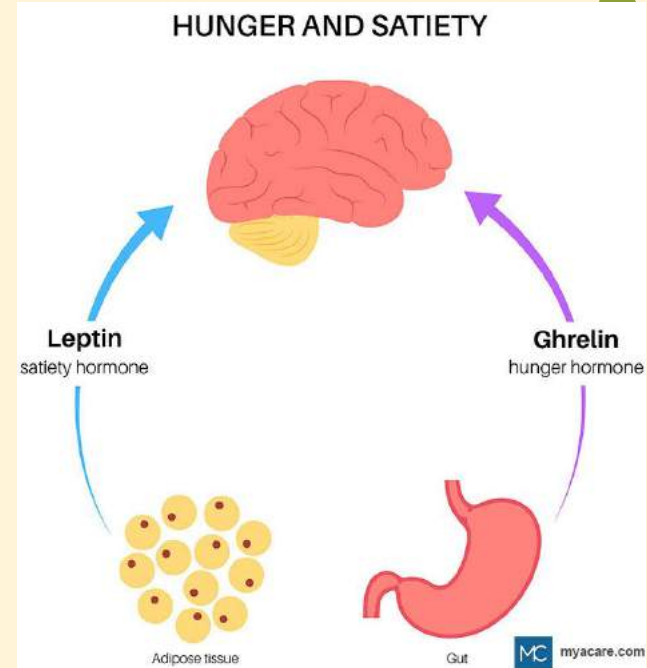


(Eena, 2023)



Understanding the Ketogenic Diet: Weight Loss

- Calorie intake is typically reduced
- Increased calorie expenditure
- Fat and protein provide more satiety
- The level of ghrelin reduces with ketosis
- Barnhart, et. al (2019) found a reduction in visceral fat without jeopardizing performance.



(Harvard School of Public Health, 2024; Dennett, 2019)



Understanding the Ketogenic Diet: Weight Loss

	KD	MD
Body Mass	-7.7 kg	-0.1 kg
Whole Body Percent Fat	-5.1%	-0.7%
Lean Body Mass	-1.4 kg	+0.8 kg
Mean visceral fat volume	-561.3 cc	-1.9 cc

(Barnhart, 2019)



Understanding the Ketogenic Diet: Weight Loss

Article: Effects of Very Low Calorie Ketogenic Diet on the Orexinergic System, Visceral Adipose Tissue, and ROS Production

In a controlled study where 20 obese participants received a nutrition intervention with a very low calorie ketogenic diet (VLCKD), participants showed a significant improvement in anthropometric and biochemical parameters after following the 8 weeks therapy.

Result	Before the diet	After the diet
↓ BMI	32.19	27.76
↓ LDL-C (mg/dL)	141.83	107.57
↓ triglycerides (mg/dL)	135.54	83.25
↓ insulinemia (uIU/mL)	10.53	5.37
↓ weight (kg)	91.33	78.73



RD Opinions

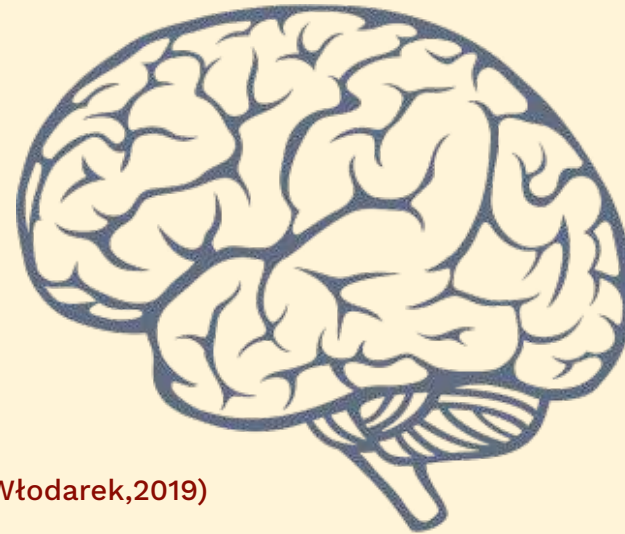
- A quick way for rapid weight loss
- Not recommended for everyone, but may be beneficial to some
- Treatment of epilepsy
- A Keto-Mediterranean diet

(George, 2020; Gordon, 2019; Roehl & Sewak, 2017)



Upcoming Research: Neurodegenerative Diseases

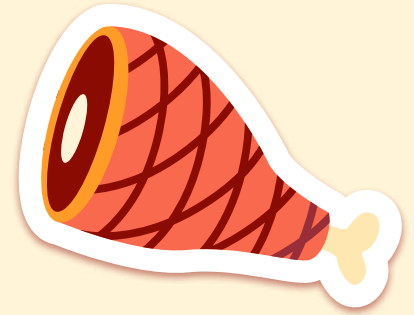
- Ketone and neuroprotective effects
 - Reduces free radicals
 - Reduction of reactive oxygen species production
 - Increase energy output and decreased inflammation
- Improved motor function
- Brain vascular function, increase beneficial gut microbiota, and improve metabolic profile
- MCT oil



(Włodarek,2019)

Assessing the Ketogenic Diet

- **Not recommended for:**
 - Liver conditions
 - Pancreatic Disease
 - Eating disorders or a history of eating disorders
 - Gallbladder disease or gallbladder removal
- **Sustainability**
 - Highly restrictive
 - Hard to follow long term
 - Quick weight gain



(Gordon, 2019)

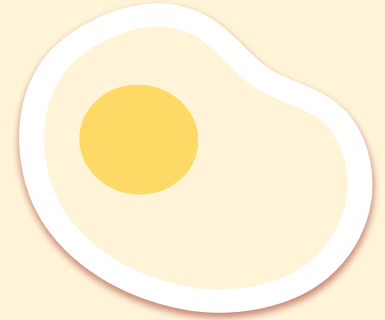
Assessing the Ketogenic Diet

- **Short-Term Effect (Keto flu)**

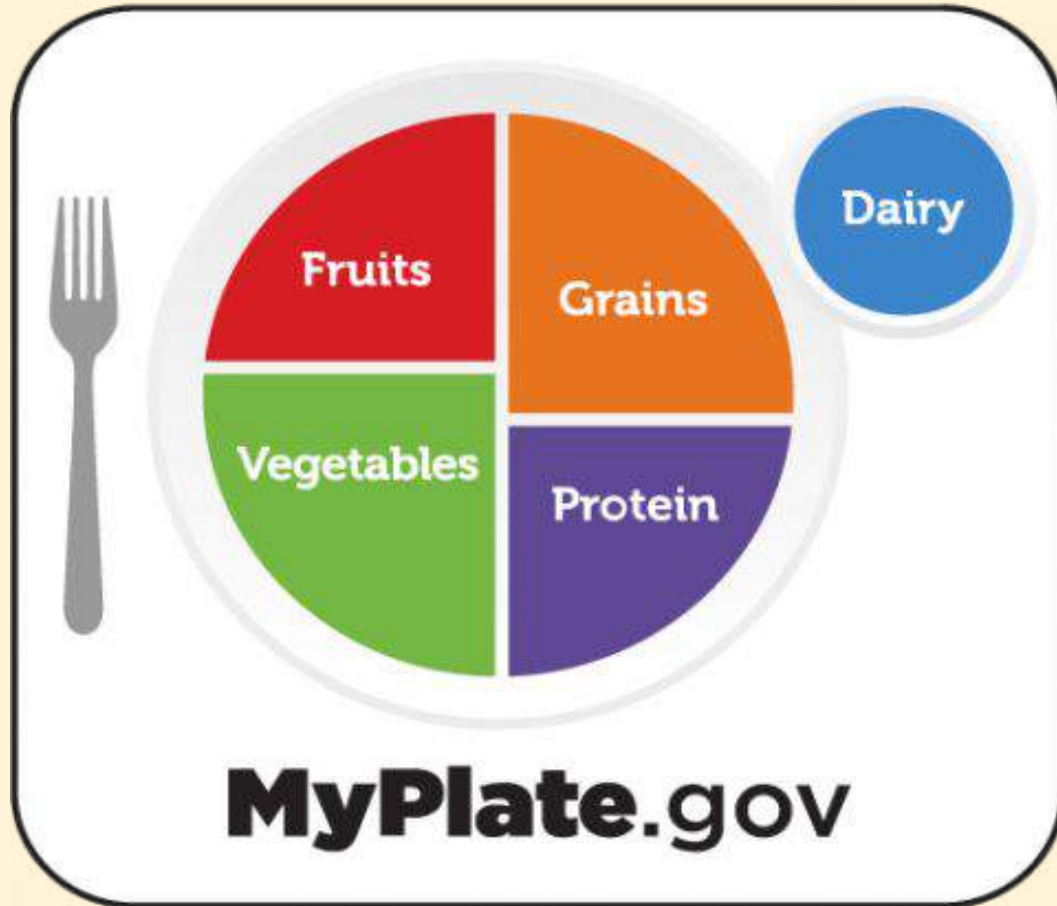
- Fatigue, headache, dizziness, nausea

- **Long-Term Health Risks**

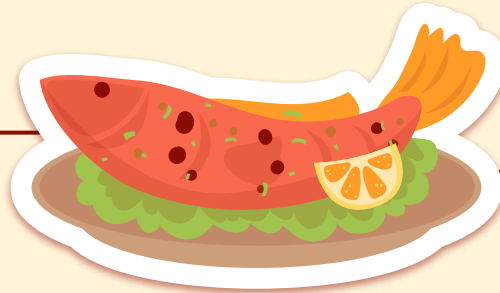
- Kidney stones
- Liver disease
- deficiencies of vitamins and minerals
 - Because so many nutrient-rich foods are cut out, vitamins A, C, K, and folate levels usually are low.



MyPlate



Mediterranean Diet



Building a Base Fruits, vegetables, whole grains

Seafood Shrimp, tuna, salmon

Healthy Fats Monounsaturated and polyunsaturated

Plant Protein Beans, lentils, chickpeas



Conclusion

- Foundation of the ketogenic diet
 - Use fat for energy instead of carbohydrates
- Quick weight loss
 - Burns fat
 - Increased calorie expenditure
- Assessment
 - May be beneficial to some, but not all
 - Highly restrictive
- Upcoming research
 - Neurodegenerative diseases
- Alternative methods



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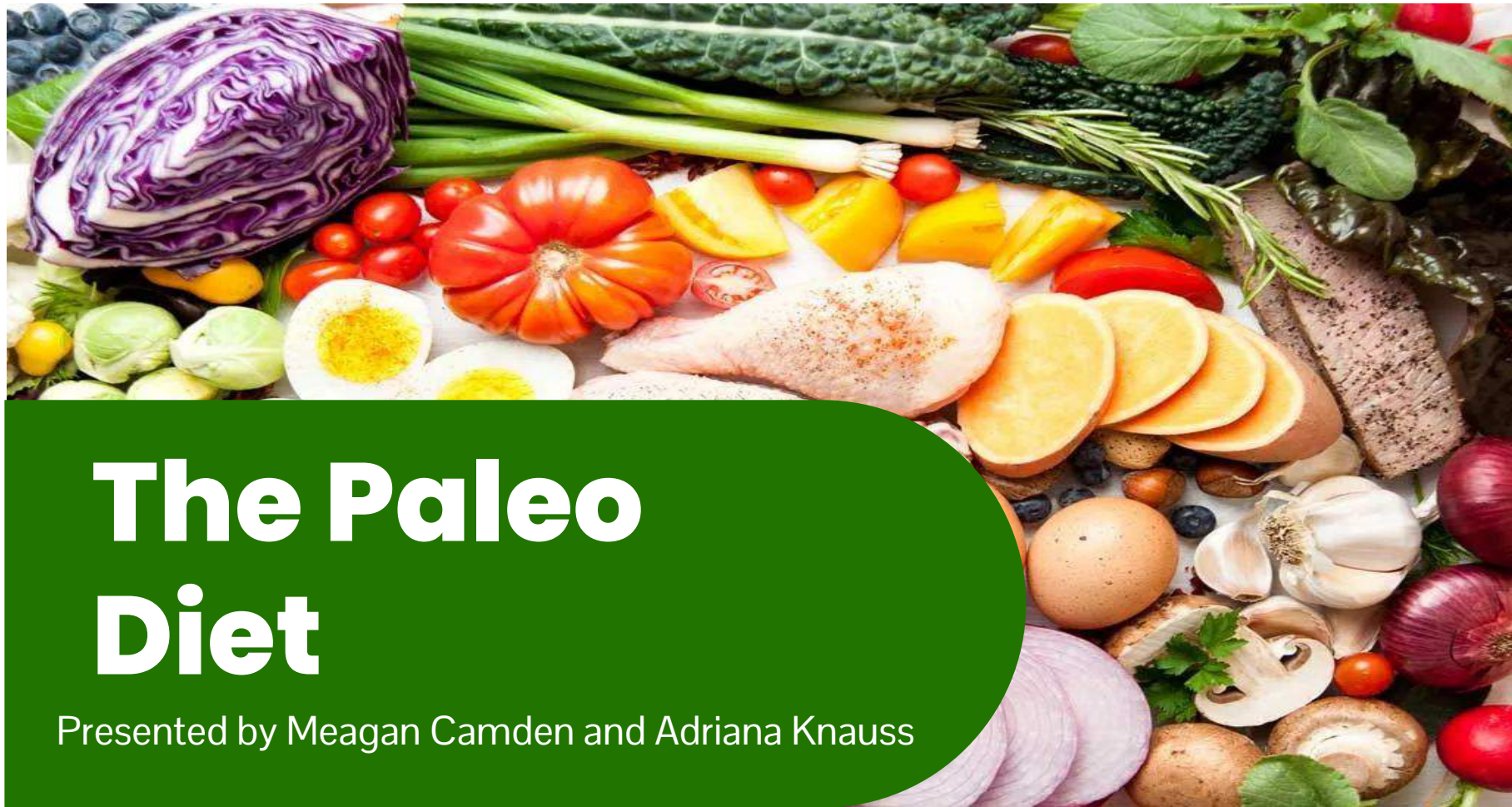
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The Paleo Diet

Presented by Meagan Camden and Adriana Knauss

Eat Right for Your Genes, Body Type, and Personal Health Needs
Prevent and Reverse Disease • Lose Weight Effortlessly
Look and Feel Better Than Ever

THE PALEO CURE

CHRIS KRESSER

NATIONAL BESTSELLER

Originally published as YOUR PERSONAL PALEO CODE

A unique and profound contribution to the field
—Nina Teicholtz, author of *The Big Fat Surprise*

PRIMAL FAT BURNER

LIVE LONGER.
SLOW AGING.
SUPER-POWER
YOUR BRAIN.
AND SAVE YOUR LIFE WITH A
**HIGH-FAT,
LOW-CARB PALEO DIET**

NORA GEDGAUDAS

CNS, NTP, BCNN

FOREWORD BY DAVID PERLMUTTER, MD

Robb Wolf's
PALEO
on a Budget Guide

Learn time-saving cooking techniques. Money-saving tricks. Recommended



Enjoy dining out healthfully on the Paleo diet.

Robb Wolf's
PALEO
Dining Out Guide

Tips for ordering. Lists of what to avoid. Tips on dining out without derailing your diet.

Lose weight. Feel better. Have more energy.

Robb Wolf's 30 Day
PALEO
Transformation

Secrets and tricks for and on the go. The Paleo Solution



Transform YOUR life with the Paleo diet.
New York Times best-selling author of *The Paleo Solution*

The Food Lovers Make it Paleo

over 200 grain free recipes for any occasion



Foreword by Mark Sisson
author of *The Primal Blueprint*

Bill Staley and Hayley Mason
authors of *The Food Lovers Primal Palate*

What is the Paleo Diet?



Also known as...

“Caveman diet,”
“Stone Age diet,”
“Hunter-gatherer diet”



Origin

Paleolithic time
period ~ 2.5 million
years ago



Diet Composition

Focuses on plants (fruits,
vegetables, seeds,, etc.),
lean animals, seafood,
and insects



Does not include

Dairy, grains, legumes
(peanuts, beans, lentils),
alcohol, coffee, salt,
processed foods

Diet and Discrepancies



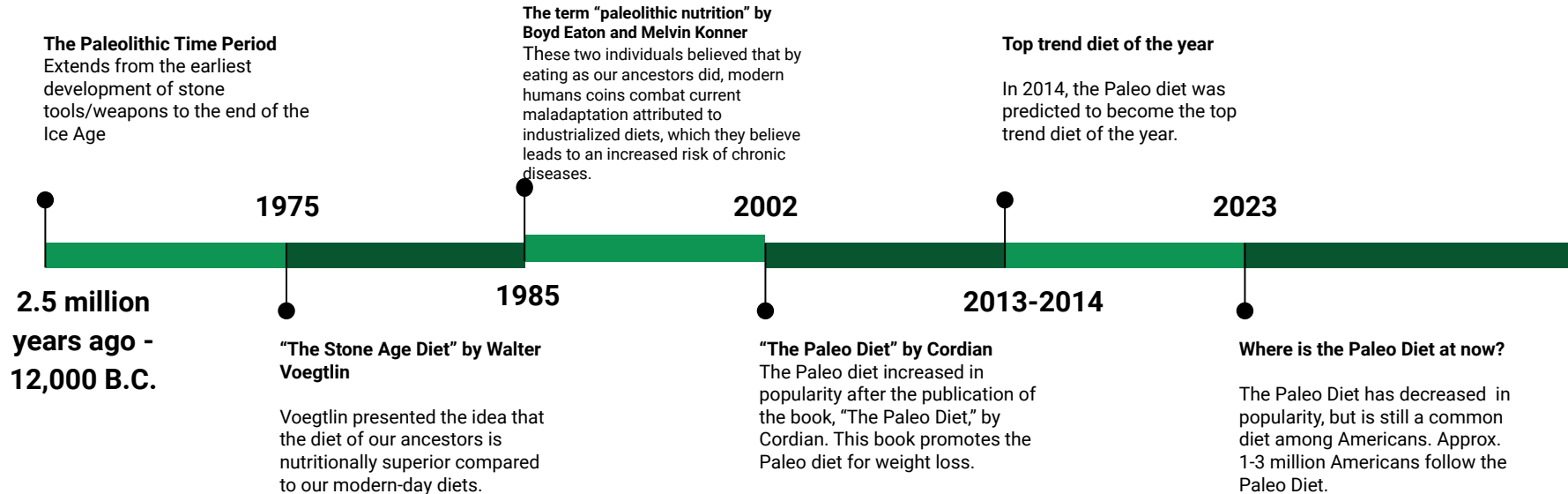
Overall, the Paleo Diet is...

- High in protein
- Moderate in fat (mainly unsaturated)
- Low to moderate carb (restricts high GI carbs)
- High in fiber
- Low in sodium
- Low in refined sugars

However...

- No consensus on a “true” Paleo Diet
- Varies by geographical region and food availability
- Inclusion/exclusion variability
- Lack of resemblance to prehistoric days

Background Information



What foods are included on the diet

→ No specified macronutrient composition. Emphasis on eating certain foods and excluding others in an attempt to eat as humans did during the paleolithic time period.

Foods That Are Included

- | | |
|--|--|
| <ul style="list-style-type: none">-Fresh lean meats<ul style="list-style-type: none">-Fish-Shellfish-Eggs-Nuts, seeds-Fruits-Vegetables | <ul style="list-style-type: none">-Olive oil, coconut oil<ul style="list-style-type: none">-A little honey- Certain root vegetables |
|--|--|

Foods That Are Excluded

- | | |
|---|---|
| <ul style="list-style-type: none">-Whole grains<ul style="list-style-type: none">-Cereals-Refined grains and sugars-Dairy products-White potatoes-Legumes (peanuts, beans, lentils, etc.) | <ul style="list-style-type: none">-Alcohol-Coffee-Salt-Refined vegetable oils-Most processed foods in general |
|---|---|

Different Variations of the Paleo Diet

There are several variations of the Paleo Diet

- No ONE true Paleo diet
- It can be customized based on dietary needs, religious beliefs, health goals, etc.
 - Examples: “80/20 Paleo,” “Autoimmune Paleo,” “Pegan Paleo Diet,” “Ketogenic Paleo”



Various Versions

Basic Paleo

Excludes grains, dairy, soy, refined, and processed foods

80/20 Paleo

Paleo 80% of the time, eat non-Paleo 20% of time

Autoimmune

Nightshades, seeds, nuts, and eggs are avoided

Primal Diet

Organic, raw dairy, fermented soy, some legumes

Ketogenic Paleo

Used by those who have a lot of weight to lose, have diabetes, epilepsy, or bodybuilders

Pegan Diet

“Paleo Vegan”

Exercise on the Paleo Diet

- No true exercise plan for the Paleo diet
- Instead proponents of the Paleo diet often follow a “Paleo Lifestyle”

Paleo Lifestyle Exercise:

- Emphasizes “natural” forms of exercise
 - Examples: walking, short-intense strength sessions
- Preferably outside
- De-emphasizes exercise using machines / the gym
- Emphasizes rest and recovery





RDN's Take on Paleo

Standpoint

Has a lot of good things going for it, but the risk for nutritional deficiencies, boredom, exclusion, and overfocus on food is concerning.



- No dairy → hard to meet calcium and Vit D requirements
- No grains → missing out on fiber, energy, vitamins and minerals
- Don't eliminate unless you have a medical condition

Care from an RDN Viewpoint

- **Recognize** the client's current positive choices
- **Build rapport** and trust even if you don't fully agree with the diet
- **Evaluate safety**
- Focus on what to **include** then exclude
- Help make the diet **sustainable and attainable**

Evidence for Weight Loss: Influence of Paleolithic diet on anthropometric markers in chronic diseases: systematic review and meta analysis

Paleo diet was associated with weight loss, decline in BMI, and decline in waist circumference → can help prevent chronic diseases

- Best results seen in overweight and obese women
 - Better weight loss
 - Significant ↓ in BMI
- Conflicting results in waist circumference: one study WC ↓, another study WC ↑ while weight decreased

Possible hypothesis: Paleo may be satiating → GLP-1 and PYY significantly increased vs control diet

Weaknesses/considerations:

- Longer follow-up and larger sample sizes needed
- Standardization of Paleo diet
- Proven biochemical and pathophysiological mechanisms for the efficacy of the Paleo diet are scarce



(de Menezes et al., 2019)

Review of Article 1: “Gut microbiome response to a modern Paleolithic diet in a Western lifestyle context”

The importance of a diverse gut microbiome	A reduction in gut biodiversity has been theorized to contribute to the development of chronic non-communicable diseases, such as obesity, diabetes, asthma, and IBS.
What dietary factors contribute to a reduction in gut microbiome diversity?	Increased consumption of: Food additives, emulsifiers and xenobiotics Decreased consumption of: microbiota-accessible carbohydrates (MACs)
Could the Paleolithic diet be beneficial at improving gut biodiversity?	Low consumption of processed foods and increased consumption of MACs from plant-based sources are characteristic of the Paleolithic diet.

Review of Article 1: “Gut microbiome response to a modern Paleolithic diet in a Western lifestyle context”

Participants	15 Italians following the Paleo diet and 143 Italians following a Mediterranean-like diet were recruited for the study
Tools for assessment	<p>7-day dietary recall to assess macro- and micro-nutrient intakes of the two groups</p> <p>The PCoA based on Bray-Curtis distances to assess the overall genus-level compositional differences in the GM structure between study groups.</p>
Results	Individuals following the paleolithic diet had a higher biodiversity than those following the Mediterranean diet.

Review of Article 2: “The Effect of the Paleolithic Diet vs. Healthy Diets on Glucose and Insulin Homeostasis: A Systematic Review and Meta-Analysis of Randomized Controlled Trials”

The ADA's stance on diet and diabetes management.

The ADA doesn't suggest one specific eating pattern for the management of diabetes. However, they do suggest diets should emphasize low glycemic index and should exclude refined sugars and processed food.

Why could the Paleo diet be potentially beneficial?

Typical macronutrient make-up of the Paleo diet: 35% of energy from fat, 35% of energy from carbohydrates, and 30% of energy from protein. It's also rich in dietary fiber.



Review of Article 2: “The Effect of the Paleolithic Diet vs. Healthy Diets on Glucose and Insulin Homeostasis: A Systematic Review and Meta-Analysis of Randomized Controlled Trials”

An overview of the study	Meta analysis, compared results from research studies that compared the effects of the Paleo diet vs. typically used, healthy diets on glucose metabolism. 4 research articles were featured.
Comparing the effects of the Paleo diet and control diets on diabetes-related biomarkers	HbA1c: no significant difference between Paleo diet and control diets in lowering A1c levels. Fasting BG levels: no significant difference between the effect of the Paleo diet and the control diets on glucose concentrations. Fasting insulin levels: no significant differences between the effect of the Paleo diet and the control diets on insulin levels. HOMA-IR: no significant differences between the effect of the Paleolithic diet and the control diets on HOMA-IR index.
Conclusion (Jamka et al., 2020).	Based on the findings of this meta-analysis it cannot be inferred that the Paleo diet is more beneficial to use for the management of diabetes. However, it should be noted that the PD has positive effects that are comparable to the control diets.

Review of Article 3: “Intermittent fasting, Paleolithic, or Mediterranean diets in the real world: exploratory secondary analyses of a weight-loss trial that included choice of diet and exercise”

	IF	Mediterranean	Paleo
Weight Loss	Highest	Middle	Low
Biomarkers?	Greatest overall energy deficit Small ↓ WC	↓ HbA1c Small ↓ WC	Small ↓ WC
Adherence	Good	Good	Poor

TABLE 3 Changes in body composition and physical outcomes by diet group

Variable and month	Mediterranean (<i>n</i> = 68)		Intermittent fasting (<i>n</i> = 133)		Paleo (<i>n</i> = 46)		Comparison between diets, <i>P</i> ¹
	<i>n</i>	Mean change from baseline (95% CI)	<i>n</i>	Mean change from baseline (95% CI)	<i>n</i>	Mean change from baseline (95% CI)	
Weight, kg							
6	53	-2.1 (-3.7, -0.6)	116	-4.2 (-5.2, -3.2)	35	-2.8 (-4.8, -0.9)	0.067
12	47	-2.8 (-4.4, -1.2)	99	-4.0 (-5.1, -2.8)	25	-1.8 (-4.0, 0.5)	0.167
Body fat, %							
12	47	-1.9 (-2.8, -0.9)	93	-1.6 (-2.4, -0.9)	24	-1.6 (-3.0, 0.2)	0.939
Visceral fat, cm ³							
12	46	-252 (-397, -108)	93	-243 (-351, -136)	24	-182 (-388, 25)	0.846
Waist circumference, cm							
6	53	-2.8 (-4.5, -1.2)	116	-4.1 (-5.2, -3.0)	35	-3.5 (-5.6, -1.4)	0.419
12	47	-4.0 (-5.7, -2.3)	99	-3.9 (-5.2, -3.0)	25	-2.4 (-4.8, -0.02)	0.499
Systolic blood pressure, mm Hg							
6	52	-3.0 (-6.0, 0.1)	115	-0.9 (-3.0, 1.1)	35	-3.0 (-6.9, 0.8)	0.444
12	46	-5.9 (-9.0, -2.7)	99	-4.9 (-7.2, -2.6)	25	-1.6 (-6.0, 2.7)	0.296
Diastolic blood pressure, mm Hg							
6	52	-2.6 (-4.8, -0.3)	115	-1.7 (-3.3, 0.2)	35	-2.5 (-5.4, 0.4)	0.794
12	46	-3.3 (-5.6, -0.9)	99	-2.9 (-4.6, -1.2)	25	-3.1 (-6.4, -0.2)	0.967

¹Outcomes were analyzed using mixed-effects regression models, with a random effect for participant and an interaction term between diet group and time, adjusting for age, sex, exercise group, randomized support group, physical activity (counts per minute), and baseline. *P* values for overall difference between diet groups at each time are from a Wald test of the diet group and time interaction term.

TABLE 4 Changes in circulating biomarkers at 12 mo by diet group¹

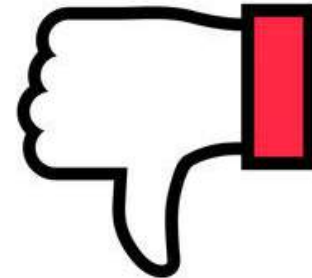
Variable	Mediterranean (<i>n</i> = 68)		Intermittent fasting (<i>n</i> = 133)		Paleo (<i>n</i> = 46)		Comparison between diets, <i>P</i> ²
	<i>n</i>	Mean change from baseline (95% CI)	<i>n</i>	Mean change from baseline (95% CI)	<i>n</i>	Mean change from baseline (95% CI)	
HbA1c, mmol/mol	46	-0.8 (-1.2, -0.4)	92	-0.2 (-0.5, 0.1)	24	-0.2 (-0.7, 0.3)	0.036
hs-CRP, mg/L	46	-0.2 (-0.8, 0.4)	92	0.0 (-0.4, 0.5)	24	0.0 (-0.8, 0.9)	0.800
Total cholesterol, mmol/mol	46	-0.3 (-0.5, -0.1)	92	-0.1 (-0.2, 0.01)	24	-0.3 (-0.6, -0.02)	0.188
LDL cholesterol, mmol/mol	46	-0.2 (-0.4, -0.03)	92	-0.1 (-0.2, 0.01)	24	-0.3 (-0.6, -0.01)	0.144
HDL cholesterol, mmol/mol	46	-0.01 (-0.07, 0.05)	92	0.06 (0.02, 0.10)	24	0.06 (-0.02, 0.14)	0.139
TGs, mmol/mol	46	-0.1 (-0.2, 0.1)	92	-0.2 (-0.3, -0.1)	24	-0.2 (-0.4, 0.04)	0.716
Ghrelin, pg/mL	45	-0.7 (-6.5, 5.2)	92	0.5 (-3.8, 4.8)	24	4.9 (-3.1, 12.9)	0.531

¹HbA1c, glycated hemoglobin; hs-CRP, high-sensitivity C-reactive protein; TG, triglyceride.

²Changes in circulating biomarkers were analyzed using mixed-effects regression models, with a random effect for participant and an interaction term between diet group and time, adjusting for age, sex, exercise group, randomized support group, physical activity (counts per minute), and baseline. *P* values for overall difference between diet groups at each time are from a Wald test of the diet group and time interaction term.

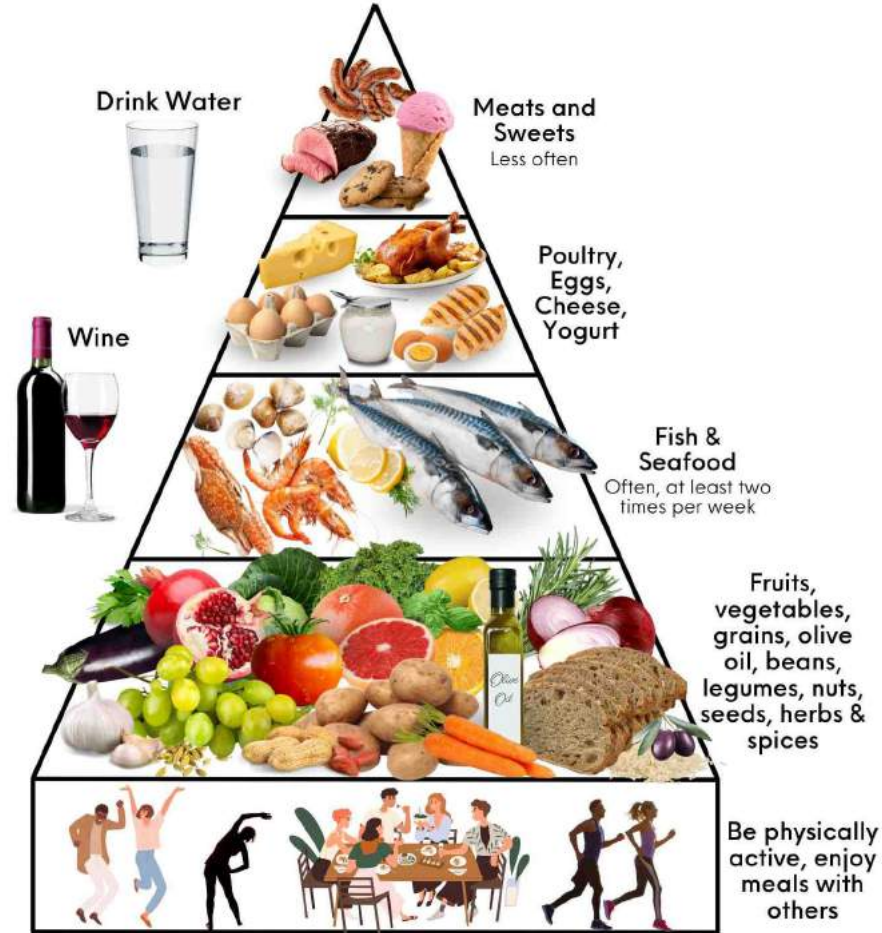
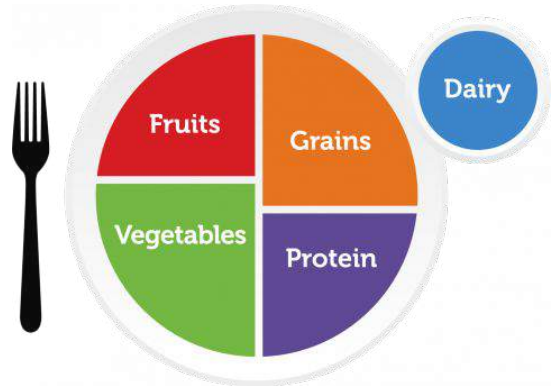
Overall Assessment of Diet

- Not attainable
- Restrictive
- Risk for vitamin and mineral deficiencies
- Too much variety, no standardization of the diet
- Not realistic
- Not much evidence to support the effectiveness of the diet



Would We Recommend a Different Diet?

Yes, Mediterranean or following a balanced diet like MyPlate.



Summary



- Paleo Diet mimics the way our ancestors ate during the paleolithic time
 - Includes fruits, vegetables, meats, fish, shellfish, nuts, seeds
 - Excludes grains, dairy, soy, refined, and processed foods
- Potential benefits: weight loss, decrease in BMI, decrease in waist circumference, improve gut microbiome biodiversity, removes highly processed food
- Disadvantages: Lack of efficacy, sustainability, standardization, restrictive
- Overall we would not recommend this diet



Thanks!

Want to discuss more?

Come talk to Adriana or Meagan for more information!

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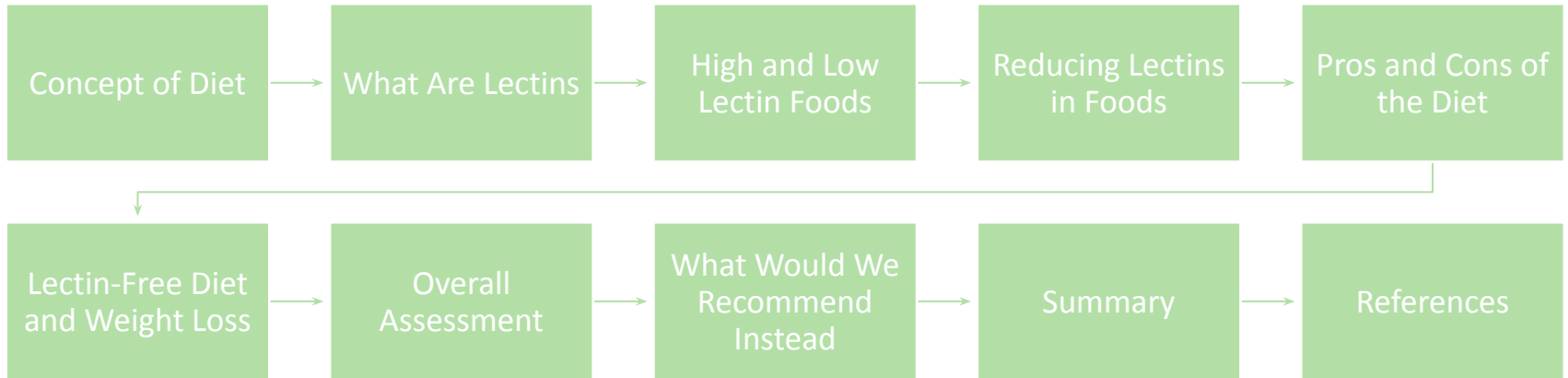
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Lectin-Free (Plant Paradox) Diet

Emilie Riley, Casey Mahoney, and Darshana Sooknundun

Table of Contents



How Can a Diet With So
Little Research Become So
Popular?



Concept of the Diet

- Avoid foods containing lectin, a protein found in grains, legumes, vegetables, and traditional dairy products.
- Eliminates processed foods, emphasis on whole foods
- Main idea: avoiding lectin-containing foods to reduce inflammation and avoid leaky gut.
 - Once eliminating these foods, weight loss and reduced inflammation/improved chronic diseases can be observed.

What are Lectins?

- Carbohydrate-binding protein
- Protects plants
- Non-digestible
- Triggers an immune response
- Good source of B-vitamins, minerals, protein, fiber, and healthy fats



FOODS HIGHEST IN LECTIN



Tomatoes, potatoes, peppers, eggplant, goji berries, and all other nightshade vegetables.



All legumes including lentils, beans, peanuts, and chickpeas.



Peanut butter, peanut oil, and other peanut-based products.



Grains and flours.



Dairy products.



LOW LECTIN FOODS

Apples



Lemons

Asparagus



Mushrooms

Blueberries



Onion

Broccoli



Oranges

Carrots



Pumpkin

Cauliflower



Strawberries

Cherries



Sweet potatoes



Reducing Lectin in Foods

- Cooking can decrease the amount of hemagglutinating activity in pulses and soybean by 93.77-99.81%
- Soaking and cooking both decreased lectin content.
- Cooking showed to be the more effective way to decrease lectin activity in foods.
- Both soaking and cooking significantly decreased lectin content, but the cooking process was more effective and recommended for pulse preparation.

Hemagglutinin Activity			
	Raw	Soaked	Cooked
Whole green pea	5.68±0.00	5.49±0.00	.17±0.00
Split green pea	5.53±0.00	5.30±0.00	.17±0.00
Whole red lentil	11.04±0.00	10.66±0.00	.33±0.00
Split red lentil	10.91±0.00	10.65±0.00	.33±0.00
Whole chickpea	2.74±0.00	2.70±0.00	.17±0.00
Split chickpea	2.73±0.00	2.64±0.00	.17±0.00
Dark red kidney bean	88.52±0.00	86.47±0.00	.17±0.00
Pinto bean	88.59±0.04	87.31±0.01	.17±0.00

Hemagglutinin Activity			
	Raw	Soaked	Cooked
Whole green pea	5.68±0.00	5.49±0.00	.17±0.00
Split green pea	5.53±0.00	5.30±0.00	.17±0.00
Whole red lentil	11.04±0.00	10.66±0.00	.33±0.00
Split red lentil	10.91±0.00	10.65±0.00	.33±0.00
Whole chickpea	2.74±0.00	2.70±0.00	.17±0.00
Split chickpea	2.73±0.00	2.64±0.00	.17±0.00
Dark red kidney bean	88.52±0.00	86.47±0.00	.17±0.00
Pinto bean	88.59±0.04	87.31±0.01	.17±0.00

Perceived Pros and Cons of the Diet

Pros

- Reduce inflammation
- Better nutrient absorption
- Help those with IBS
- Lower disease risk
- Whole foods emphasis
- Anti-cancer benefits

Cons

- Restrictive
- Hard to follow/ not easily accessible
- Reduced intake of micronutrients
- Available research does not concern humans.

Lectin-Free Diet and Weight Loss



There is no scientific evidence showing the healing effects of lectins.



Weight loss could be a result of following a healthier diet.



A lectin-free diet should be generalized vs. avoiding all foods with lectin.

(Zeratsky, 2022)

RDN Review on Lectins

The Study:

Lectins found in wheat germ and red kidney beans were tested on rats.

Results:

Lower levels of heat shock proteins found found in the wheat germ and red kidney bean lectin fed rats compared to the control group.

Issues within the study:

This study utilized a small sample size and was only on rats

Study 2: Cancer Benefits

- Lectins from nettle leaf were exposed to gastric cancer cells for 24 hours.
- White mulberry leaves, Tepary leaves and Lotus Corniculatus were exposed to colorectal cancer cells.
- Decrease in cell proliferation observed.
- Peanut agglutinin lectin showed mitogenic effects on cancer cells.
 - Further research required.

Lack of Research

There is little research on this diet within the past 5-7 years.

There is no research comparing those on the lectin-free diet to those within a control group.

Overall Assessment

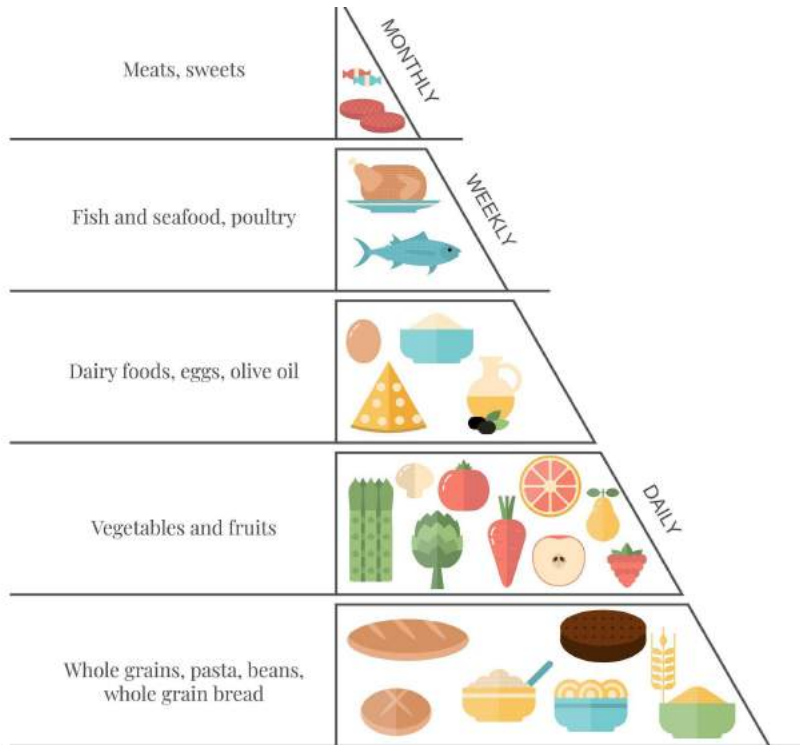
May be beneficial for those with IBS, celiac disease, and those with other GI disorders or autoimmune diseases.

Not recommended for weight loss; lack of nutrients due to restriction

Not enough research to promote diet in practice

Benefits outweigh the risks when consuming lectins

What Would We
Recommend Instead?



(Powers, 2024)

Mediterranean Diet

Mediterranean Diet

- Long-term observational studies and randomized trials of cardiovascular risk factors support the health benefits of the mediterranean diet.
- “Gold standard”
- Emphasis on intake of plants, fish, nuts, seeds, olive oil, seasonal and fresh foods.
- Shown to reduce:
 - Inflammation
 - Obesity
 - Risk of diabetes / glycemic control
 - Hypertension
 - Risk of cardiovascular outcomes
- Not only a healthy diet but a sustainable lifestyle.

(Guasch-Ferre & Willett, 2021)

In the Research: Mediterranean Diet and the Gut Microbiome

- Has been shown to have positive effects on the gut microbiome.
- Foods promoted within the diet have high amounts of anti-inflammatory and antioxidant properties.
- Benefits of the Mediterranean diet outweigh the proposed benefits of the lectin-free diet.

Summary

We would not recommend the lectin-free diet, unless one has a current digestive sensitivity or disease.

- There is not enough research out there supporting the diet
- Most foods do not have enough lectins in them to be harmful
- Not realistically a long-term diet

However, we would recommend the Mediterranean diet.

- Helps reduce inflammation and risk of obesity, diabetes, and CVD
- Realistic lifestyle diet
- Promotes both a healthy diet and environmentally friendly

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Thank you!



Questions/Comments?