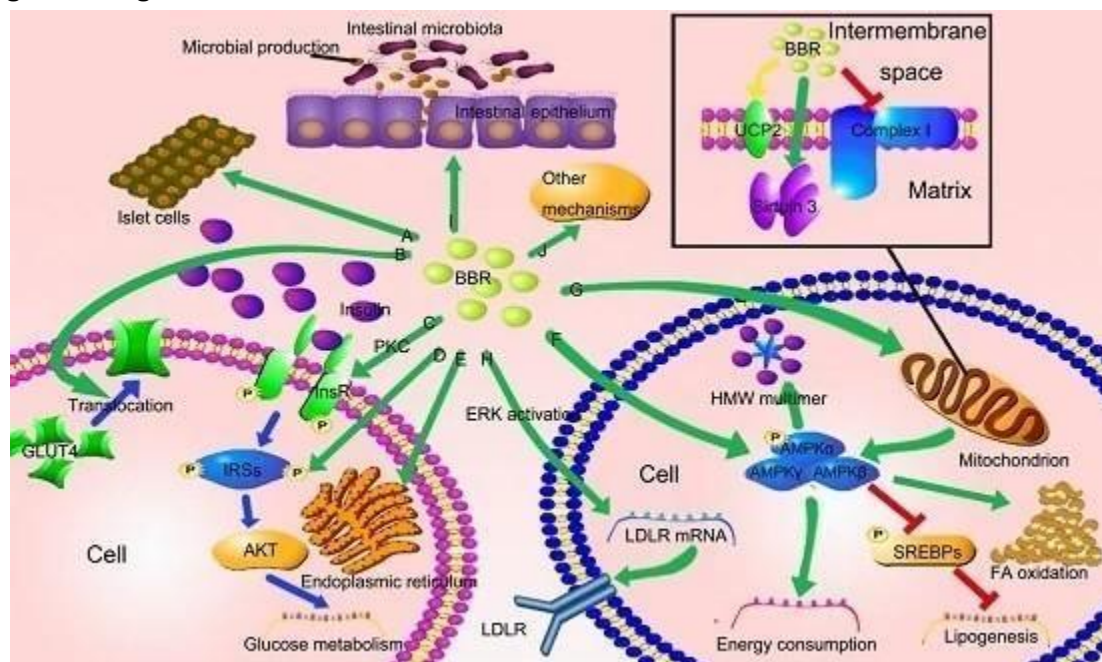
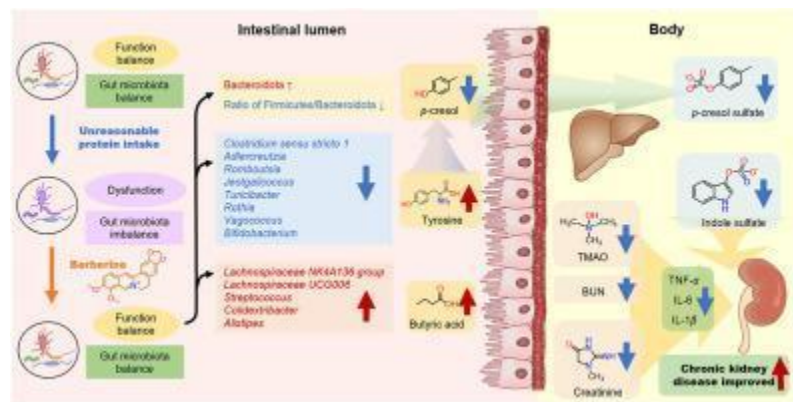


**Berberine is studied in 2,800+ scientific papers** that prove berberine influences the same metabolic pathways as modern drugs. Weight loss, insulin resistance reversal back to normal and a vast increase in beta cell performance in producing insulin and total blockage of *gluconeogenesis in vivo!*

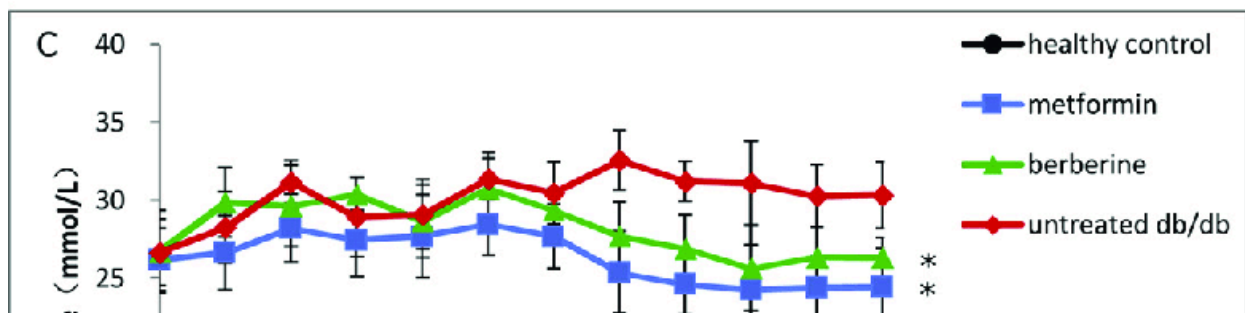
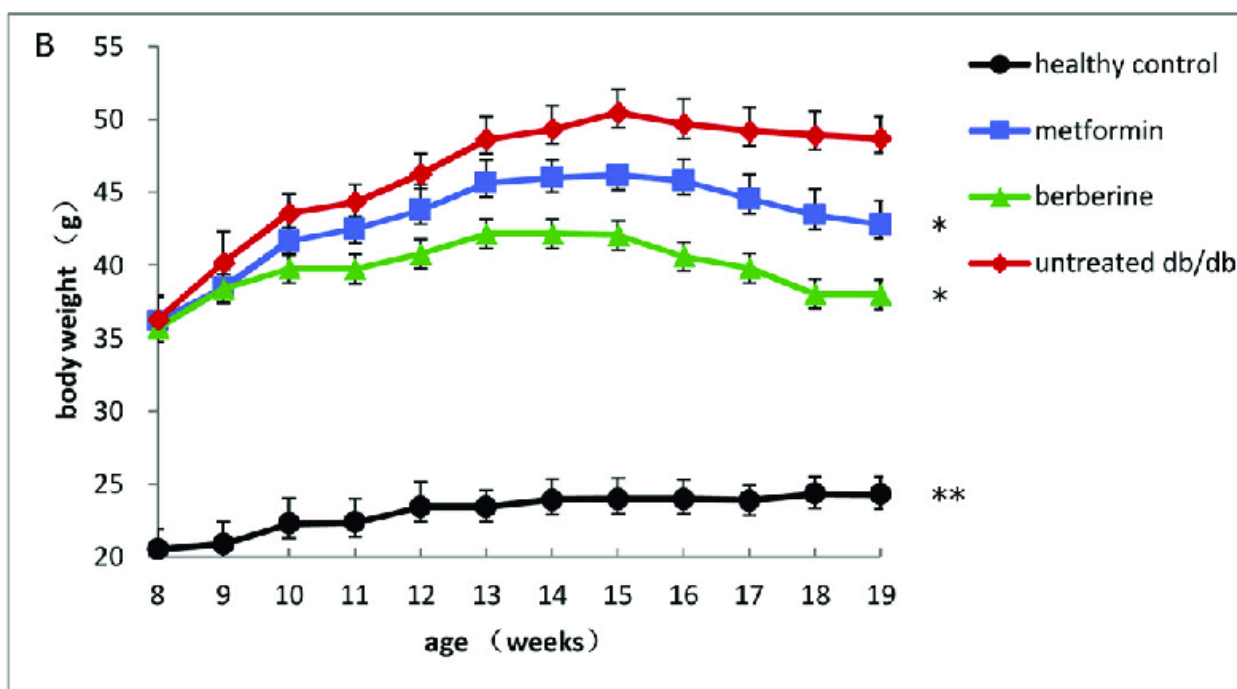
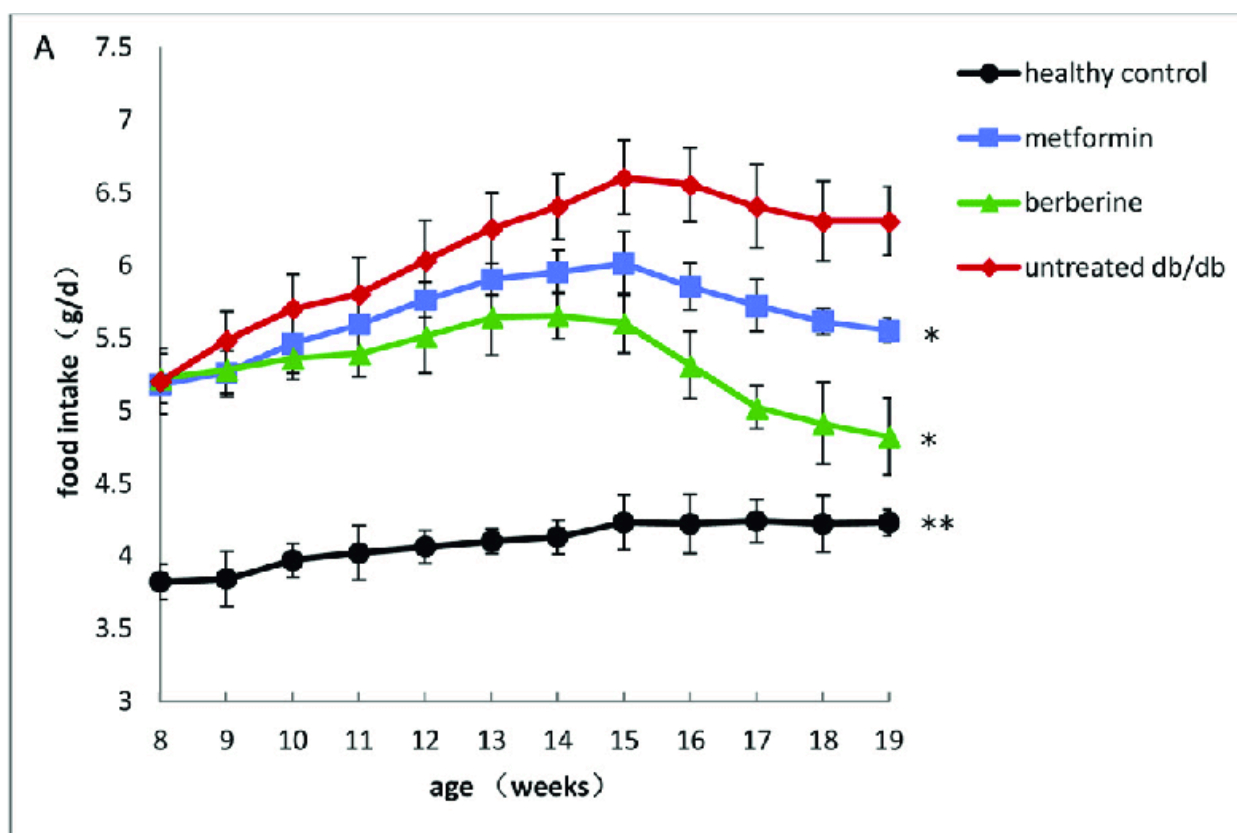


<https://youtu.be/VkczHHDssKo?si=BDPvye7vooFYeAV2>

**Berberine** — a bright yellow compound found in plants like barberry, goldenseal, and Oregon grape. For thousands of years, it appeared in traditional medical systems across Asia and India, long before modern pharmacology existed. <https://share.google/7b3O4g4wCxui2j6Tq>

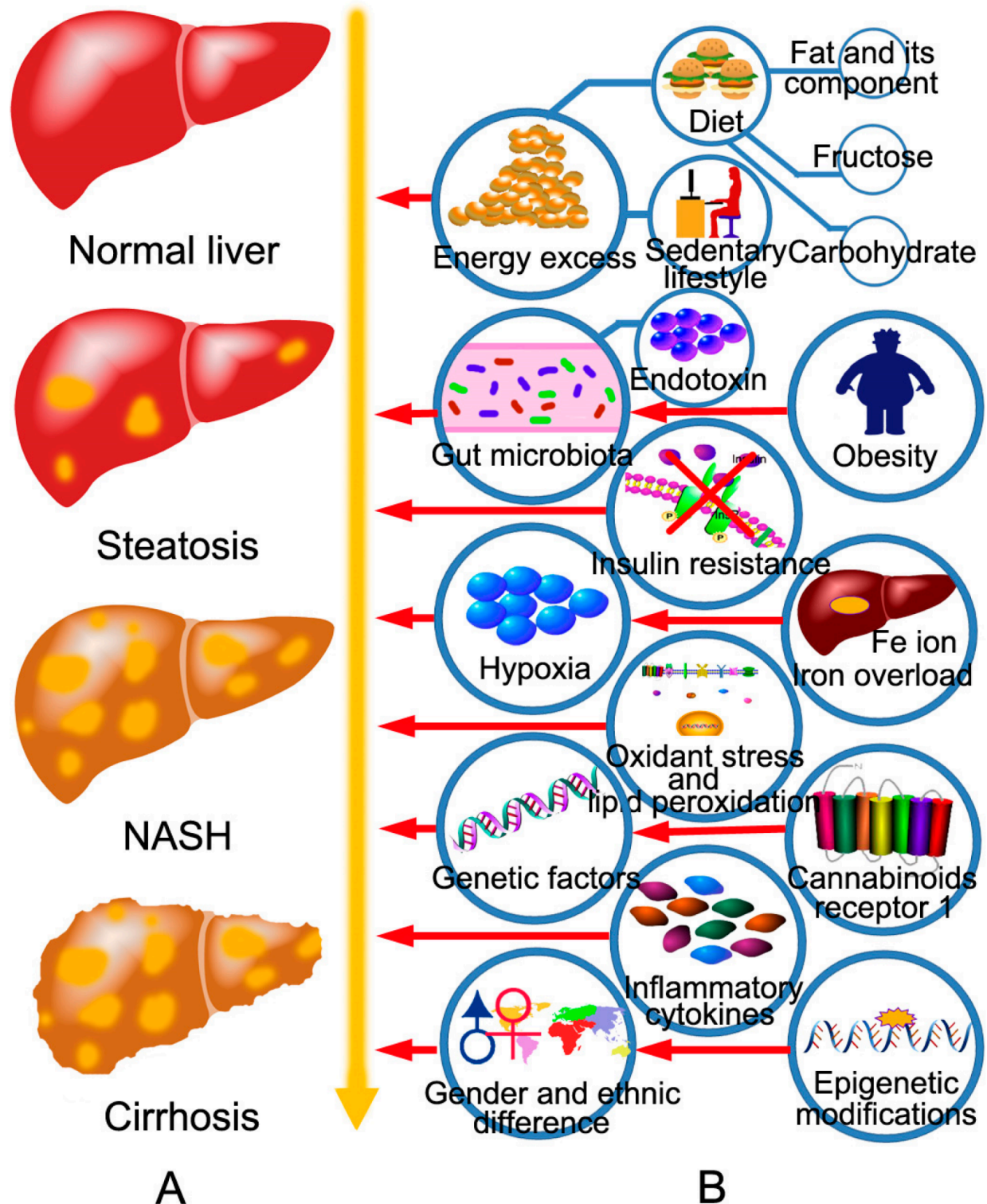


Matched metformin in head to head trial  
Stimulates/Uses same pathway as Ozempic



Appears in Indian Barberry- prescribed For same condition- **metabolic syndrome**.

**Berberine is not a nutrient it's a weapon to kill fungi. To fight insects & to fight bacteria in the soil. A chemical defense system refined over millions of years of evolution.**



When humans consume it berberine activates an enzyme called AMPK. Adenosine monophosphate activated kinase. This is the master metabolic switch. It regulates how

***cells process glucose. How cells burn fat and how they respond to glucose. A survival mechanism. A survival switch. A golden thread connecting plant defense to human health. It designed it for itself. We discovered what protects a root in the soil also protects a body under metabolic stress.***

Tested head to head against metformin 2008

Same dose

Same patients

Same markers

It was statistically indistinguishable

HB1C dropped by 2% in both groups

Fasting glucose fell by -26% with berberine

-23% with metformin

But berberine did something metformin couldn't- triglycerides fell by -36%

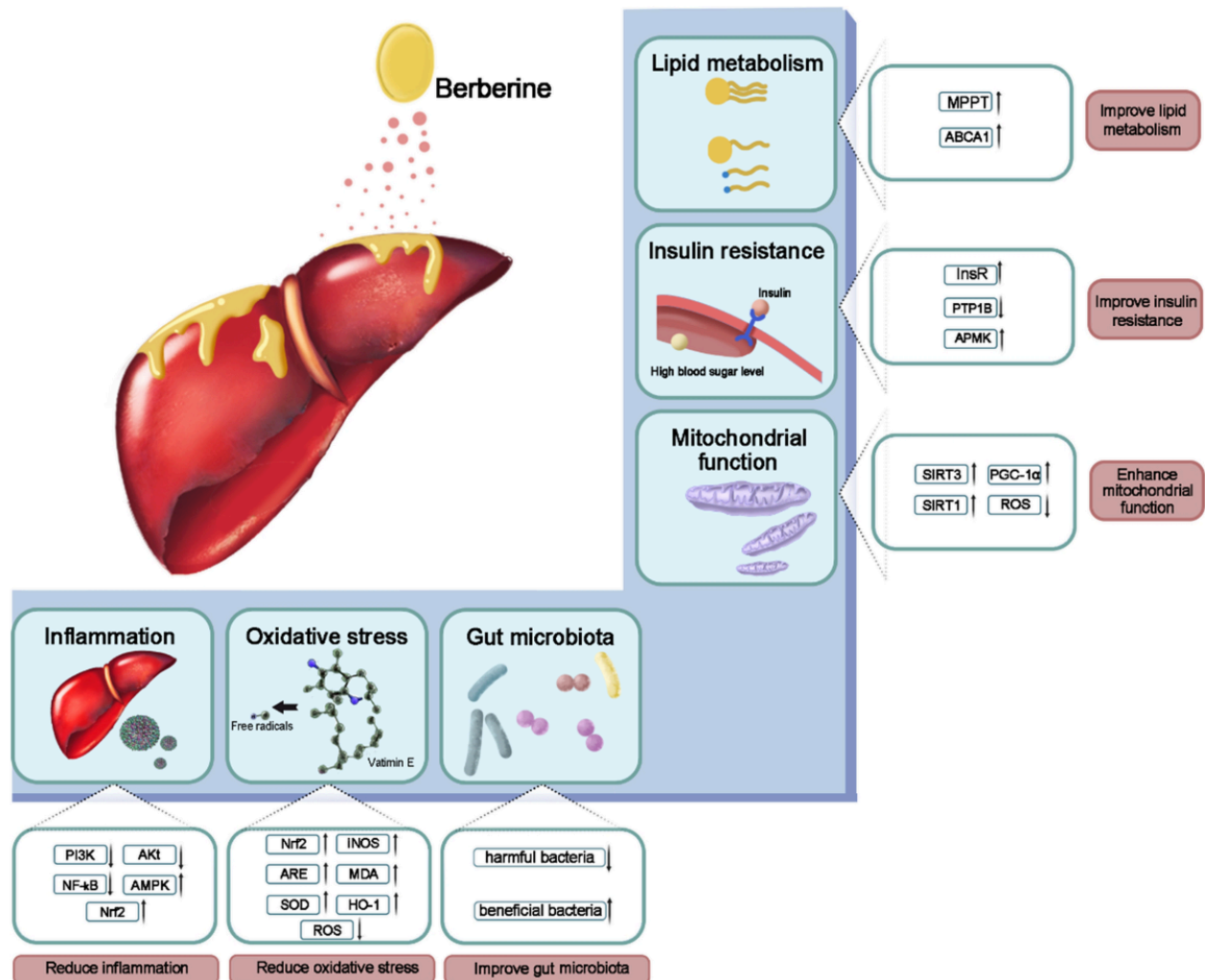
Metformin by -28%

LDL Cholesterol - bad cholesterol - berberine reduced it significantly; metformin did not.

One compound - three mechanisms- pennies per day

2004 Kong et al published a study showing berberine lowered LDL cholesterol at rates comparable to low dose statins through a completely different pathway, upregulating LDL receptors in the liver.





### GLP CONNECTION;

The same downstream pathway that makes **ozempic** the most profitable injection in modern medicine - berberine activates it. Different mechanism, same metabolic cascade.

Ozempic - \$1200/ mo

Statins \$200/ mo

Metformin \$50/ mo

Berberine \$7/ mo

### 3800 pharmaceutical studies

#### 3 mechanisms

And not taught at a single medical school on earth

Yet superior!

It matches 3 prescription drugs for pennies

FDA CLASSIFIES BERBERINE AS DIETARY SUPPLEMENT- NOT A DRUG

As supplement it can not make disease claims

It can not be prescribed

It can not be covered by insurance  
\$19 bn diabetes drugs  
\$21bn GLP injections  
\$19 bn statins  
\$59 bn based on repeat prescriptions

Berberine to fight diabetic neuropathy and post- stroke recovery, while reversing insulin resistance

Diabetic nephropathy (DN), one of severe diabetic complications in the diabetes, is the main cause of end stage renal disease (ESRD). Notably, the currently available medications used to treat DN remain limited. Here, we determined whether berberine (BBR) could enhance the anti-diabetic nephropathy activities of metformin (Met) and explored its possible mechanisms. **Testing confirmed:**

We found that both single Met and BBR treatments, and combination therapy could lower blood glucose, and ameliorate insulin resistance. The improvement of lipids metabolism by co-administration was more evident, as indicated by reduced serum cholesterol and less fat accumulation in the liver. Further, it was found that Met and BBR treatments, and co-administration could attenuate the progression of DN. However, anti-diabetic nephropathy activities of Met were enhanced when combined with BBR, as evidenced by improved renal function and histological abnormalities of diabetic kidney. Mechanistically, BBR enhanced renal-protective effects of Met primarily through potently promoting expression of Trib1, which subsequently downregulated the increased protein levels of CCAAT/enhancer binding protein  $\alpha$  (C/EBP $\alpha$ ), and eventually inhibited fatty synthesis proteins and nuclear factor kappa-B (NF- $\kappa$ B) signaling. This stops and reverses fatty liver disease and; as shown, also triggers burning brown fat.

## Reversing Fatty Liver Disease - FLD

berberine burns liver fat and reverses FLD

Berberine has shown significant potential in studies to burn liver fat and reverse the effects of non-alcoholic fatty liver disease (NAFLD) by acting as a metabolic regulator. It

works at the cellular level to reset metabolism, primarily by activating the **AMP-activated protein kinase (AMPK)** enzyme, which functions as a "metabolic master switch" to increase fat burning and decrease new fat creation (lipogenesis) in the liver.

*National Institutes of Health*

## Key Findings on Berberine and Liver Fat

- **Significant Fat Reduction:** Clinical studies have reported substantial reductions in liver fat content, with one study showing a 57.2% decrease in hepatic fat among participants. Another meta-analysis found berberine significantly improves liver enzymes, lipid profiles, and insulin resistance.
- **Reversing NAFLD:** Research indicates that berberine can reverse hepatic steatosis (fatty liver) and reduce liver damage in both animal models and human trials. It helps decrease liver weight and reduces inflammatory cell infiltration.
- **Mechanism of Action:** Beyond activating AMPK, berberine increases fatty acid
- -oxidation (fat burning), enhances insulin sensitivity (improving how the body manages glucose), and reduces lipogenesis (fat creation).
- **Improvement in Liver Enzymes:** Berberine helps normalize liver enzyme levels (ALT, AST), which are typically elevated in patients with liver damage.
- [National Institutes of Health \(.gov\)](#) +5

## Supporting Metabolic Health

- **Weight Management:** It aids in modest weight reduction, which contributes to reducing fat buildup in the liver.
- **Cholesterol and Lipid Profile:** Berberine regulates LDL receptors, helping clear harmful fats (triglycerides, TC, LDL-c) from the blood.
- **Gut Microbiome Modulation:** It optimizes the gut microbiome by boosting beneficial bacteria, which in turn reduces toxins that drive liver damage.

- [National Institutes of Health \(.gov\) +2](#)

## Considerations and Best Forms

- **Optimal Form:** Liposomal berberine HCl is considered more effective due to higher bioavailability (up to 13.6x greater) compared to regular berberine.
- **Dosage and Timeframe:** Studies often use 500 mg twice daily with meals. Measurable improvements in liver fat and enzymes are typically seen after 8–12 weeks of daily use.
- **Safety:** It is generally safe for daily use,
- **Improves glucose metabolism by directly inhibiting hepatic gluconeogenesis**—the process of creating glucose in the liver—which helps lower fasting blood sugar in type 2 diabetes. It achieves this independently of insulin by activating AMPK, restricting mitochondrial pyruvate uptake, and downregulating key enzymes like PEPCK and G6Pase.

*Note: While many studies show positive results, some researchers indicate that the effectiveness of berberine can be enhanced when paired with lifestyle interventions, such as a balanced diet and regular exercise.*

[National Institutes of Health \(.gov\) +1](#)

## Berberine for Fatty Liver: How It Naturally Supports Liver Health

Oct 17, 2025 — Berberine: Nature's Metabolic Regulator & Science Behind the Switch. Berberine is a bright yellow compound extracted from plants like Barberry, Goldenseal, and ...

Wellbeing Nutrition

## The Therapeutic Effect of Berberine in the Treatment of Nonalcoholic liver Disease:

Method. We searched Embase, Pubmed, Cochrane Library, and so forth, until March 2016 for randomized controlled trials using berberine to treat NAFLD. Result. Si...

[National Institutes of Health \(.gov\)](#)



## Berberine in Non-Alcoholic Fatty Liver Disease—A Review - PMC

Aug 23, 2022 — Abstract. The incidence of Non-Alcoholic Fatty Liver Disease (NAFLD) has been rapidly increasing during the last decade. It is a relevant health problem that af...

National Institutes of Health (.gov)

## Berberine ameliorates nonalcoholic fatty liver disease by decreasing ...

Berberine ameliorates nonalcoholic fatty liver disease by decreasing the liver lipid content via reversing the abnormal expression of MTTP and LDLR \* Ping Chen

National Institutes of Health (.gov)

## The clinical efficacy and safety of berberine in the treatment of non ...

Mar 1, 2024 — Conclusion. This meta-analysis demonstrates berberine's efficacy in improving liver enzymes, lipid profile, and insulin sensitivity in NAFLD patients.

## Berberine improves glucogenesis and lipid metabolism in ... - PubMed

## Berberine inhibits liver damage in rats with non-alcoholic fatty liver disease ...

MAIN POINTS. • Berberine can alleviate the liver tissue steatosis and in- flammatory cell infiltration. • Berberine can reduce the NAFLD activity scores and ser...

Turkish Journal of Gastroenterology

## What to know about berberine, the so-called "nature's Ozempic"

Oct 22, 2025 — Berberine works by triggering the enzyme AMPK (adenosine monophosphate-activated protein kinase) that controls metabolism and energy. "Activating that enzyme in...

## Berberine for Fatty Liver: How It Supports Liver Health

Oct 17, 2025 — Start with 500 mg berberine HCl twice daily with meals

### **Berberine Growing Regions in :**

Region 3 - 7 - **gold thread** - shade loving- slow growing - 7 years to harvest

### **Goldenseal- endangered - grow it**

### **Region 3 - amur Cork tree - bark contains berberine**

**Zone 4 - 8 - barberry** - workhorse- drought- proof - survives - 30°F - grows in poor soil. Root bark is the medicine

Zone 5 - 9 **oregon grape** - evergreen. Root is bright yellow when you cut it open -

### ***Japanese barberry- invasive in NE USA***

### ***Standard dosage***

***500 mg two to three times daily with meals***

***No known interactions***

### ***Metformin- interactions with meds:***

***combined use may cause hypoglycemia***

***Immune suppressants***

***Blood thinners***

Modern research later revealed something remarkable: berberine activates **AMPK**, often called the body's metabolic master switch. This pathway is also associated with treatments used for metabolic health today, including drugs like **Ozempic** and Metformin.

## Berberine for kidney failure

### **Berberine shows**

**potential therapeutic benefits for various kidney conditions** in preclinical (cell and animal) studies by reducing inflammation, oxidative stress, and fibrosis. However, if

you have severe chronic kidney disease (CKD) or are on **dialysis**, **you should avoid using berberine** and consult a medical professional.

Cleveland Clinic Health Essentials

## Important Precautions

- **Consult a doctor:** It is crucial to consult a healthcare professional before starting berberine, especially if you have existing kidney issues, as supplements are not regulated by the [U.S. Food and Drug Administration (FDA)](<https://health.clevelandclinic.org/is-berberine-bad-for-kidneys>) in the same way as medications.
- **Severe CKD/Dialysis:** Avoid using berberine if you have severe chronic kidney disease and are on dialysis, as it may interfere with kidney function and the dialysis process.
- **Drug Interactions:** Berberine can hinder certain liver enzymes involved in metabolizing drugs, which could affect how other medications are broken down in the body.
- [Cleveland Clinic Health Essentials +1](#)

## Potential Benefits (Based on Research)

Scientific studies, primarily in laboratory settings (animal and cell models), suggest that berberine may offer protective effects against different types of kidney damage:

Frontiers

- **Diabetic Kidney Disease (Diabetic Nephropathy):** Berberine has shown promise in ameliorating kidney damage related to diabetes by helping to manage blood sugar, reduce protein in the urine, and alleviate inflammation and fibrosis.
- **Chronic Kidney Disease (CKD):** Research indicates it may slow the progression of CKD by altering gut microbiota composition and inhibiting the production of uremic toxins that can worsen kidney disease.
- **Acute Kidney Injury (AKI):** It has demonstrated protective effects against AKI caused by issues like ischemia-reperfusion injury (damage from interrupted blood flow) and toxicity from certain chemotherapy drugs or antibiotics.

- **Other Conditions:** Studies suggest it may help with kidney damage related to hypertension, high fat diets, kidney stones, and the aging process of the kidneys.

These benefits are linked to berberine's anti-inflammatory, antioxidant, and anti-fibrotic properties. However, more large-scale, long-term clinical trials are necessary to confirm these findings and establish standardized clinical uses and dosages for humans.

*ScienceDirect.com*

### Unveiling the therapeutic potential of berberine: its ... - PMC

\* Abstract. Berberine (BBR) is a pentacyclic benzylisoquinoline alkaloid widely distributed across various medicinal plants. Recent studies have demonstrated th...

PubMed Central (PMC) (.gov)

### Protective effects of berberine on various kidney diseases - PubMed

Oct 1, 2022 — Abstract. Berberine (BBR) is a pentacyclic benzylisoquinoline alkaloid that can be found in diversity of medicinal plants. BBR has a wide range of pharmacologic...

National Institutes of Health (.gov)

### Is Berberine Bad for Kidneys? - Cleveland Clinic Health Essentials

Jun 12, 2025 — Is Berberine Bad for Kidneys? \* Berberine, a staple in traditional Chinese medicine (TCM), has been mainly used to treat diarrhea and other gastrointestinal inf...

Cleveland Clinic Health Essentials

### Protective effects of berberine on various kidney diseases

Oct 1, 2022 — Abstract. Berberine (BBR) is a pentacyclic benzylisoquinoline alkaloid that can be found in diversity of medicinal plants. BBR has a wide range of pharmacologic...

ScienceDirect.com

### its therapeutic role and molecular mechanisms in kidney diseases

Feb 20, 2025 — Recent studies have demonstrated that berberine possesses a broad spectrum of pharmacological activities, including not only antioxidant properties but also the...

Frontiers

### Protective effect of berberine in diabetic nephropathy: A systematic ...

Twenty-five studies were included, and the risk of bias tool from SYRCLE was used to assess the methodological quality. Statistical analysis was conducted using...

ScienceDirect.com

## Berberine ameliorates chronic kidney disease through inhibiting the ... - PMC

Berberine ameliorates chronic kidney disease through inhibiting the production of gut-derived uremic toxins in the gut microbiota \* Libin Pan. 1State Key Labora...

PubMed Central (PMC) (.gov)

## Berberine ameliorates chronic kidney disease through inhibiting the ...

Apr 15, 2023 — ORIGINAL ARTICLE. Berberine ameliorates chronic kidney disease through inhibiting the production of gut-derived uremic toxins in the gut microbiota. ... Abstrac...

ScienceDirect.com

## Berberine Ameliorates Diabetic Kidney Disease by Modulating Macrophage

Mar 2, 2026 — Berberine Ameliorates Diabetic Kidney Disease by Modulating Macrophage Polarization via Inhibiting IL-17A Signaling \* Authors Fan J , Liu Y , Zheng C , Liu J , ...

Dove Medical Press

## Berberine: Benefits, Side Effects, and Weight Loss - WebMD

Aug 28, 2024 — But for some people, this effect could cause blood pressure to drop too low, which can be dangerous. \* Can berberine damage the liver? \* Studies suggest that be...

WebMD

## Protective effects of berberine on high fat-induced kidney damage by ...

Abstract. Berberine (BBR) has been reported in several studies in cell and animal models. However, the mechanism of actions is not fully understood. The present...

National Institutes of Health (NIH) | (.gov)

## The therapeutic effect of Berberine on rodent models of kidney injury

Jul 1, 2025 — Abstract \* Background. Berberine, a potent bioactive compound extracted from the traditional herbal medicine Huanglian (*Coptis chinensis*), has garnered signific...

National Institutes of Health (.gov)

## Berberine protects the liver and kidney against functional disorders ...

Abstract \* Objective(s): Iron is an essential element for living organisms. Iron overload can have detrimental effects on health. This study pertains to the pro...

PubMed Central (PMC) (.gov)

## Berberine Ameliorates Chronic Kidney Injury Caused by Atherosclerotic ...

Mar 26, 2013 — Berberine Ameliorates Chronic Kidney Injury Caused by Atherosclerotic Renovascular Disease through the Suppression of NFκB Signaling Pathway in Rats \* Xin Wan. ...

PLOS

## Berberine protects diabetic nephropathy by suppressing epithelial-to ...

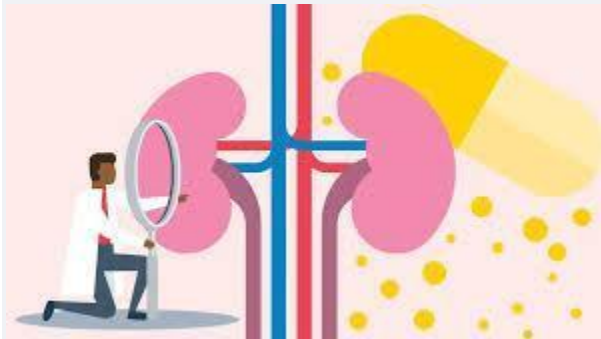
Berberine protects diabetic nephropathy by suppressing epithelial-to-mesenchymal transition involving the inactivation of the NLRP3 inflammasome \* Zejun Ma. aNH...

National Institutes of Health (.gov)

## Is Berberine Bad for Kidneys? - Cleveland Clinic Health Essentials

Jun 12, 2025 — “However, regular monitoring with either a blood or urine test is recommended.” But Dr. Tumah adds that if you have severe chronic kidney disease and are on dia...

Cleveland Clinic Health Essentials



This is for informational purposes only. For medical advice or diagnosis, consult a professional. AI responses may include mistakes. [Learn more](#)

So why is a compound with thousands of studies still relatively unknown to many people?

- The ancient history of berberine in traditional medicine
  - The modern clinical research behind its metabolic effects
  - The plants that naturally contain berberine
  - How different species grow across climate zones
  - Safety considerations and dosage used in scientific studies
- understanding the intersection between ancient botanical knowledge and modern science. **The story of berberine is a reminder that sometimes the most fascinating discoveries are not**



**new inventions — but old**

Metabolic syndrome is a cluster of conditions—large waistline, high blood pressure, high triglycerides, low HDL cholesterol, and high fasting blood sugar—that significantly increase the risk of heart disease, diabetes, and stroke

- . It is primarily caused by obesity, insulin resistance, physical inactivity, and genetics
- . Treatment focuses on lifestyle changes, including weight loss, healthy eating, and exercise

.

## Key Details on Metabolic Syndrome

- **Definition & Diagnosis:** You are diagnosed with metabolic syndrome if you have three or more of the following:
  - **Large Waistline:**
    - 40 inches (men) or
    - 35 inches (women).
  - **High Blood Pressure:**
    - 130/85 mmHg or using blood pressure medication.
  - **High Triglycerides:**
    - 150 mg/dL.
  - **Low HDL Cholesterol:** < 40 mg/dL (men) or < 50 mg/dL (women).
  - **High Fasting Blood Sugar:**
    - 100 mg/dL or taking medication for high blood sugar.
- **Symptoms:** Generally, there are no obvious physical symptoms other than a large waist circumference, though some people may have high blood pressure.
- **Causes & Risk Factors:** The main drivers are obesity (particularly abdominal fat), lack of physical activity, genetics, and insulin resistance. Risk increases with age.
- **Long-term Effects:** Untreated, it leads to Type 2 diabetes, heart attack, stroke, and atherosclerosis.
- **Treatment & Prevention:** The primary treatment is lifestyle modification: losing 7% to 10% of body weight, exercising (e.g., 30 minutes of brisk walking daily), and eating a heart-healthy diet. Medications may be used to manage blood pressure, cholesterol, and blood sugar.
- **Cleveland Clinic +9**

[metabolic syndrome components diagram]

[visceral fat and insulin resistance illustration]

## What is Metabolic Syndrome? - American Heart Association

Metabolic syndrome is a group of five conditions that can lead to heart disease, diabetes, stroke and other health problems. Metabolic syndrome is diagnosed whe...

[www.heart.org](http://www.heart.org)

## Metabolic syndrome - Symptoms & causes - Mayo Clinic

Overview. Metabolic syndrome is a group of conditions that increase the risk of heart disease, stroke and type 2 diabetes. These conditions include high blood p...

Mayo Clinic

## Metabolic syndrome | Better Health Channel

Metabolic syndrome is a collection of conditions that often occur together and increase your risk of diabetes, stroke and heart disease. The main components of ...

Better Health Channel

## Metabolic Syndrome: Nursing School Nutrition Essentials Education ...

YouTube · Level Up RN

0:46

## Metabolic Syndrome: Risk Behind Heart Disease, Stroke and Diabetes

YouTube · Max Healthcare

## Metabolic Syndrome: What It Is, Causes, Symptoms & Treatment

A person meets the criteria for metabolic syndrome if they have at least three of the following: \* Excess abdominal weight: A waist circumference of more than 50in

Cleveland Clinic

## Metabolic syndrome - Diagnosis & treatment - Mayo Clinic

Diagnosis of metabolic syndrome is based on medical history, family medical history, a physical exam, and blood pressure and blood tests. The National Institute...

Mayo Clinic

## Metabolic Syndrome: Risk Factors, Diagnosis, and More - Healthline

What is metabolic syndrome? Metabolic syndrome is a group of five risk factors, that when left untreated, increase the likelihood of developing heart disease, d...