



The Medicinal Properties of Berberine

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Introduction

Berberine is a compound that is extracted from a variety of herbs, such as

- European barberry
- Goldenseal
- Goldthread
- Greater celandine
- Oregon grape
- Phellodendron
- Tree turmeric



<https://www.healthdirections.com/articles/blood-sugar/what-is-berberine-research-and-benefits>

Research Question

What is berberine and how can it heal the body:

Berberine is a quaternary protoberberine alkaloid (QPS) that is found in barks, leaves, twigs, rhizomes, roots, and stems of the plants listed above (Neag et al., 2018).

Berberine reduces body mass index (BMI), systolic blood pressure, triglycerides (blood fats), and blood sugar levels in people with metabolic syndrome (Cao & Su, 2019). It's used to treat various ailments like inflammation, infectious diseases, constipation, fevers, diabetes, high cholesterol, and other pathologies.

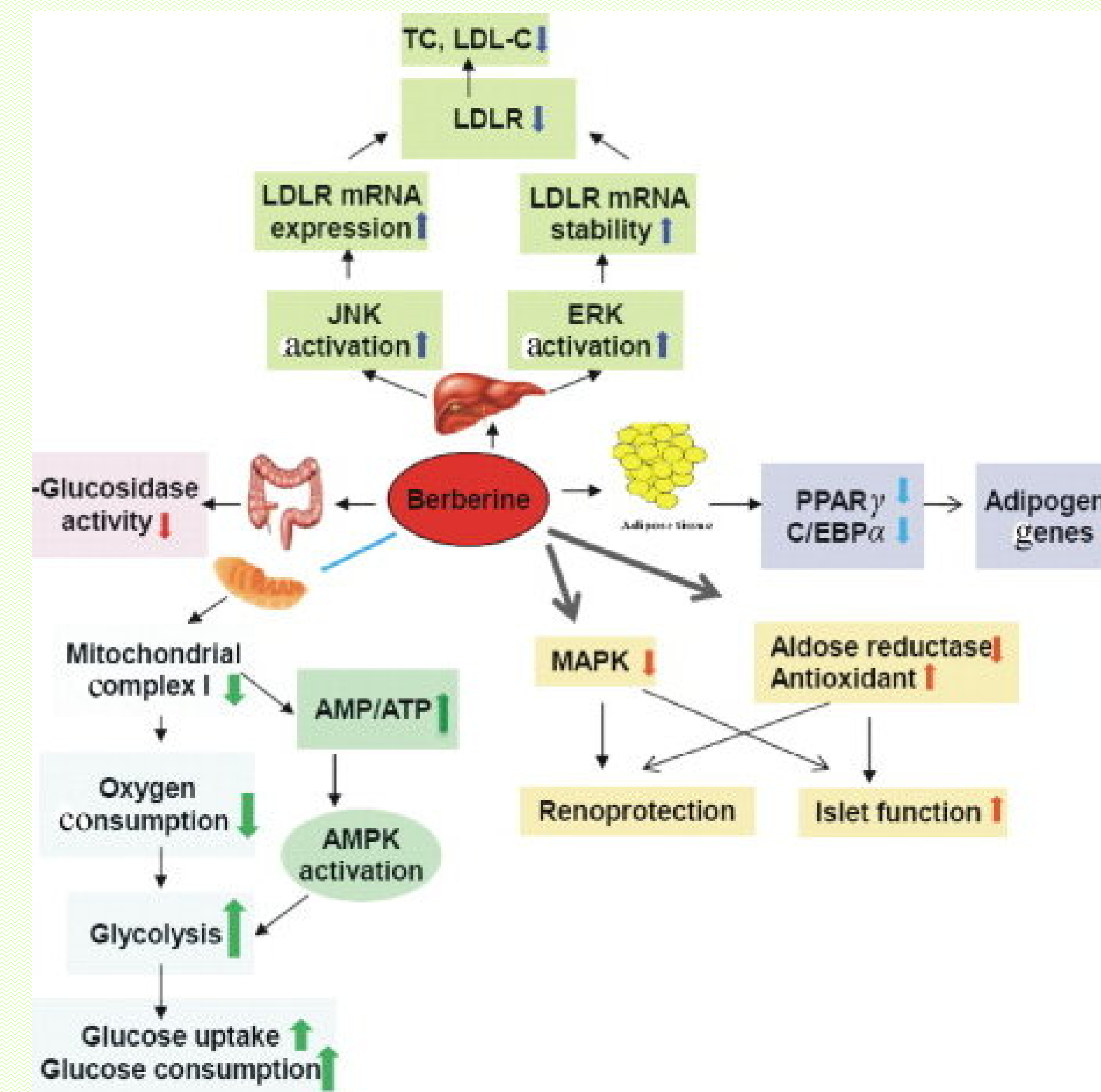
Background Information

- It has more than 3,000 years of history, the oldest evidence of use was written on clay tablets in the library of the Assyrian emperor Asurbanipal during 650 BC, as a blood purifying agent (Neag et al., 2018).

- Berberine was first isolated in 1917 from goldenseal (*Hydrastis canadensis*), a North American herb.

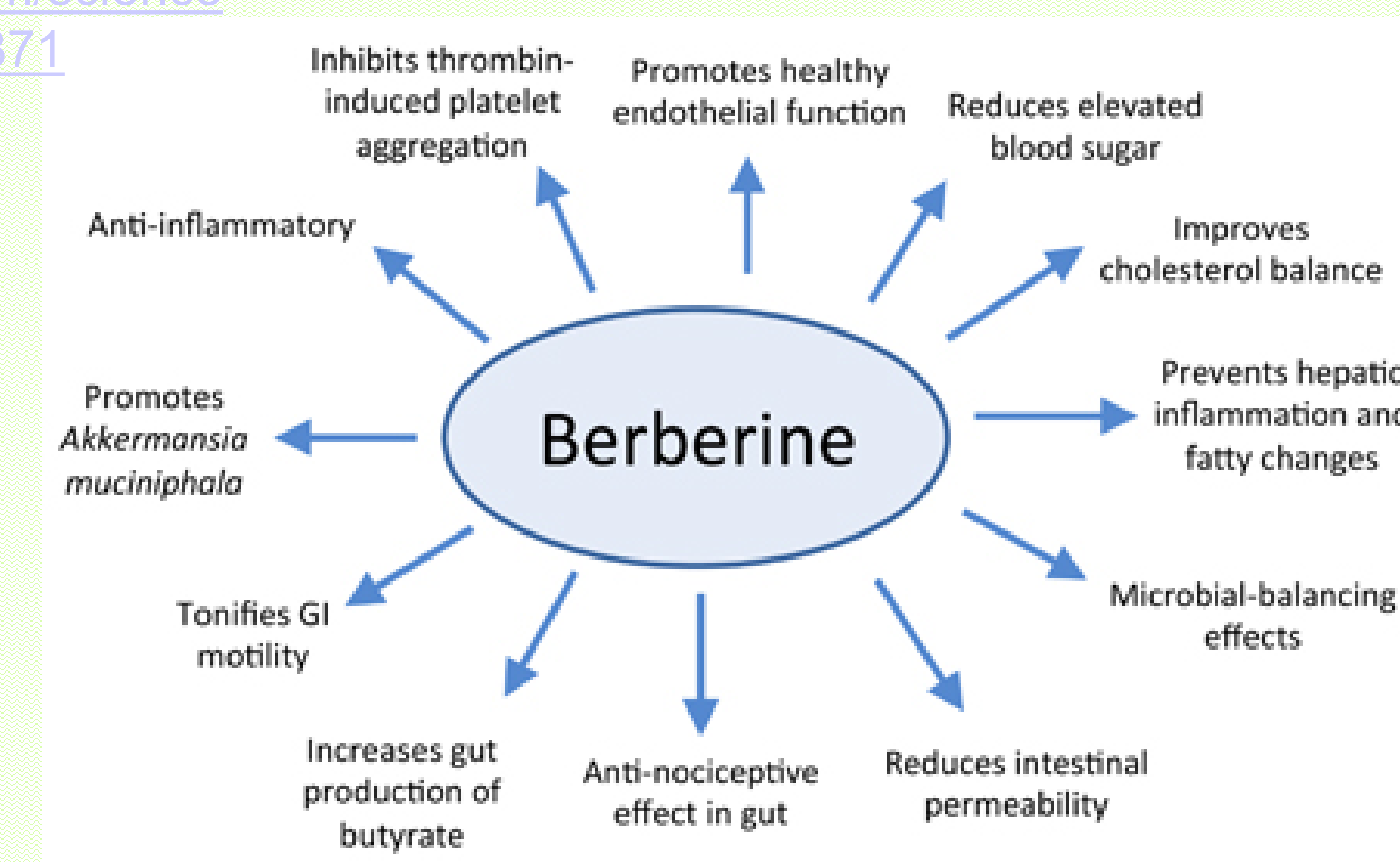
- The US Food and Drug Administration has not yet approved berberine for any prescription or over-the-counter drug use.

- The hypoglycemic effect of berberine was found in 1988 when berberine was used to treat diarrhea in diabetic patients in China.

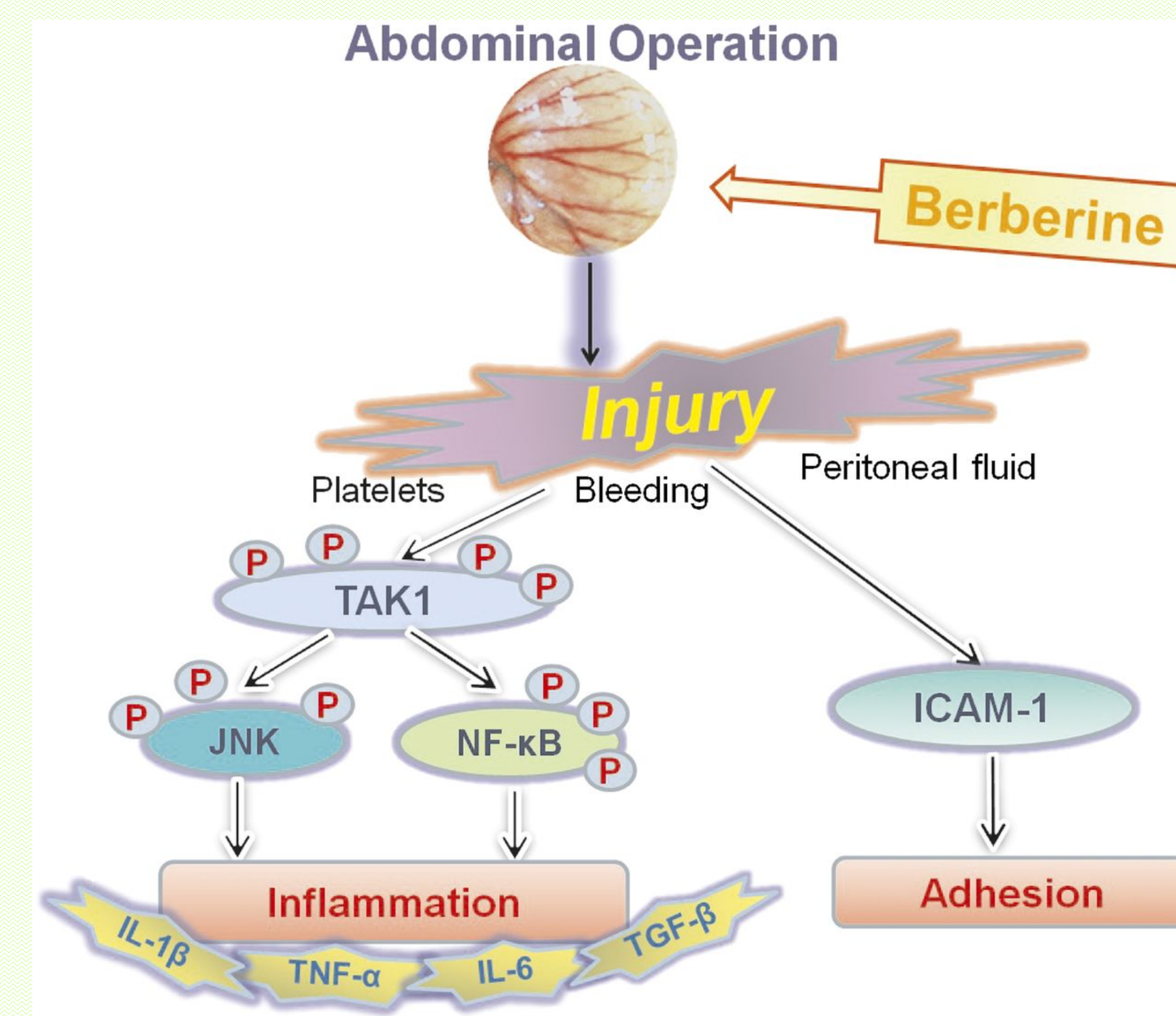


<https://www.sciencedirect.com/science/article/pii/S2211383512000871>

Acts as an antimicrobial, directly influences intestinal permeability, increasing motility and contractility in states of hypofunction, increases the gut production of short chain fatty acids -- butyrate which has an anti-inflammatory effect in the colon (Decker, 2018).



<https://www.townsendletter.com/May2018/berberine0518.html>



<https://jpet.aspetjournals.org/content/349/3/417>

The insulin-independent hypoglycemic effect of berberine relates to the inhibition of mitochondrial function, stimulation of glycolysis and activation of AMPK pathway. The antioxidant and aldose reductase inhibitory activities of berberine seems to be useful in alleviating diabetic nephropathy (Wang et al., 2018).

Extractions for Medicinal Use

Maceration-coarse or powered raw berberine soaked in solvent for 7 days with occasional shaking and then filtered.

Percolation- grind dried berberine, moisten with solvent, let sit for one hour, transfer to percolator with solvent, and wait till extractant to be colorless.

Soxhlet- Add powered berberine in a Soxhlet apparatus with solvent at 80°C for 72 hours.

Cold or hot continuous extraction- using different solvents like methanol, ethanol, aqueous or acidified methanol or ethanol.

Take Home Message

Different species of berberine-rich plants have numerous health benefits including regulation on metabolism and glucose, having antioxidant and immunomodulatory effects, and the protection on the liver, cardiovascular system, and kidney (Neag et al., 2018). Berberine is derived from Chinese herbal medicine used in treatments for various ailments like diabetes, high cholesterol, inflammation, and more. It's continuously being studied for its medicinal properties so we should be seeing berberine medication in the near future.

References

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