

**Impact Of Picrorhiza Kurroa (Kutki) On Liver Health: A Review**Dr. Shilpi Jain<sup>1</sup>DOI: <https://doi.org/10.5281/zenodo.18985051>**Review: 04/02/2026****Acceptance: 04/02/2026****Publication: 12/03/2026****Abstract:**

Picrorhiza kurroa (Kutki) is a well-known medicinal herb traditionally used in Ayurvedic medicine for the management of liver disorders and digestive ailments. The present review evaluates the hepatoprotective potential of Picrorhiza kurroa based on available experimental and limited clinical evidence. The rhizomes of the plant contain bioactive iridoid glycosides, primarily picroside I, picroside II, and kutkin, which are responsible for its pharmacological activities. Preclinical studies demonstrate that P. kurroa exhibits significant antioxidant, anti-inflammatory, and lipid-modulating effects. In various models of paracetamol-induced hepatotoxicity, alcohol-induced liver injury, and non-alcoholic fatty liver disease (NAFLD), administration of the extract resulted in reduced serum liver enzymes (ALT, AST), decreased lipid peroxidation, and improved histopathological architecture of hepatic tissue. Limited clinical trials in patients with viral hepatitis suggest faster normalization of liver function markers compared to placebo. Overall, the findings indicate that P. kurroa holds promising hepatoprotective properties through mechanisms involving oxidative stress reduction and inflammatory pathway modulation. However, despite encouraging preclinical results, large-scale, well-controlled human clinical trials are necessary to confirm its safety, standardized dosing, and long-term therapeutic efficacy in liver diseases.

**Keywords:** Picrorhiza kurroa, Kutki, Hepatoprotective activity, Liver health, Non-Alcoholic Fatty Liver Disease (NAFLD), Oxidative stress, Atioxidant activity, Liver enzymes(ALT,AST).

**Introduction:** Picrorhiza kurroa (commonly known as kutki) is a perennial medicinal herb traditionally used in Ayurvedic and Unani medicine for treating liver disorders, fever, and digestive ailments. The rhizomes and roots contain iridoid glycosides primarily picroside I, picroside II, and kutki which are thought to contribute to its bioactivity. Over recent decades, scientific research has increasingly focused on its hepatoprotective potential in various experimental models of liver disease and injury.

Picrorhiza kurroa Royle ex Benth., commonly known as Kutki, is a well-recognized medicinal herb in Ayurvedic medicine traditionally used for liver disorders, fever, and digestive disturbances. The rhizomes of the plant contain bioactive compounds such as picroside I, picroside II, and kutkin, collectively known as iridoid glycosides. Liver diseases—including non-alcoholic fatty liver disease (NAFLD), alcoholic liver injury, viral hepatitis, and drug-induced hepatotoxicity—are major global health concerns. Oxidative stress, inflammation, and lipid accumulation are key pathological mechanisms involved in hepatic damage. Increasing scientific attention has been directed toward evaluating the hepatoprotective potential of P. kurroa in experimental and clinical settings.

**Objective**

This review aims to summarize and analyze available scientific literature regarding the hepatoprotective effects of Picrorhiza kurroa, focusing on its mechanisms of action, therapeutic potential and clinical relevance in liver disorders.

**Review of Literature**

Several preclinical studies have demonstrated significant hepatoprotective effects of P. kurroa extracts and its standardized preparation, Picroliv. In experimental models of paracetamol-induced liver toxicity, administration

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of *P. kurroa* reduced serum levels of alanine aminotransferase (ALT), aspartate aminotransferase (AST), and bilirubin, indicating protection against hepatocellular damage. Studies on alcohol-induced liver injury in rodents showed restoration of antioxidant enzyme levels such as superoxide dismutase (SOD) and catalase, along with reduced lipid peroxidation.

In high-fat diet models of NAFLD, *P. kurroa* significantly reduced hepatic fat accumulation and improved lipid metabolism. The herb has also shown anti-inflammatory properties by inhibiting pro-inflammatory cytokines and oxidative pathways. Limited clinical trials suggest benefits in acute viral hepatitis, where patients receiving kutki demonstrated faster normalization of liver enzymes compared to placebo. However, large-scale randomized controlled trials remain scarce.

### Materials & Methods

This review is based on secondary data collected from peer-reviewed journals, pharmacological studies, and clinical research articles indexed in scientific databases such as PubMed, Scopus, and Google Scholar. Keywords used included “*Picrorhiza kurroa*,” “kutki,” “hepatoprotective,” “liver toxicity,” and “NAFLD.” Both in vitro and in vivo studies, along with available human clinical trials, were included. Studies focusing on antioxidant activity, biochemical markers of liver function, and histopathological findings were analyzed.

### Results & Discussions

The collected evidence consistently indicates that *P. kurroa* exerts hepatoprotective effects primarily through antioxidant, anti-inflammatory, and lipid-modulating mechanisms. The iridoid glycosides, particularly picroside I and II, scavenge reactive oxygen species and enhance endogenous antioxidant defenses. Reduction in lipid peroxidation and inflammatory mediators contributes to hepatocyte protection. In toxin-induced liver injury models, treatment with *P. kurroa* restored liver architecture and normalized enzyme levels. In metabolic liver disorders such as NAFLD, the herb improved lipid metabolism and reduced hepatic steatosis. While preclinical findings are promising, variability in dosage, extract standardization, and study design limits direct clinical translation. More well-designed human studies are necessary to establish optimal therapeutic regimens and long-term safety.

### Conclusions

*Picrorhiza kurroa* demonstrates significant hepatoprotective potential supported by experimental evidence and limited clinical data. Its antioxidant and anti-inflammatory properties play a central role in protecting liver tissue from toxic and metabolic damage. Although traditional usage and preclinical findings are encouraging, further large-scale clinical trials are essential to confirm efficacy, safety, and standardized dosing. Kutki may serve as a promising complementary therapy for liver health in the future.

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