

Medicinal Plants used in Treating Jaundice – A Systematic Review

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Abstract

Medicinal plants have long been central to traditional healing systems, offering natural remedies for ailments such as jaundice and liver disorders. Plants possess bioactive compounds with hepatoprotective, antioxidant, and anti-inflammatory activities, which may support liver health and recovery. Growing global interest in herbal medicine has intensified research to authenticate traditional claims and discover novel therapeutic applications. Amalgamating traditional knowledge with modern science through ethnopharmacology may foster holistic healthcare approaches. However, additional studies are required to clarify mechanisms of action, standardize dosages, and assess potential interactions. Overall, these medicinal plants exhibit promising potential as complementary therapies for jaundice and related liver disorders. For present systematic review nineteen review articles published on jaundice are considered, with the data on number of plants reported, literature source, geographic region, key aspects and number of literature sources studied.

Keywords: Medicinal plants, jaundice, liver, traditional, treatments

1. Introduction

Jaundice is a clinical condition marked by the yellowish discoloration of the skin, mucous membranes, and sclera due to raised bilirubin levels in the blood. It is not a disease in itself but a indication of various underlying hepatic or extrahepatic disorders, including viral hepatitis, alcoholic liver disease, bile duct obstruction, haemolytic anaemia, and drug-induced hepatotoxicity (Penny et al., 2019). The worldwide burden of liver-related diseases is noteworthy, with jaundice remaining a common manifestation, especially in developing countries where inadequate access to modern healthcare requires reliance on traditional remedies (Mishra et al., 2018).

Conventional treatment of jaundice emphasizes on indicative management and addressing the primary cause. However, the efficacy of synthetic drugs is often limited by adverse effects, drug resistance, and high cost (Patel et al., 2012). This has encouraged renewed interest in complementary and alternative medicine, particularly herbal drugs, which are observed as safer, cost-effective, and more culturally suitable. Across traditional healing systems such as Ayurveda, Siddha, Unani, and different tribal and folk

practices, medicinal plants have long been employed to cope with jaundice and liver dysfunction (Tiwari & Rao, 2002).

Several plants with ethnomedicinal significance, such as *Phyllanthus niruri*, *Andrographis paniculata*, *Picrorhiza kurroa*, *Boerhaavia diffusa*, and *Eclipta alba* have been reported to alleviate jaundice. These plants are rich in secondary metabolites including flavonoids, alkaloids, terpenoids, phenolic compounds, and lignans, which contribute to their hepatoprotective, antioxidant, anti-inflammatory, and antiviral properties (Choudhury & Poddar, 2014; Patel et al., 2019). Pharmacological studies disclose that these phytoconstituents may improve bile secretion, improve detoxification processes, stabilize hepatocellular membranes, and mitigate oxidative stress, thereby supporting recovery of liver function (Mishra et al., 2018). Now a day attention is again diverted toward the use of crude plant extracts, as plants contains many secondary metabolites which act synergistically and may not show good activity with compounds isolated in pure form. (Jyothi, 2020)

In recent years, the researchers have shown growing interest in validating the therapeutic potential of these traditionally used plants. Preclinical and clinical studies have demonstrated that phytochemicals like phyllanthin (in *hyllanthus niruri*), andrographolide (in *Andrographis paniculata*), and kutkoside (in *Picrorhiza kurroa*) possess marked hepatoprotective effects, confirming their ethnomedicinal applications (Patel et al., 2019). Despite these advances, a comprehensive consolidation of traditional knowledge, pharmacological validation, and mechanistic insights is still lacking.

Given the global rise in liver disorders, the limited effectiveness of existing drugs, and the increasing demand for natural therapeutics, it is important to systematic review the evidence on medicinal plants traditionally employed in the treatment of jaundice. Such a review not only highlights the ethnobotanical relevance of these species but also provides a scientific basis for future pharmacological exploration, drug development, and integration of plant-based remedies into modern healthcare systems (WHO, 2013). Present systematic review based on 19 revive articles on jaundice/ hepatoprotective/ liver disorders provides the information and the detailed analysis.

Methods

This review summarizes literature on major herbal medicines used for management of jaundice and related liver problems. Information from various sources highlights traditional medicinal plants employed by indigenous communities across different ethnic groups. The systematic analysis reveals how plant selection for treating jaundice is influenced by local availability and cultural practices, supporting the preservation and utilization of indigenous knowledge.

Approaches of Article Selection:

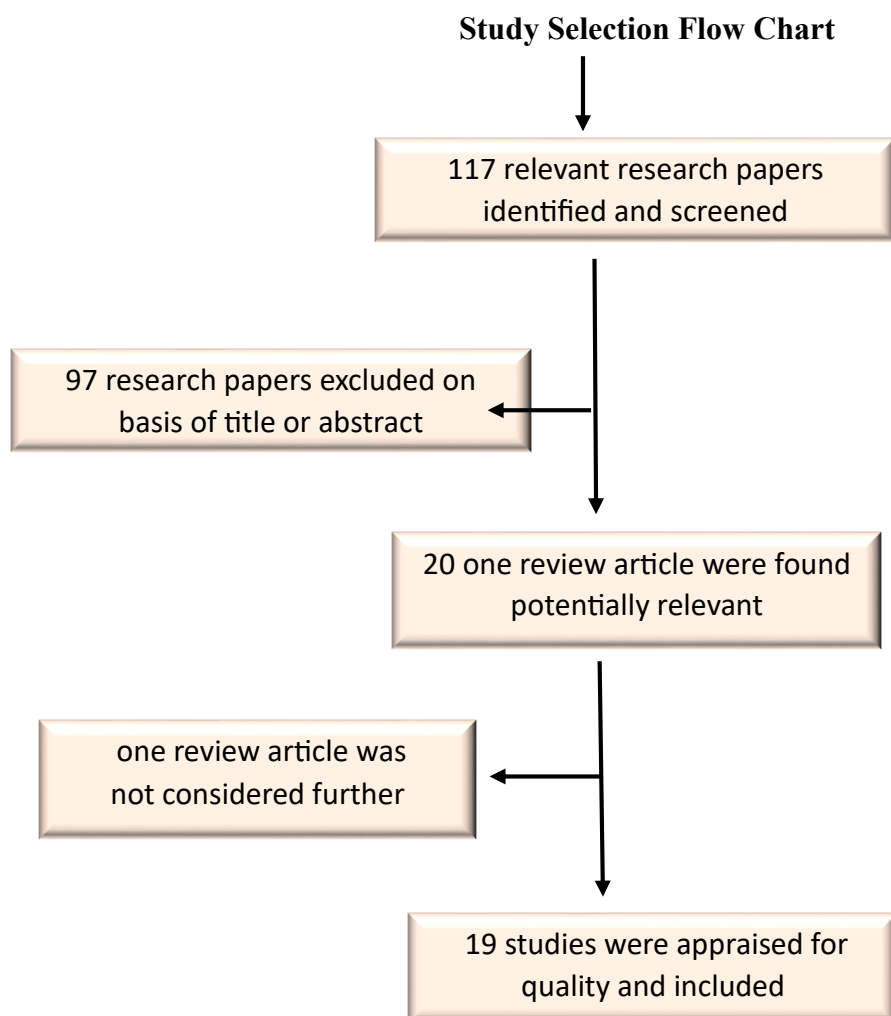
A comprehensive literature search was conducted using online and offline literature search to gather ethnobotanical and ethnomedicinal studies on medicinal plants for treating jaundice.

Inclusion criteria

The inclusion was restricted to review articles published in English language. Relevant sources were identified through key terms such as review, medicinal plants, jaundice, hepatoprotective, liver disorders, etc., herbal remedies, folk medicine, ethnobotany, ethnomedicine.

Exclusion criteria

The title, abstract does not include review, jaundice, liver disorders or hepatoprotective words.



Result & Discussion

Table 1. Details of studies included in the systematic review.

Study Reference	No of Plants Reported	Literature Source	Geographic Region	Key Aspects	No of Literature sources studied
Abraham, 2014	10	Offline & Online literature survey	-	Based on reported works on promising phytochemicals from medicinal plants that have been tested	28
Bhardwaj et al, 2023	05	Offline & Online literature survey	-	Provided morphological features, hepatoprotective activity & chemical constituents of Plants	13
Bhatt & Deshpande, 2021	106	Pub Med and Google Scholar	-	Provided information based on Ayurveda, Siddha, Unani & clinical studies done on liver disorders along with other medicinal properties of plants	67
Bhuiyan & Nahar, 2018	02	Ethnobotanical Database of Bangladesh, PubMed, PMC, Wiley Online Library	Bangladesh	Pharmacological aspects of two plants	81
Chaithra et al, 2014	01	Offline & Online literature survey	-	Provided information on pharmacology, clinical effectiveness, safety profile and molecular mechanisms that support the therapeutic benefits of <i>Phyllanthus niruri</i>	10
Garedew & Bizuayehu, 2018	114	PubMed, Science direct, Research gate, Web of Science, Google scholar, AJOL, Hinari,	Ethiopia	Provided information from 8 regions of Ethiopia such as, plant part used, mode of preparation, doses, etc	46
Hussain et al, 2021	100	Google scholar, PubMed, NCBI,	-	Provided information about Hepatotoxicity inducing	120

		Science direct, scopus, midline databases, Handawi and Semantic scholars		agents, Biochemical Markers and Histopathological Parameters	
Islam & Alam, 2023	22	PubMed, Google scholar, Science hub, Research gate, Scopus and Science Direct	-	Provided information on phytochemicals form literature	52
Jamileh et al, 2021	32	Canon of medicine and PubMed, ScienceDirect, and Google Scholar	Iran	Provided the used in Traditional Persian Medicine and uses as per current studies	36
Janghel et al, 2019	55	PubMed, Scopus, and Google Scholar	Central India	Provided ethnobotanical & pharmacological data with active constituent	112
Kale et al, 2020	08	Scopus and Pub Med	-	Provided information on Histology, functions, pathophysiology and ethnobotanical used of plants	20
Khadse et al, 2024	06	Online and offline literature	-	address the safety, toxicity, and standardization of herbal formulations	91
Kharade et al, 2023	87	Pubmed, Web of Science, and Google Scholar	Himachal Pradesh, India	Provided information about plant uses	30
Khedmat et al, 2021	13	Google Scholar, Scopus, Web of Science, MedLine/PubMed, EBSCO, ProQuest	Iran	Neonatal jaundice	22
Luper, 1998	02	Online & offline literature	-	Provided active constituents, pharmacokinetics, & toxicity	87

Raeisi et al, 2017	06	Google Scholar, and Scientific databases ISI, PubMed, and Scopus.	Iran	Provided information on plants used in Neonatal Jaundice with part used and preparation of medicine	59
Raghuvanshi et al, 2021	87	Science Direct, Pubmed, Web of Science, and Google Scholar	Himachal Pradesh, India	Provided information on plant part used and mode of use with phytochemical & pharmacological evidences	144
Shejole et al, 2023	29	Google Scholar, ISI Web of Knowledge, and PubMed. Phytochemical substances ha	-	Hepatotoxicity Inducing Agents & studied Biochemical and Pathological Parameter	73
Singh et al, 2023	10	Web of Science, Pub Med, Scopus, and Science Direct	-	Review on 10 plants used for jaundice and other diseases	52

Result shows that, maximum number of plants are reported in review articles such as, Bhatt & Deshpande, 2021 (106); Garedew & Bizuayehu, 2018 (114) and Hussain et al, 2021 (100). Online total literature sources were found Google scholar, PubMed, NCBI, Science direct, scopus, midline databases, Handawi and Semantic scholars, etc. in different articles. Geographical regions of study for India and Iran 3 articles each; Ethiopia and Bangladesh 1 article each., while in 11 articles not mentioned any geographic region.

The key aspects highlight the integration of traditional medicine with modern pharmacology in treating jaundice and liver disorders. *Phyllanthus niruri* is the most studied plant with strong clinical and pharmacological support, while many others remain documented mainly through ethnobotanical knowledge. Regional practices, such as Ethiopian medicine, add diversity but lack standardization in preparation and dosage. Although safety, toxicity, and neonatal jaundice treatments are addressed, clinical validation and comprehensive toxicity studies are still limited. Overall, further research is needed to standardize formulations and ensure efficacy and safety.

Medicinal plants are widely used for jaundice, with surveys reporting hundreds of species across India and beyond (Raghuvanshi & Pandey, 2021; Janghel et al., 2019; Tewari et al., 2017). Commonly cited are *Phyllanthus* spp., *Picrorhiza kurroa*, *Andrographis paniculata*, *Tinospora cordifolia*, *Terminalia chebula*, and *Embllica officinalis*, valued for hepatoprotective compounds like picrosides, andrographolide, and alkaloids (Almeleebia et al., 2022; Okhwarobo et al., 2014; Balkrishna et al., 2024). Clinical evidence is limited, with reviews noting low-certainty benefits for hepatitis B (Cochrane Hepato-Biliary Group, 2022) and inconclusive results in neonatal jaundice (Rezapour et al., 2022). Safety concerns, particularly herb-

induced liver injury linked to *T. cordifolia*, underscore the need for standardization and pharmacovigilance (Ballotin et al., 2021; Jayaraj et al., 2022).

Conclusion

This systematic review highlights that a wide range of medicinal plants have been traditionally employed in the management of jaundice, many of which demonstrate hepatoprotective, antioxidant, and anti-inflammatory properties. Ethnopharmacological evidence, along with experimental and limited clinical studies, supports their therapeutic potential, though scientific validation remains incomplete for several species. Standardization, phytochemical characterization, and well-designed clinical trials are needed to confirm safety, efficacy, and mechanisms of action, thereby facilitating the integration of these plants into evidence-based liver care.

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References

1. Abraham G. (2014). A Review on Hepato-Protective Herbs Used in Ayurveda. *Global J Res. Med. Plants & Indigen. Med.*, 3(7), 303–311.
2. Almeleebia, T. M., Alqahtani, A. S., Alqahtani, A., & Ahmad, A. (2022). *Picrorhiza kurroa* Royle ex Benth (Kutki): A review of ethnomedicinal uses, phytochemistry, and pharmacological properties. *Plants*, 11(19), 2605.
3. Balkrishna, A., Arya, V., Singh, H., Gupta, A., Verma, S., Sharma, N., Varshney, A. (2024). *Tinospora cordifolia* (Guduchi): Traditional uses, pharmacological activities, and hepatoprotective potential. *Frontiers in Pharmacology*, 15, 1422464.
4. Ballotin, V. R., Bigolin, A. V., Balbinot, R. A., Uebel, C. O., & Dall'Alba, V. (2021). Herbal hepatotoxicity: A systematic review. *Clinics*, 76, e3124.
5. Bhardwaj K., Dhiraj K., Sharma A., , Omitya Raman P., Palsra V. (2023). A Review on Hepatoprotective Activity of Medicinal Plants. *WJPMR*, 9(7), 115-119.
6. Bhatt N., Deshpande M. (2021). A Comparative Review on Medicinal Plants Used for the Treatment of Liver Disorders as in Ayurved, Siddha and Unani [ASU] Systems of Medicine-Part I- Contextual and Clinical Aspects. *International Journal of Ayurvedic and Herbal Medicine*. 11:5, 4007–4028.
7. Bhuiyan R. M., Nahar J. (2018). A Pharmacological Review on the Two Traditional Plants Used In Bangladesh For Jaundice. *Pharmacology online*. vol.3, 37-48.
8. Chaithra L.N., Mahalakshmi K.S., Kavitha P. N. (2014). *Bhumyamalaki* in the Management of Jaundice: A Comprehensive Review. *World Journal of Pharmaceutical and Life Science*. 10(6), 90-92.
9. Choudhury, S., & Poddar, M. (2014). Medicinal plants with hepatoprotective activity. *International Journal of Green Pharmacy*, 8(1), 1–10.

10. Cochrane Hepato-Biliary Group. (2022). Phyllanthus species for chronic hepatitis B virus infection. Cochrane Database of Systematic Reviews, Issue 12, CD008960.
11. Garedew B., Bizuayehu B. A Review on Ethnobotanical Study of Traditional Medicinal Plants Used for Treatment of Liver Problems in Ethiopia. EJMP, 26(1): 1-18, 2018; Article no. EJMP.38153.
12. Hussain A, Aadil A. A., Sultan A., Muhammad A., Ahmad A., Pervez M., Wahidullah and Yousma T. (2021). Hepatoprotective effects of various medicinal plants: A systematic review. Journal of Pharmacognosy and Phytochemistry. 10(3): 109-121.
13. Islam M., Alam F. (2023). Plant Materials from Assam in the Treatment of Jaundice: A Review. Indian Journal of Natural Sciences. 14(77), 54003-54009.
14. Jamileh M. J., Barimani S., Alias F., Ghazaleh H., Pasalar M. (2021). A Mini-review on Medicinal Plants Used for the Treatment of Jaundice in the Canon of Medicine. Shiraz E-Med J. 22(4):e102127.
15. Janghel Va., Patel P., Singh S. C. (2019). Plants used for the treatment of icterus (jaundice) in Central India: A review. Annals of Hepatology. 2019, 18, 658–672.
16. Janghel, V., Sahu, P., & Prajapati, P. K. (2019). Ethnomedicinal plants used in the treatment of jaundice in Central India: A review. Journal of Pharmacognosy and Phytochemistry, 8(2), 1873–1878.
17. Jayaraj, R., Patil, V., & Sharma, S. (2022). Safety concerns of Tinospora cordifolia (Guduchi) and reported hepatotoxicity: A review. Journal of Clinical and Experimental Hepatology, 12(6), 1638–1646.
18. Jyothi K. AS. (2020). Study on some commonly available medicinal plants used for jaundice: A review. Journal of Pharmacognosy and Phytochemistry. 9(3): 1597-1600
19. Kale S.G., Kanase S. S., Kalkate S.D., Muley S. S. (2020). Review on Hepatoprotective Medicinal Plants for Liver Diseases. World Journal of Pharmaceutical Research. 9(7), 1088-1102.
20. Khadse S. Y., Mahanur V. B, Maske A. (2024). Hepatoprotective Active Indian Medicinal Plants - A Comprehensive Review. IJARSCT. 4(3), 492-510.
21. Kharade S. A., Khilari N. G., Khetmalis S. M., Khetmalis S. M., Navale S. B. (2023). A Review on: Ethnomedicinal Plants Traditionally Used for the Treatment of Jaundice (Icterus) In Himachal Pradesh in Western Himalaya. Journal of Emerging Technologies and Innovative Research (JETIR). 10(4), d254-d263.
22. Khedmat L., Sayed Y. M., Atousa M. (2021). Recent clinical evidence in the herbal therapy of neonatal jaundice in Iran: A review. Journal of Herbal Medicine. 29, 100457.
23. Luper S. (1998). A Review of Plants Used in the Treatment of Liver Disease: Part 1. Alternative Medicine Review. 3(6), 410-421.
24. Mishra, A., et al. (2018). Role of phytochemicals in liver diseases. World Journal of Hepatology, 10(7), 799–811.
25. Okhuarobo, A., Falodun, J. E., Erharuyi, O., Imieje, V., Falodun, A., & Langer, P. (2014). Harnessing the medicinal properties of Andrographis paniculata for diseases and beyond: A review of its phytochemistry and pharmacology. Asian Pacific Journal of Tropical Disease, 4(3), 213–222.

26. Patel, M., et al. (2019). Phytomedicine for liver disorders: An updated review. *Journal of Complementary Medicine Research*, 10(3), 72–81.
27. Patel, T., et al. (2012). Herbal medicines in the treatment of liver diseases. *Pharmacognosy Reviews*, 6(11), 24–36.
28. Penny, C., et al. (2019). Pathophysiology of Jaundice and Its Clinical Implications. *Journal of Hepatology Research*, 65(2), 115–123.
29. Raeisi R., Saeid H.-S., Majid A.-S., Luther T. (2017). A Systematic Review of Phytotherapies for Newborn Jaundice in Iran. *IJPSR*. 8(5), 1953-1958.
30. Raghuvanshi, P., & Pandey, D. N. (2021). Review on medicinal plants traditionally used for jaundice treatment in India. *International Journal of Herbal Medicine*, 9(5), 43–49.
31. Rezapour, M., Naseri, M., Kiani, M., & Khadem, E. (2022). Herbal medicines in the treatment of neonatal jaundice: A systematic review. *Complementary Therapies in Medicine*, 64, 102804.
32. Saini Mukesh, Mangain Shilpa. Herbal Syrup for the Treatment of Jaundice- A Review. *IJCRT*. 2024. 12(5), e975-e984.
33. Shejole S. R., Jakhad A. R., Khairnar P. R. (2023). A Review on Medicinal Plants Used in Liver Protection. *World Journal of Pharmaceutical Research*. 12(17), 1149-1172.
34. Singh A., Verma P., Shukla M. K. (2023). A Comprehensive Review on Hepatoprotective Activity of Some Medicinal Plants. *International Journal of Pharmaceutical Research and Applications*. 8(2), 664-672.
35. Tewari, D., Mocan, A., Parvanov, E. D., Sah, A. N., Nabavi, S. M., & Atanasov, A. G. (2017). Ethnopharmacological review of medicinal plants used in jaundice and liver disorders. *Journal of Ethnopharmacology*, 196, 227–250.
36. Tiwari, P., & Rao, J. (2002). Traditional hepatoprotective plants in India. *Journal of Ethnopharmacology*, 81(1), 45–52.
37. World Health Organization (2013). WHO Traditional Medicine Strategy 2014–2023. WHO Press.