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Cichorium intybus: A Medicinal Plant in the Phytotherapeutic Management of Neonatal Jaundice

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A B S T R A C T

Cichorium intybus, commonly known as chicory, is a medicinal herb with a long history of use in traditional Iranian medicine. Among its numerous therapeutic properties, chicory is particularly noted for its hepatoprotective effects, which may offer valuable support in the management of neonatal jaundice. Neonatal jaundice is a prevalent condition in newborns, characterized by an excess of bilirubin in the bloodstream, which, if left untreated, can lead to severe complications such as kernicterus, brain damage, and long-term cognitive and motor impairments. The active constituents of chicory, including flavonoids, polyphenols, and inulin, are known for their potent antioxidative and anti-inflammatory properties. These bioactive compounds play a crucial role in enhancing liver function by promoting the elimination of bilirubin, improving its metabolism, and reducing oxidative stress. Additionally, chicory has choleretic properties, stimulating bile production, which is vital for the excretion of bilirubin. Although preclinical studies have shown promising results, it is essential to conduct more rigorous clinical trials to establish the most effective dosage, safety profile, and therapeutic potential of chicory for neonatal jaundice. Further research will be pivotal in determining its role as a complementary treatment option in managing this common yet serious neonatal condition.

Keywords: Cichorium intybus, neonatal jaundice, hepatoprotection, traditional medicine, herbal therapy

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Introduction

Neonatal jaundice is a prevalent condition, affecting approximately 60% of full-term and 80% of preterm infants within the first week of life [1]. It results from an imbalance in bilirubin metabolism due to hepatic immaturity, increased hemolysis, or impaired bilirubin conjugation and excretion [2]. If left untreated, severe hyperbilirubinemia can lead to kernicterus, causing irreversible neurological damage and motor impairments [3].

Conventional treatments for neonatal jaundice include phototherapy, intravenous immunoglobulin administration, and, in severe cases, exchange transfusion [4,5]. However, traditional medicine has historically utilized herbal remedies for jaundice management, with medicinal plants such as Cichorium intybus (chicory) gaining recognition for their hepatoprotective effects [6]. This review explores the therapeutic potential of chicory in neonatal jaundice treatment, focusing on its bioactive compounds, mechanisms of action, and clinical applicability.

Methodology

A systematic literature search was conducted across Scopus, PubMed, Google Scholar, and SID databases using the keywords "Cichorium intybus," "neonatal jaundice," "herbal therapy," "traditional medicine," "bilirubin metabolism," and "hepatoprotection." Only peer-reviewed studies and

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clinical trials evaluating the hepatoprotective effects of chicory were included.

Results and Discussion

Cichorium intybus, a plant with a long history in traditional medicine, is recognized for its liver-supporting properties. The bioactive components of chicory, including sesquiterpene lactones, flavonoids, and inulin, contribute to its hepatoprotective efficacy [7,8]. These compounds facilitate bilirubin excretion by enhancing bile secretion, reducing oxidative stress, and improving hepatocellular function [9,10].

Several studies have explored the impact of chicory on liver disorders, indicating its efficacy in reducing serum bilirubin levels. For instance, a study by Pourabbasi et al. (2019) demonstrated that chicory extract significantly reduced bilirubin levels in neonates with jaundice, suggesting its potential as an adjunct therapy to conventional treatments [11]. Moreover, the anti-inflammatory properties of chicory help mitigate hepatic inflammation, which can exacerbate neonatal jaundice [12,13].

Beyond its hepatoprotective effects, chicory has been studied in the context of neonatal nutrition. Research suggests that maternal consumption of chicory during breastfeeding may contribute to neonatal bilirubin reduction by enhancing hepatic enzyme activity in infants [14]. Additionally, clinical evidence supports the role of prebiotics such as inulin, found in chicory, in modulating gut microbiota to facilitate bilirubin metabolism and excretion [15,16].

Despite these promising findings, the clinical application of chicory in neonatal jaundice requires further investigation. Standardized dosing regimens, safety profiles, and potential interactions with existing treatments must be established through well-designed clinical trials. Certain medicinal plants possess antioxidant and anti-inflammatory properties due to the presence of compounds such as flavonoids and polyphenols [16-18]. These compounds may contribute to the treatment of neonatal jaundice by enhancing liver function, reducing oxidative stress, and promoting bilirubin excretion.

Conclusion

Cichorium intybus holds significant promise as a complementary treatment for neonatal jaundice due to its hepatoprotective, anti-inflammatory, and choleretic properties. The bioactive compounds present in chicory enhance bilirubin metabolism, reduce oxidative stress, and support liver function, making it a potential adjunct therapy in jaundice management. However, further research is required to determine its optimal dosage, safety, and long-term effects in neonates.

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Competing interests

The authors have no competing interests to declare that are relevant to the content of this article.

Ethics approval

This study was performed in line with the principles of the Declaration of Helsinki.

Consent to participate

Informed consent was obtained from all individual participants included in the study.

Author contributions

AZ: Conceptualization, the original draft writing, investigation, writing including reviewing and editing and investigation and formal analysis; AZ: Supervision, and project administration; AZ Conceptualization, the original draft writing, writing including reviewing and editing

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