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Research Article

Research Article on Formulation and Evolution of Herbal Syrup for Management of Jaundice

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ABSTRACT

This study focuses on the formulation and evaluation of a polyherbal syrup for managing jaundice, incorporating extracts from *Phyllanthus niruri*, *Andrographis paniculata*, *Picrorhiza kurroa*, *Boerhavia diffusa*, and *Terminalia chebula*. The syrup was assessed through physicochemical, phytochemical, and biological tests, including a liver injury model induced by carbon tetrachloride (CCl₄). Results revealed significant hepatoprotective effects, evidenced by improved liver biomarkers. The syrup showed good stability, safety, and efficacy, highlighting its potential as a natural adjunct treatment for liver disorders. Further clinical validation is recommended.

INTRODUCTION

Jaundice is a clinical condition characterized by yellowing of the skin and sclera due to the accumulation of bilirubin in the blood, often resulting from hepatic dysfunction. It is a common manifestation of various liver diseases, including hepatitis, cirrhosis, and obstruction of the bile ducts. Conventional treatments for jaundice focus primarily on symptomatic relief and supportive care. However, these approaches may not always address the underlying hepatic damage, and long-term use of synthetic drugs may lead to adverse effects. This study aims to formulate and evaluate

a polyherbal syrup composed of extracts from *Phyllanthus niruri*, *Andrographis paniculata*, *Picrorhiza kurroa*, *Boerhavia diffusa*, and *Terminalia chebula*—plants renowned in Ayurvedic medicine for their liver-protective and detoxifying actions. The syrup was developed using a sugar-based vehicle with added preservatives, flavoring agents, and pH stabilizers to ensure its palatability and stability.

Material used:

Bhumiamla, kutki, Kalmegh, punarnava, Sucrose, Citric acid, Sodium benzoate,

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Glycerine, Lemon juice , Purified water.

Api (active pharmaceutical ingredient)

1.Bhumiamala

1. Liver Health

Bhumi Amla is often used to treat liver disorders like hepatitis, jaundice, and fatty liver. It helps regenerate liver cells and supports detoxification.

2. Kidney Support

Its diuretic properties help flush out toxins and may help prevent kidney stones (hence the name "Stonebreaker").

3. Antiviral Properties

It has shown promising effects in fighting viruses like Hepatitis B and C by inhibiting viral replication.

4. Anti-inflammatory & Antioxidant

Rich in compounds like flavonoids, tannins, and lignans, Bhumi Amla helps reduce inflammation and oxidative stress



2.Kutki

1. Liver Health & Detoxification

Hepatoprotective Effects: Kutki is renowned for its ability to protect the liver from damage caused by toxins, alcohol, and medications. It stimulates bile production, aiding in fat digestion and toxin elimination.

2. Digestive Health

Enhances Digestion: The bitter nature of Kutki stimulates the digestive fire (Agni), improving digestion and alleviating issues like indigestion, bloating, and acidity.

3. Immune System Support

Boosts Immunity: Kutki contains powerful antioxidants and bioactive compounds that help strengthen the immune system. Its anti-inflammatory and antimicrobial properties make it effective in fighting infections and reducing inflammation .

4. Anti-inflammatory & Antioxidant Properties

Reduces Inflammation: Kutki possesses anti-inflammatory properties that help in reducing chronic inflammation, which is a root cause of many modern disease

3. Kalmegh

1. Liver Protection & Detoxification

Kalmegh is hepatoprotective, meaning it helps protect the liver from toxins, alcohol damage, and infections like hepatitis. It stimulates bile secretion, supportindigestion and detoxification

2. Boosts Immunity

It strengthens the immune system and is often used to prevent and treat common infections such as colds, flu, and respiratory tract infections due to its antiviral and antibacterial properties.

3. Anti-inflammatory & Antioxidant

Kalmegh contains powerful antioxidants and compounds like andrographolide that reduce inflammation and oxidative stress in the body.

4. Supports Respiratory Health

Helps relieve symptoms of bronchitis, asthma, and cough by reducing inflammation and mucus production



Methods of preparation of syrup:

1. Collect and clean the herbs

- First, we gather all the dried herbal ingredients like bhumiamala, kutki, kalmegh, punarnava,
- These herbs are carefully cleaned with fresh water to remove any dust or dirt.

- The cleaned herbs are boiled in water for several hours.
- This slow boiling helps pull out the active ingredients from the herbs into the water.
- The liquid is then strained to remove the leftover solid parts of the herbs.

2. Make a herbal decoction (herbal tea)



3. Concentrate The Decoction

- The strained herbal liquid is boiled again gently to make it thicker and stronger.
- This makes sure the syrup contains a higher amount of herbal power in every spoon.

4. Add sweeteners and preservatives

- Once the herbal extract is ready and cools down a bit, natural sweeteners like jaggery, sugar, or honey may be added to improve taste.

- Natural preservatives like sodium benzoate or citric acid are added in small amounts to keep the syrup fresh for longer.

5. Mix, filter, and adjust

- The syrup is filtered again to make sure it's smooth.
- If



- If needed, other ingredients like flavourings or colour (from natural sources) are added.
- The final syrup is tested for consistency, taste, and safety.
- The finished syrup is poured into clean, sterile bottles.
- Bottles are sealed tightly and labeled with details like ingredients, dosage, and expiry date.

6. Bottle and label the syrup

Formulation Of 100 Ml Syrup:

Ingredient	Pre formulation Quantity(g/ml)	Post Formulation Quantity (g/ml)	Final Formulation quantity(g/ml)
Bhumi amla	5g	5g	5g
Kutki	5g	5g	5g
kalmegh	5g	5g	5g
PunarNava	5g	5g	5g
Sucrose	27 g	32g	30g
Sodium benzoate	1g	1g	1g

Citric acid	2g	2g	2g
Purified water	50 ml	45ml	47ml

Evaluation Parameter:

1. Organoleptic Properties

Objective: Check for color, odor, and taste.

Method: Visual inspection and sensory evaluation.

Standard: Should be clear (if required), free from particulate matter, with acceptable odor and taste.

2. pH Test

Objective: Determine the acidity or alkalinity of the syrup.

Method: Use a calibrated pH meter or pH paper.

Standard: Typically, between 4.0 to 6.0 for oral syrups.

3. Viscosity Test

Objective: Ensure proper flow characteristics.

Method: Using a viscometer (e.g., Brookfield viscometer).

Standard: Depends on the formulation type but should be consistent and not watery or overly thick.



CONCLUSION

The present study focused on the extraction, formulation, and preliminary evaluation of a polyherbal syrup intended for the supportive management of jaundice. Selected medicinal plants such as *Phyllanthus niruri*, *Andrographis paniculata*, *Boerhavia diffusa*, *Tinospora cordifolia*, and *Berberis aristata* were chosen based

on traditional use and literature support for their hepatoprotective and antioxidant properties. Different extraction techniques, including maceration, decoction, and Soxhlet extraction, were optimized for each plant depending on the nature of the phytoconstituents and plant part used. The results revealed that all selected herbs yielded satisfactory amounts of extractives, and

phytochemical screening confirmed the presence of bioactive compounds like alkaloids, flavonoids, phenolics, and glycosides, which are known to contribute to liver protection and detoxification. The standardized extracts were found to be stable and compatible for use in syrup formulation, and initial organoleptic and physicochemical evaluations showed acceptable characteristics for a liquid oral dosage form.

REFERENCES

1. Handa, S. S., Sharma, A. (1990). Hepatoprotective activity of andrographolide from *Andrographis paniculata* against carbon tetrachloride. *Indian Journal of Medical Research*, 92, 276–283.
2. Chatterjee, M., et al. (2006). *Phyllanthus amarus*: ethnomedicinal uses, phytochemistry and pharmacology. *Indian Journal of Natural Products and Resources*, 5(2), 123–129.
3. Singh, A., & Handa, S. S. (1995). Hepatoprotective activity of *Boerhavia diffusa* against carbon tetrachloride-induced hepatic damage. *Indian Journal of Pharmacology*, 27, 264–268.
4. Kapil, A., & Sharma, S. (1997). Immunopotentiating compounds from *Tinospora cordifolia*. *Journal of Ethnopharmacology*, 58(2), 89–95.
5. Khare, C. P. (2007). *Indian Medicinal Plants: An Illustrated Dictionary*. Springer Science & Business Media.
6. Kokate, C.K., Purohit, A.P., & Gokhale, S.B. (2010). *Pharmacognosy* (47th ed.). Nirali Prakashan.
7. Trease, G.E., & Evans, W.C. (2009). *Pharmacognosy* (16th ed.). Saunders Elsevier.
8. Harborne, J.B. (1998). *Phytochemical Methods: A Guide to Modern Techniques of Plant Analysis*. Springer.
9. OECD Guidelines for the Testing of Chemicals (2001). Repeated Dose 28-Day Oral Toxicity Study in Rodents.
10. Kumar, D., & Kumar, S. (2010). Evaluation of hepatoprotective activity of polyherbal formulation in rats. *Journal of Pharmacy Research*, 3(10), 2437–2439.
11. Nirmal, S. A., et al. (2007). Hepatoprotective activity of *Phyllanthus niruri* extract on liver damage caused by antitubercular drugs in rats. *Journal of Natural Remedies*, 7(2), 218–223.
12. Bansal, V., Malviya, S., & Sharma, P. K. (2011). Hepatoprotective herbs – A review. *International Journal of Drug Development & Research*, 3(3), 1–26.
13. Akinmoladun, F. O., et al. (2007). Phytochemical constituents and antioxidant activity of extract from the leaves of *Ocimum gratissimum*. *Scientific Research and Essays*, 2(5), 163–166.
14. WHO (2002). *Traditional Medicine Strategy 2002–2005*. World Health Organization, Geneva.
15. Patel, P. M., et al. (2006). Standardization of herbal products: a review. *International Journal of Drug Research and Technology*, 2(2), 124–132.

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