

REVIEW ARTICLE ON HERBAL SYRUP OF KALMEGH

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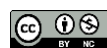
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ABSTRACT

Kalmegh (*Andrographis paniculata*) is an important medicinal herb widely used in traditional Ayurvedic and herbal medicine due to its hepatoprotective, antipyretic, antimicrobial, anti-inflammatory, and immunomodulatory activities. Herbal syrups prepared from Kalmegh are commonly used for liver disorders, fever, cough, indigestion, and immunity enhancement.^[2] Herbal syrups are liquid oral formulations containing herbal extracts with suitable sweetening and preservative agents to improve palatability and stability.^[3] This review article summarizes the introduction, types of herbal syrups, chemical constituents, advantages, disadvantages, applications, methods of preparation, and evaluation tests of Kalmegh herbal syrup.

KEYWORDS: Kalmegh, *Andrographis paniculata*, Herbal syrup, Herbal formulation, Andrographolide, Hepatoprotective activity, Herbal medicine, Evaluation tests.

INTRODUCTION

Herbal medicines have been used since ancient times for the prevention and treatment of diseases. Herbal syrups are one of the most commonly used dosage forms because they are easy to administer, especially for pediatric and geriatric patients. Syrups improve patient compliance due to their pleasant taste and ease of swallowing. Herbal syrups are prepared using aqueous or hydroalcoholic extracts of medicinal plants combined with sweetening agents and preservatives.^[1]

Kalmegh (*Andrographis paniculata*), belonging to the family Acanthaceae, is commonly known as the “King of Bitters.” It is widely distributed in India, China, Sri Lanka, and Southeast Asian countries. The plant is traditionally used in Ayurveda, Siddha, and Unani systems of medicine for treating fever, liver disorders, diabetes, respiratory infections, and gastrointestinal diseases.^[2]

The major bioactive constituent present in Kalmegh is andrographolide, a diterpenoid lactone responsible for most of its pharmacological activities. Due to its bitter taste, formulation into syrup dosage form improves palatability and patient acceptability.^[3] Herbal syrup of Kalmegh is widely utilized as a liver tonic, immune booster, and antipyretic preparation.^[4]

Types of Herbal Syrup

Medicated Herbal Syrup

Contains active herbal ingredients used for therapeutic purposes such as cough syrup, liver tonic syrup, and antipyretic syrup.^[5]

Non-Medicated Herbal Syrup

Used mainly as flavored sweetening agents or vehicles in pharmaceutical preparations.^[5]

Dry Herbal Syrup

Available in dry powder form and reconstituted with water before use.^[6]

Sugar-Based Herbal Syrup

Prepared using sucrose as the primary sweetening agent.^[6]

Sugar-Free Herbal Syrup

Prepared using artificial sweeteners for diabetic patients.^[7]

Chemical Constituents of Kalmegh

Kalmegh contains several bioactive phytoconstituents responsible for its medicinal properties including andrographolide, neoandrographolide, deoxyandrographolide, andrographiside, flavonoids, diterpenoids, alkaloids, polyphenols, lactones, and tannins.^[8]

The diterpenoid lactones, especially andrographolide, are considered the major pharmacologically active constituents responsible for hepatoprotective and anti-inflammatory activities.^[9]

Advantages of Herbal Syrup

- Easy administration and swallowing^[10]
- Improved palatability of bitter drugs^[10]
- Better patient compliance^[11]
- Suitable for pediatric and geriatric patients^[11]
- Rapid absorption and therapeutic effect^[12]
- Provides soothing effect on throat and gastrointestinal tract^[12]
- Natural and comparatively safer formulation^[13]

Disadvantages of Herbal Syrup

- Microbial contamination may occur due to high sugar content^[14]
- Stability problems during storage^[14]
- Bulky packaging and transportation issues^[15]

- Dose measurement errors^[15]
- Shorter shelf life compared to solid dosage forms^[16]
- Risk of crystallization of sugar^[16]

Applications of Kalmegh Herbal Syrup

Kalmegh herbal syrup is widely used as a hepatoprotective agent in liver disorders, treatment of fever and common cold, immune enhancer, anti-inflammatory agent, antimicrobial and antiviral preparation, digestive stimulant, and for respiratory tract infections.^[17]

It is also used as a blood purifier and detoxifying agent in traditional medicine systems.^[18]

Method of Preparation of Kalmegh Herbal` Syrup

Ingredients

- Kalmegh extract^[19]
- Purified water^[19]
- Sucrose^[20]
- Citric acid^[20]
- Sodium benzoate^[21]
- Flavoring agent^[21]
- Coloring agent (optional)^[21]

Procedure

1. Fresh or dried Kalmegh leaves are collected, cleaned, and dried.^[22]
2. The dried material is powdered and subjected to extraction using water or hydroalcoholic solvent.^[22]
3. The extract is filtered and concentrated.²³
4. Syrup base is prepared by dissolving sucrose in purified water with heating.^[23]
5. Preservatives, citric acid, and flavoring agents are added.^[24]
6. The concentrated Kalmegh extract is mixed with syrup base with continuous stirring.^[24]
7. The final volume is adjusted with purified water.^[25]
8. The syrup is filtered and filled into amber-colored bottles.^[25]

Evaluation Tests of Herbal Syrup

Physical Appearance

Color, odor, taste, and clarity are evaluated visually.^[26]

pH Determination

The pH is measured using a digital pH meter.^[26]

Viscosity Test

Viscosity is determined using a viscometer.^[27]

Specific Gravity

Measured using a specific gravity bottle.^[27]

Stability Study

The formulation is stored under different temperature conditions to evaluate physical and chemical stability.^[28]

Microbial Load Test

Performed to determine microbial contamination.^[28]

Sedimentation Test

Checks for sediment formation during storage.^[29]

Drug Content Estimation

Determines the amount of active constituent present in the syrup.^[29]

CONCLUSION

Kalmegh herbal syrup is an effective herbal formulation with significant therapeutic benefits due to the presence of andrographolide and other phytoconstituents.^[30] The syrup dosage form improves palatability and patient compliance while maintaining medicinal efficacy.^[30] Kalmegh syrup has wide applications in liver disorders, fever, respiratory infections, and immune enhancement.^[31] Proper formulation methods and evaluation tests ensure the quality, stability, and safety of the preparation.^[31] Herbal syrups continue to gain importance in modern herbal pharmaceutical research due to their effectiveness and natural origin.^[32]

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