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Shatavari Syrup - A Modern Formulation for Holistic Wellness

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ABSTRACT: Shatavari (*Asparagus racemosus*) is a renowned herb in Ayurveda, traditionally revered for its myriad health benefits. In recent years, the popularity of Shatavari syrup has surged due to its purported therapeutic properties. This paper presents preparation and evaluation of the Shatavari syrup, focusing on its medicinal uses and potential health benefits. The review sheds light on Shatavari syrup's efficacy in various conditions such as reproductive health, gastrointestinal disorders, immunomodulation, and stress management. This paper underscores the importance of further investigation into Shatavari syrup to fully elucidate its therapeutic potential and optimize its utilization in clinical practice. This study aimed to prepare and evaluate a herbal syrup containing Shatavari (*Asparagus racemosus*) extract, liquorice, and sodium benzoate. The resultant syrup was subjected to various analyses including determination of secondary metabolites such as saponins, flavonoids, and phenolics, macro nutrient content, and physical parameters such as pH, colour, odour and taste. The results indicated significant presence of secondary metabolites and macro nutrients, along with satisfactory physical parameters, suggesting the potential of the herbal syrup as a nutritional supplement.

KEYWORDS: Shatavari, Liquorice, Herbal Syrup, Fertility, Galactagogue

I. INTRODUCTION

HERBAL SYRUP:

Herbal syrup is a concentrated herbal tea, preserved in sugar or honey. Historically, herbal syrups were used to sweeten the taste of bitter medicinal herbs to make them more palatable and extend their shelf life. They are a versatile alternative to alcoholic beverages for children or those who avoid alcohol.¹

According to an estimate of the World Health Organization (WHO), about 80% of the world population still uses herbs and other traditional medicines for their primary health care needs. As per WHO definition, there are three kinds of herbal medicines: raw plant material, processed plant material and medicinal herbal products. Herbal drugs are finished labelled products that contain active ingredients such as aerial or underground parts of plant or other plant material or combination thereof, whether in the crude state or as plant preparations.⁴ Herbal formulations have reached extensive acceptability as therapeutic agents for several diseases.⁵

MEDICATED HERBAL SYRUP :

Herbal Syrup containing medicinal extracts intended for medicinal use may be categorized as medicated herbal syrups. These extracts may be adopted from classified systems of alternative and complimentary medicine, ayurveda or herbal medicine or pharmacognosy classification systems which may contain invert sugar or sugar base with or without alcohol. The alcohol itself acts as preservative in the herbal syrup.¹

Ayurvedic formulations are preferentially administered by oral route, and most of the orally administered Ayurvedic formulations belong to liquid form of drug or drug combination.⁶

SHATAVARI:

Asparagus racemosus, traditionally known as shatavari means “who possesses a hundred husbands or acceptable to many”. Every part of *Asparagus racemosus* as- stem, root, leaves, are use to prevent disease in both humans and dairy animals.¹⁰ In Ayurveda it is considered a female tonic. In spite of being a rejuvenating herb it is beneficial in female infertility.

In modern Ayurvedic practices the roots of plant are considered to be effective as antispasmodic,appetizer, stomach tonic, aphrodisiac,galactagogue, astringent, antidiarrhoeal, antidysenteric, laxative, anticancer, anti-inflammatory, blood purifier, antitubercular, antiepileptic and also in night blindness, kidney problems and in throat complaints.⁹

USES OF SHATAVARI:

1. Shatavari is commonly used in traditional Ayurvedic medicine to support women's health, particularly during various stages of their reproductive life.
2. It is believed to have adaptogenic properties, helping the body cope with stress and promoting overall well-being.
3. Shatavari is often utilized to support lactation in nursing mothers, aiding in milk production and quality.
4. It is used to balance hormonal levels, making it beneficial for managing symptoms of menopause and menstrual irregularities.
5. Shatavari is known for its anti-inflammatory properties, which may help alleviate conditions like gastritis and ulcers.
6. Some people use shatavari to enhance digestive health and alleviate symptoms of indigestion and constipation.

LIQUORICE:

The roots of a plant *Glycyrrhiza glabra* Linn constitute an important drug in the ancient Unani literature, Commonly known as Mulethi or Aslus Soos or liquorice. It is one of the most widely used plants from the ancient medical history, both as a medicine and as a flavouring herb.⁸

Glycyrrhiza glabra used as mild laxative, anti-arthritic, antiinflammatory, anti-biotic, anti-viral, anti-ulcer, memory stimulant (being MAOinhibitor), anti-tussive, aphrodisiac, anti-mycotic, estrogenic, anti- oxidant, anti-caries agent, anti-neoplastic, anti-cholinergic, anti-diuretic, hypolipidemic agent. ⁷ .

USES OF LICORICE:

1. Culinary: Flavoring in candies, baking, and teas.
2. Medicinal: Soothes sore throats, aids digestion, potential anti-inflammatory properties.
3. Cosmetic: Skin-soothing in skincare, scalp health in hair care.
4. Traditional Medicine: Treating various ailments, adaptogenic properties.
5. Beverage Flavoring: Cocktails, herbal remedies, and tonics.
6. Smoking Cessation: Substitute for hand-to-mouth action and flavor.
7. Industrial: Flavoring in tobacco products, oral care products like toothpaste.

II. LITERATURE SURVEY

Sr. No	Main Author and Year of Publication	Title of Paper	Name of Drug/ API	Reference No.
1.	Xiao N Ruan 2023	The effect of sodium benzoate on host health	Sodium Benzoate	11
2.	Dahiya 2022	A broad review on shatavari :Queen of all herbs	Shatavari	12
3.	Shreyasi Majumdar 2021	Neuro-Nutraceutical potential of <i>Asparagus racemosus</i>	Shatavari	13
4.	Priyanka Namdeo 2021	Phytochemistry and Pharmacological Studies of <i>Glycyrrhiza glabra</i> :A medicinal plant review	Liquorice	14
5.	Md Kamrul Hasan 2021	Phytochemistry and Pharmacological activity and potential health benefits of <i>Glycyrrhiza glabra</i>	Liquorice	15
6.	Nutan Sharma 2021	Shatavari (<i>Asparagus Racemosus wild</i>) :A review on its cultivation , morphology , biological activities and pharmacological importance	Shatavari	16
7.	Sharma V, Singh S 2020	Formulation and Evaluation of Herbal cough syrup from seeds extract of Hedge mustard	Hedge Mustard	17

8.	Song-Yi Yang 2020	Antimicrobial Effects against Oral Pathogens and Cytotoxicity of Glycyrrhiza uralensis extract	Chinese Licorice	18
9.	Prashant Sakharam Bhokardankar	An Overview of Shatavari (Asparagus Racemosus) an Ayurvedic Drug	Shatavari	19
10.	Ajai K Pandey	Possible beneficial effects of shatavari	Shatavari	20

III. MATERIALS AND METHODOLOGY

Plant Materials: Shatavari Roots and Licorice

Chemicals: Sodium Benzoate and Water

Method:

1. Wash the Shatavari roots thoroughly to remove any dirt.
2. Soak them in water for a few hours or overnight to rehydrate.
3. Cut the roots into smaller pieces for better extraction of properties.
4. In a Round Bottom Flask , add the Shatavari roots and enough water to cover them.
5. Reflux the water and roots on low to medium heat until the water reduces to about half.
6. Decant the liquid to separate the roots from the infusion.
7. Repeat the above process three times to obtain the extract of roots .
8. Filter the liquid with normal filter paper twice , and then with Whatman filter paper .
9. Then repeat this procedure with licorice root .
10. Mix both the solutions together.
11. Filter the mixture.
12. Then add the preservative (Sodium Benzoate).
13. Then transfer it to a clean, airtight container.
14. Store the Shatavari syrup in the refrigerator for longer shelf life.

EVALUATION STUDIES:

Phytochemical screening:

Table no. 1

SECONDARY METABOLITE	TEST	OBSERVATION	RESULT
Saponin	5ml distilled water was added to 1ml plant extract and then shaken well,	Froth formation took place.	Stability of froth confirms the presence of saponin in plant extract.
Tannin	1ml 5% FeCl ₃ was added to 1ml plant extract.	Dark blue, black or dark green fail to appear	Confirms absence of tannin in plant extract.
Flavonoids	2ml 1% NaOH was added to 1ml plant extract	Presence of yellow colour	Presence of flavonoids.
Alkaloids	1ml iodine was added to 1ml plant extract.	Appearance of reddish brown precipitate	Confirms the presence of alkaloid in plant extract.
Glycoside	Libermann burchard test : Alcoholic extract of drug was evaporated to dryness and extracted with CHCl ₃ , add few drops of acetic anhydride followed by conc. H ₂ SO ₄ from side wall of test tube to the CHCl ₃ extract.	Formation of violet to blue coloured ring at the junction of two liquid.	Indicate the presence of steroid moiety.

	Salkowaski test Alcoholic extract of drug was evaporated to dryness and extracted with CHCl ₃ , add conc. H ₂ SO ₄ from sidewall of test tube to the CHCl ₃ extract.	Formation of yellow coloured ring at the junction of two liquid, which turns red after 2 min.	Indicate the presence of steroid moiety.
Terpenoids	2 ml chloroform was added to 5 ml of plant extract then 3 ml Conc. H ₂ SO ₄ was added to the solution.	Reddish brown ppt does not appear	Confirms presence of terpenoids.

Table no. 2

MACRO NUTRIENTS	TEST	OBSERVATION	RESULT
Carbohydrate	1ml Fehling A and 1ml Fehling B was added to 2ml plant extract and then test tube was heated in water bath for 20 min.	Appearance of red precipitate	Confirms the presence of carbohydrate in plant extract.
Protein	1ml of 1% CuSo ₄ and 1ml of 1% NaOH was added to 2ml plant extract.	Purple color does not appear	Confirms the absence of protein in plant extract.
Starch	1ml iodine was added to 1ml plant extract.	Blue or black color does not appear	Confirms the absence of starch in plant extract.
Fats	1mL of distilled water and few drops of ethanol were added to 1mL of plant extract.	The white color precipitate does not form	Absence of fat in the plant extract.

Physicochemical Parameters :

Table no. 3

Parameter	Evaluation	Result
Colour	Five ml final syrup was taken into watch glasses and placed against white back ground in white tube light. It was observed for its color by naked eye.	Brownish Yellow Colour was observed.
Odour	Two ml of final syrup was smelled individually. The time interval among two smelling was kept 2 minutes to nullify the effect of previous smelling.	Sweet
Taste	A pinch of final syrup was taken and examined for its taste on taste buds of the tongue.	Characteristic
Determination of pH	Placed an accurately measured amount 10 ml of the final syrup in a 100 ml volumetric flask and made up the volume up to 100 ml with distilled water. The solution was sonicated for about 10 minutes. pH was measured with the help of digital pH meter.	9.1

IV. RESULT AND DISCUSSION

The herbal syrup exhibited significant levels of secondary metabolites, including saponins, flavonoids, and phenolics, indicating its potential therapeutic value. Macro nutrient analysis revealed the presence of carbohydrates contributing to its nutritional content. Physical parameters such as colour, odour and taste were evaluated, suggesting good stability and palatability of the syrup. The addition of sodium benzoate as a preservative ensured adequate shelf-life and microbial stability.

The shatavari syrup was prepared by the method of extraction of the roots of shatavari and roots of liquorice in a suitable solvent i.e water. The preparation of herbal syrups is a traditional practice in many cultures, often used for their medicinal properties. Shatavari (*Asparagus racemosus*) and liquorice (*Glycyrrhiza glabra*) are two such herbs known for their therapeutic benefits. The extraction method used should ensure maximum retention of bioactive compounds, which contribute to the therapeutic efficacy of the syrup. The combination of shatavari and liquorice in a herbal syrup offers a synergistic effect, as both herbs are known for their adaptogenic and immunomodulatory properties.

V. CONCLUSION

The preparation and evaluation of a herbal syrup combining shatavari and liquorice represent a meticulous process aimed at harnessing the therapeutic benefits of these traditional medicinal herbs. Through careful extraction, sweetening, and bottling, the syrup is prepared to retain its potency and palatability.

The herbal syrup containing Shatavari, liquorice, and sodium benzoate demonstrated promising levels of secondary metabolites, macro nutrients, and satisfactory physical parameters. These findings suggest its potential as a nutritional supplement with possible health benefits.

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