Formulation and Evaluation of *Hyptis suaveolens* Herbal Syrup

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ABSTRACT

The objective of the present study was to formulate and evaluate herbal cough syrup. Potential anticough herbs were used for formulating herbal syrup. Decoction of plant *Hyptis suaveolens*, Leaves of Adulsa (*Adhathoda vasika*), stems of mulethi (*Glycyrrhiza glabra*), fruits of golmirch (*Piper nigrum*) and plant of pudina (*Mentha piperita*) was prepared. One part of decoction was mixed with five parts of simple syrup IP (1:5) to prepare formulation. The formulations were evaluated by morphological characters, physical parameters like PH, density, viscosity, Specific gravity, etc. Herbal syrup was also subjected for the accelerated stability testing (AST) for the period of 72 hours at accelerated temperature conditions. No marked changes were noticed in all the evaluated parameters during AST. The laboratory scale preparation of herbal Syrup may be used as a stable, liquid dosage form and the work done in stability testing may help in the progress of shelf-life determination studies. The presence study includes preparation and evaluation of *Hyptis suaveolens* herbal syrup first time.

**Keywords:** *Hyptis suaveolens*, Cough, organoleptic, qualitative,
INTRODUCTION

A drug administered in solution is immediately available for absorption, and in most cases, is more rapidly and efficiently absorbed than the same amount of drug administered in a tablet or capsule\(^1\). Designing of oral herbal formulations (solutions) is a challenge in modern pharmaceutics till date. However the final preparation must satisfy the requirements of pharmaceutical elegance with regard to taste, appearance and viscosity.

*Hyptis suaveolens* belongs to the Lamiaceae family, as an aromatic plant. It is common plant found in wasteland of North East India, Andaman and Nicobar Island, Deccan Peninsula. The plant traditionally used as a carminative, sudorific, galactogogue, stimulant, infection of uterus, antiseptic, antispasmodic, antirheumatic, headaches and for treatment of cancer\(^2,3\). As the plant is very potential in pharmacological uses the hypothesis were made that its herbal cough preparation may prepared and evaluated along with Adulsa, mulethi, golmirch and pudina.

MATERIALS AND METHOD

**Procurement of Plant Material**

Whole plant of *Hyptis suaveolens* was collected from ‘Yeola’ region, Maharashtra, India, in the month of Aug–Oct 2018. Botanical identification was carried out and voucher specimen of the plant material has been deposited at Institute level.

**Preparation of Plant Material**

Fresh plant of *Hyptis suaveolens* are shade dried and powdered was prepared by passing through sieve # 40, and kept in air tight polythene bags for further study.

**Chemicals and Instruments**

Solvents and reagents were procured from Research Lab-Fine Chem Industries, Mumbai, India. Some apparatus and other common glassware and instruments used for the study. Brookfield’s viscometer, Specific gravity bottle

**Method of preparation of decoction**

150 g powder of *Hyptis suaveolens*, 100g powder of Adulsa, 100 g powder of Mulethi, 50 g powder of Golmirch and 50 g powder of Pudina were taken. All the powders were mixed with 3000 ml of water. The mixture was boiled until total volume become one fourth of the initial volume. Then the decoction was cooled and filtered. Filtrate was taken to prepare final herbal syrup\(^5\).

**Method of preparation of final herbal syrup**
One part of decoction was mixed with five parts of simple syrup IP (1:5). Required quantity of methyl paraben was added as preservative, to the above mixture. Solubility was checked by observing the clarity of solution visually. The final herbal syrup was then subjected for evaluation5.

**Evaluation of herbal syrup**

**Physicochemical parameters**

Herbal syrup was evaluated for various physicochemical parameters such as physical appearance, pH, Specific Gravity and viscosity. For determination of pH 10%v/v solution prepared and specific gravity determined by specific gravity bottle. For determination of viscosity Ostwald’s viscometer used.

**Accelerated Stability Testing (AST)**

Stability testing of the prepared poly herbal syrup was performed on keeping the samples at accelerated temperature conditions. Nine portions of the final syrup (S₁, S₂, S₃, S₄, S₅, S₆, S₇, S₈ and S₉), were taken in amber colored glass bottles and were kept at accelerated temperature at 4₀°C, Room temperature and 47₀°C respectively. The samples were tested for all the physicochemical parameters, turbidity and homogeneity at the interval of 24 hr, 48 hr and 72 hr to observe any change.

**RESULTS AND DISCUSSION**

The prepared poly herbal syrup was evaluated immediately after preparation and all the tested parameter along with turbidity/homogeneity were compared with the changes in accelerated stability testing. The final syrup found to have pH 4.5 and specific gravity 1.1610 g/ml (Table 1). The results of stability study of the final syrup (Table-2) reveal that no changes were noticed in all the tested physicochemical parameter as well as turbidity/homogeneity during 24, 48 hr and 72 hr.

| Parameter       | Inference          |
|-----------------|--------------------|
| Color           | Reddish            |
| Odor            | Pleasant           |
| Taste           | Sweet              |
| pH              | 5.1                |
| Specific Gravity| 1.1610g/ml         |
| Viscosity       | 0.09 poise         |

**Table 1: Physicochemical Parameters of *Hyptis suaveolens* Herbal Syrup.**

| Sample | Temperature | 24hrs | 48hrs | 72hrs |
|--------|-------------|-------|-------|-------|
| S₁     | 4₀°C        | RC    | RC    | RC    |
| S₂     | RT          | RC    | RC    | RC    |
| S₃     | 47₀°C       | RC    | RC    | RC    |
| S₄     | 4₀°C        | RC    | RC    | RC    |
| S₅     | RT          | RC    | RC    | RC    |
| S₆     | 47₀°C       | RC    | RC    | RC    |
| S₇     | 4₀°C        | RC    | RC    | RC    |
| S₈     | RT          | RC    | RC    | RC    |
| S₉     | 47₀°C       | RC    | RC    | RC    |

**Table 2: AST of *Hyptis suaveolens* Herbal Syrup**

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| Odor  | RC | RC | RC | RC | RC | RC | RC | RC | RC |
|-------|----|----|----|----|----|----|----|----|----|
| Taste | RC | RC | RC | RC | RC | RC | RC | RC | RC |
| pH    | 5.1| 5.1| 5.1| 5.1| 5.1| 5.1| 5.1| 5.1| 5.1|
| Specific Gravity (g/ml) | 1.1570 | 1.1570 | 1.1590 | 1.1570 | 1.1590 | 1.1570 | 1.1570 | 1.1570 | 1.1590 |
| Viscosity (poise) | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 | 0.09 |

RT- Room Temperature; RC-Remain Constant

CONCLUSION

In conclusion, the expectorant herbal syrup of *Hyptis suaveolens* prepared in the laboratory scale may be used as a liquid dosage form which is stable and the results of the AST may make some progress in shelf-life degradation studies of herbal syrup helping Ayurvedic pharmaceuticals in near future.

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