

Polyherbal Oral Spray for Instant Mouth Refreshing [†]

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Abstract: In today's busy lifestyle, people are experiencing a constant shortage of time for their personal care. Focus on personal health and hygiene has reduced to a significant extent. In such situations, health and hygiene of people are continuously downgrading due to a lack of attention towards them. As the solution of such situations, the market is full of many instantly acting products containing harmful chemicals and ingredients. Mouth health and hygiene is of prime importance as it is the main gateway of food and for verbal communication. Tackling the increasing problems related to the health and hygiene of the oral cavity and emerging issues due to excessive use of instant-acting products for them is the need of the hour. Herbal formulations are proven treatment options that can deal with such situations without any untoward side effects. We have studied many traditionally used natural items to screen a few of the potent ingredients to formulate an oral spray. Developed polyherbal spray formulation using Clove oil, Peppermint oil, Fennel oil, Piper Betel oil and Cardamom oil was evaluated for various basic parameters. As all of the above herbal ingredients have already proven their activities for maintaining and improving oral hygiene and health, the final product was not evaluated for specific activities. Moreover, it does not require additional facilities. In a nutshell, the developed polyherbal spray was found to be a probable alternative for an instant mouth-refreshing product dealing with the majority of oral health and hygiene issues, especially a foul smell.

Keywords: polyherbal; mouth refreshing; spray; oral health; oral hygiene; foul smell



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1. Introduction

A foul smell from the mouth is a major issue for today's daily life. It is also a major indicator of poor oral health. People are not maintaining oral hygiene due to many reasons—lack of time being the chief one. Poor oral hygiene is directly connected with poor oral health and ultimately leads to a foul smell. Many instant-refreshing products such as chewing gums, mouthwashes, gargles, fast-dissolving films, etc., are available for suppressing the foul smell. However, none of them are fixing the root cause, that is, microorganisms.

In order to treat the root cause, a mouth-refreshing formulation must contain some antibacterial substances along with those that suppress the foul smell.

A mouth-refreshing spray is a widely accepted formulation out of all the available ones due to many benefits such as ease of preparation, handling and the instant effect. It is designed to instantly freshen up your breath and provide a burst of freshness to your mouth. When formulated with herbal or natural ingredients, such formulations can be more advantageous as they are comparatively more safe to use even at higher concentrations [1–3].

The present study emphasizes such polyherbal formulation to enhance patient compliance and safety along with instant mouth refreshing. Some of the ingredients selected for the same also have antibacterial activity, which addresses the root cause for the foul smell.

2. Materials and Methods

All the essential oils used for the formulation were purchased from a local market. Propylene glycol was purchased from Molychem, Gujarat.

2.1. Method for Preparing Mouth-Refreshing Spray

All the essential oils (as shown in Table 1) were mixed in a test tube. After obtaining a uniform liquid mixture, it was added dropwise to a three-quarter quantity of propylene glycol in a beaker, with constant stirring up to 30 min. The beaker was covered with aluminum foil while stirring to prevent the loss of any volatile component. It was transferred to a manual spray bottle for further evaluation [4].

Table 1. Formulations for polyherbal oral spray.

Ingredient	S1	S2	S3	S4	S5	S6	S7	S8
Clove oil	0.5	0.5	0.5	0.5	1	1	1	1
Peppermint oil	2	2	2	2	2	2	2	2
Fennel oil	0.5	1	1.5	2	0.5	1	1.5	2
Betel leaf oil	0.8	0.6	0.4	0.2	0.8	0.6	0.4	0.2
Cardamom oil	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Propylene glycol (q.s.)	100	100	100	100	100	100	100	100

All the quantities are in %v/v.

Quantities of various oils were selected on the basis of the literature and their activities, especially deodorizing potential and antibacterial activities.

2.2. Evaluation of Mouth-Refreshing Spray

All the formulations were evaluated for the relevant parameters in order to compare them and select the optimal formulation [5–7].

2.2.1. Appearance

The overall appearance of the formulation was evaluated by visual inspection. Parameters evaluated were the colour, clarity, presence of foreign particles, phase separation, presence of oil globules, etc. The overall appearance was rated as +, ++ and +++ for a poor, average and acceptable appearance of the formulation, respectively.

2.2.2. Viscosity

Viscosity of the formulation was measured using the Brookfield's viscometer.

2.2.3. Spray pattern

The spray pattern was evaluated by spraying coloured formulation on a plain white paper surface. Uniformity of the spray pattern was categorized as +, ++ and +++ for uneven, slightly uneven and good spray patterns, respectively.

2.2.4. Spray Angle

The spray angle was determined by spraying the formulation from the height of 5 cm above plain white paper. The angle between the outermost border and central rod tip (at a 5 cm height) was measured at four different points. The average was considered as the spray angle.

3. Results and Discussion

Results of evaluation tests of all the formulations are shown in Table 2.

Table 2. Evaluation of polyherbal oral spray.

Evaluation Parameter	S1	S2	S3	S4	S5	S6	S7	S8
Appearance	+++	+++	+++	+++	++	++	++	+
Viscosity (cps)	55.3	57.2	56.3	55.9	51.4	52.1	53.7	52.6
Spray pattern	++	++	+	+	+++	+++	++	++
Spray angle (°)	62.8	58.4	53.2	47.3	72.4	68.0	63.9	61.5

Considering the above data, batches S5 and S6 can be considered as optimal ones. Out of these batches, formulations containing a higher amount of Fennel oil can be more preferable in order to achieve instant-refreshing activity. Hence, batch B6 was selected as the final optimal batch from this study.

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