

Polyherbal Oral Spray for Instant Mouth Refreshing [†]

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Abstract: In today's busy lifestyle, people are experiencing constant shortage of time for their personal care. Focus on personal health and hygiene has reduced to the significant extent. In such situation, health and hygiene of the people are continuously downgrading due to lack of attention towards it. As the solution of such situations, 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 also for verbal communication. Tackling the increasing problems related to the health and hygiene of oral cavity and also emerging issues due to excessive use of instant acting products for it is the need of the hour. Herbal formulations are proven treatment options that can deal with such situations without any untoward side effects. We had 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 are already proven their activities for maintaining and improving oral hygiene and health, the final product was not evaluated for specific activities. Moreover it don't require additional facilities like In the nutshell, developed polyherbal spray was found to be a probable alternative for instant mouth refreshing product dealing with majority of oral health and hygiene issues, especially foul smell.

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

1. Introduction [1–3]

Foul smell from mouth is the major issue for today daily life. Which 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 foul smell. Many instant refreshing products like chewing gums, mouthwashes, gargles, fast dissolving films etc. are available for suppressing the foul smell. But 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 anti bacterial substance along with those which suppress the foul smell.

A mouth refreshing spray is widely accepted formulation out of all the available ones due to many benefits like ease of preparation, handling and 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.

Present study is emphasizing on such polyherbal formulation to enhance patient compliance and safety along with instant mouth refreshing. Some of the ingredients selected for the same are also having antibacterial activity, which is the root cause for the foul smell.

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2. Materials and Methods

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

2.1. Method for Preparing Mouth Refreshing Spray [4]

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 3/4th quantity of propylene glycol in a beaker, with constant stirring upto 30 min. 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.

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 literature and their activities, especially deodorizing potential and anti bacterial activities.

2.2. Evaluation of Mouth Refreshing Spray [5–7]

All the formulations were evaluated for the relevant parameters in order to compare them and select the optimal formulation.

2.2.1. Appearance

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

2.2.2. Viscosity

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

2.2.3. Spray pattern

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

2.2.4. Spray Angle

It was determined by spraying the formulation from the height of 5 cm above a plain white paper. The angle between the outermost border and central rod tip (at 5 cm height) was measured at four different points. 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 above data, batch S5 and S6 can be considered as optimal one. Out of these batches, formulation containing higher amount of fennel oil can be more preferred in order to achieve instant refreshing activity. Hence Batch B6 was selected as the final optimal batch from the study.

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