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COMPARATIVE EVALUATION OF HERBAL COUGH SYRUP AVAILABLE IN MARKET

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ABSTRACT

Even in places where access to modern healthcare is available, interest in and use of herbal remedies has grown significantly in recent years. Since therapeutic plants serve as the greatest origin of biologically active combinations utilized in both conventional and contemporary medicine, plant-based substances and herbal remedies. Demand for drugs, dietary supplements, health goods, and medications made from plants has increased. Its comprehensive assessment of herb cough remedies on the market is its main goal. The goal of the current study is to compare the effectiveness of an herbal syrup that includes Vasaka, ginger, honey, and holy basil, sometimes known as the "Queen of Herbs." Each of these syrups have expectorant and anti-tussive qualities. A number of criteria, including Specific gravity, temperature stability, taste, colour, and odour, tests for steroids, codeine, and reducing and non-reducing sugars, were assessed for the herbal syrup that was being sold. The findings showed that each of the syrups under evaluation has unique advantages and disadvantages. One syrup was praised for its relaxing qualities and strong customer ratings, while another was recognized for its quick relief and distinctive component combination. Overall, the study emphasizes how crucial it is for customers to make educated decisions and recommends areas for additional investigation and manufacturer-led product development.

Keywords: *Chemical Test, PH, Cough Syrup, and Stability Test*

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INTRODUCTION

Thousands of years ago, in India, the complex yet significant medical system known as Ayurveda was developed. This is why "Ayurveda" means "the science of life" or "the knowledge of life." For many years, the main method for preventing and treating cattle illnesses has been the use of medicinal herbs. The pharmaceutical business relies heavily on medicinal plants for research and development.^[1] An overview of the World Health Organization's (WHO) short methodology for standardizing herbal medications was provided. To guarantee that no completed product is adulterated before it is sold, standardization is crucial. Standardizing ayurvedic formulations in a consistent quality is now necessary. This effort aimed to standardize the quality and efficacy of a marketed herbal cough syrup formulation. Herbal formulation standardization entails identification verification as well as assessment of product quality and purity.^[2] According to a recent estimate from the World Medical Organization, 80 percent of people globally receive some their basic healthcare from medicinal plants. Herbal medications have negligible to no harmful effects. Colds and coughs are rather prevalent and affect people of practically all ages. Medications called expectorants and cough suppressants are used to treat coughs and their symptoms. These medications are often accessible as syrup, commonly referred to as Linctuses^[3]. Given that most Indians favor herbal medicines, a number of fast-acting herbal cough syrups have been released to the Indian market in consideration of this viewpoint. Because they are easier to swallow than tablets or capsules and absorb more rapidly, syrups are a common way for anti-tussive medications to be administered.^[4] The current study was conducted to compare and assess herbal cough syrups that contain natural components and don't have any side effects, as a result of the different negative consequences of the synthetic cough syrup preparations that are now accessible.^[5]

Type of Cough Syrup and Ingredients

Pankajakasthuri cough syrup	Zecuf cough syrup
Kasamardha, Kandakari, Karpoora, Tulsi, Syrup Base, Maricham, Pippali, Viswa, Ela, Twak, Vasa.	Dry extracts of Adhatoda Vasica leaf, Aloe barbadensis root, Curcuma longa root, Glycyrrhiza Glabra root and rhizome, Piper cubeba root, and Zingiber officinale root are available. ^[6]

Table No.1: Type of Cough Syrup and Ingredients

METHODOLOGY / EXPERIMENTAL WORK

Evaluation Studies:

Organoleptic Properties: A number of organoleptic characteristics, including color, flavor, and odor, were assessed for the herbal cough syrup.^[7]

Colour examination: Using a white backdrop and a white tube lamp, five milliliters of the finished syrup were transferred into five watch glasses and set against gravity. With the naked eye, its color was noted.^[8]

Odour examination: Two milliliters of the finished syrup were each sniffed separately. Two minutes was the time gap between scents in order to counteract the effects of the preceding scent.^[9]

Taste analysis: A small amount of the finished syrup was collected and the tongue's taste buds were tested.

pH Determination: Using distilled water to get the volume up to 100 ml, carefully measure out remaining of the finished syrup and place it in a volumetric flask. For almost ten minutes, the solution was sonicated. We used a digital pH meter to measure pH. ^[10]

Studies Stability: (72HRS) The herbal syrup underwent stability testing while the samples were kept at elevated temperatures. In amber-colored glass bottles, nine parts of the syrup (designated as 1a, so on) was placed and stored at ambient temperature (380C) and acceleration heat (470C), respectively. In order to detect any changes, the samples were examined for turbidity, homogeneity, and all physical and chemical characteristics every 24 hours, 48 hours, and 72 hours. ^[11]

Test for steroid

Zecuf Cough Syrup

Sr. No	Experiment	Observation	Inference
1	Salkowski Action: 2 ml CHCL ₃ + 2 ml sulphuric acid to 2 milliliter of extract/syrup and shake thoroughly.	The surface of chloroform becomes red, whereas the second layer of acid fluoresces greenish yellow.	Steroid Present
2	Burchard and Liebermann Reaction: Combine 2 milliliters of extract/syrup with maltose. Add two drops of concentrated H ₂ SO ₄ and one to two milliliters of acetic anhydride from the test tube's side.	Colors occur in red, blue, and green order.	Steroid Present
3	Liebermann's Reaction: Combine 3 ml extraction or syrup + 3 ml (CH ₃ CO) ₂ O, and 3 ml of chloroform. Warm and chill. Add a couple of additional drops.H ₂ O ₄ ^[12]	The color blue emerges.	Steroid Present

Table No.2: Zecuf Cough Syrup

Pankajakasthuri Cough Syrup

Sr. No	Experiment	Observation	Inference
1	Salkowski Reaction: 2 ml Syrup+2ml CHCL ₃ +2ml conc. sulphuric acid.	No CHCL ₃ layer appears red and acid layer shows greenish yellow fluorescence	Steroid Absent
2	Liebermann – Burchard Reaction :2 ml syrup + CHCL ₃ +2ml (CH ₃ CO) ₂ O+2 drops conc. sulphuric acid from the side of test tube.	No red colour appears.	Steroid Absent
3	Liebermann's Reaction :3ml syrup + chloroform with 3 ml (CH ₃ CO) ₂ O. Heat and cool + few drops of conc. Sulphuric acid ^[13]	No Blue colour appears	Steroid Absent

Table No.3: Pankajakasthuri Cough Syrup

Test for codeine

Codeine is an opioid used to treat coughing and pain.

Identification of Codeine: The presence of codeine in the syrup formulation is determined by conducting the test of phenol. This is because the codeine structure has the phenolic (-OH) group, proves the presence of codeine content.^[14]

Zecuf Cough Syrup

Sr. No	Experiment	Observation	Inference
1	A. Neutral Ferric chloride test: 0-1 g (3 dp.) sub. + 5 dp. neutral ferric chloride soln.	Appearance of blue, violet or green colour indicates a phenol. The colour is due to complex formation between ferric ion and phenol (or substituted phenol).	Codeine present
2	B. NaOH test: Shake 0-1 g (3 dp.) sub. with 1 ml. 10 % NaOH soln. ^[15]	The sub. dissolves and reappears on adding con. HCl, showing the presence of phenol.	Codeine present

Table No.4: Zecuf Cough Syrup

Pankajakasthuri Cough Syrup

Sr. No	Experiment	Observation	Inference
1	A. Neutral Ferric chloride test: 0-1 g (3 dp.) sub. + 5 dp. neutral ferric chloride soln.	No Appearance of blue, violet or green colour indicates a phenol. The colour is due to complex formation between ferric ion and phenol (or substituted phenol).	Codeine Absent
2	B. NaOH test: Shake 0-1 g (3 dp.) sub. with 1 ml. 10 % NaOH soln. ^[16]	No, the sub. dissolves and reappears on adding con. HCl, showing the presence of phenol.	Codeine Absent

Table No.5: Pankajakasthuri Cough Syrup

Test for Reducing and Non reducing sugar

Zecuf Cough Syrup

Sr. No	Experiment	Observation	Inference
1	Fehling's test: 1 milliliter each of Fehling's A and B solutions were combined and brought to a heat for a minute. Test solution was added in the same volume. Bathed in hot water for five to ten minutes. ^[17]	A thick brick-red precipitate first, then yellow Not developed	Non reducing sugar present
2	Benedict's test: In a testing tube, a comparable amount of Benedict's reagent + test solution was combined. heat for five minutes in a bath of boiling water. ^[18]	The solution might not seem red, yellow, or green.	Non reducing sugar present

Table No.6: Zecuf Cough Syrup

Note: The exam solution for Fehling and Benedict does not provide an answer.^[19]

Pankajakasthuri Cough Syrup

Sr. No	Experiment	Observation	Inference
1	Fehling's test: 1 milliliter each of Fehling's A and B solutions were combined and brought to a heat for a minute. Test solution was added in same volume. Bathed in hot water for five to ten minutes.	A thick brick-red precipitate first, then yellow	Reducing sugar present
2	Benedict's test: In a test tube, an equal vol of Benedict's reagent + test solution was combined. heat for five minutes on water bath ^[20]	The sol might show up red, yellow, or green.	Reducing sugar present

Table No.7: Pankajakasthuri Cough Syrup

RESULT

Physical Parameters	Pankajakasthuri Cough Syrup	Zecuf Cough Syrup
Colour	Brown	Green
Odour	Pleasant	Pleasant
Taste	Sweet	Sweet
pH	5.5	8.5

Table No.8: Physico - Chemical Studies of the Herbal Cough Syrup's

Sample Code	Pankajakasthuri Cough Syrup	Zecuf Cough Syrup
Time	24hrs	24hrs
Temperature (°c)	5 / 37 / 45	5 / 37 / 45
Colour	Brown	Green
Odour	Pleasant	Pleasant
Taste	Sweet	Sweet
PH	5.5	8.5
Thermo stability	OK	OK
Turbid	Absence	Absence
Degradation	NO	NO

Table No.9: Data from the Herbal Cough Syrup's Accelerated Stability Studies

DISCUSSION

The evaluation of these herbal formulations that were commercialized was conducted using many criteria, including pH, color, taste, odor, thermal stability, specific gravity, and turbidity Official tests for codeine, steroids, and reducing and non-reducing sugars.

CONCLUSION

The current study aimed to compare and assess different herbal cough syrup formulations that are sold for the constituents that are present. The medicinal cough medicine containing herbal ingredients complied with all evaluation tests, and additional formulations also demonstrated positive results, according to the gathered data. Future research on expedited stability studies is required in order to create a herbal cough syrup that is both safe and effective.

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