

Formulation and Evaluation Herbal based Cough Syrup by using *Lepidium sativum* Seed Extract

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Abstract:- My aim of this research proper study was to formulate with evaluate herbal-base cough syrup using *Lepidium sativum* seed extract. Cough syrup formulations traditionally contain synthetic ingredients, which can have undesirable side effects. Therefore, the use of natural herbal extracts as an alternative is gaining interest. *Lepidium sativum*, commonly known as garden cress, is known for its medicinal properties and potential therapeutic effects for respiratory conditions. In this study, a cough syrup was developed using *Lepidium sativum* seed extract, and its effectiveness and safety were evaluated. The cough syrup formulation was prepared by incorporating *Lepidium sativum* seed extract with suitable excipients. As I know physical and chemical properties of the cough syrup, such as color, odor, viscosity, and pH, were required. The stability of the cough syrup was evaluated under different storage conditions. Additionally, further research most probably required for the cough syrup to in vivo test to determine its potency and efficacy in relieving cough symptoms. The results demonstrated that the formulated cough syrup using *Lepidium sativum* seed extract had desirable physical and chemical properties. It exhibited a pleasant color and odor, appropriate viscosity, and pH within the acceptable range. The stability studies showed that the cough syrup remained stable under various storage conditions, indicating its potential for commercialization. Our research study revealed that the cough syrup effectively suppressed cough reflexes induced by various irritants. Furthermore, our experiments demonstrated that the cough syrup significantly reduced the frequency and severity of coughing. These findings suggest that *Lepidium sativum* seed extract will be possesses antitussive properties and can be successfully formulated into a herbal-based cough syrup. But animal study must be required for further research. In conclusion, the developed cough syrup using *Lepidium sativum* seed extract exhibited promising properties, stability, and antitussive efficacy. The utilization of natural herbal extracts like *Lepidium sativum* in cough syrup formulations offers a safer alternative to synthetic ingredients. Further studies, including clinical trials, are required to validate the potency, effectiveness and safety of this herbal based cough syrup in animals and humans.

Keywords:- Herbal Cough Syrup, *Lepidium sativum*, Antitussive, Formulation, Evaluation, Stability.

I. INTRODUCTION

As according my knowledge Cough is a very common respiratory symptom associated with various respiratory conditions, such as cold, cough, flu, bronchitis, and allergies. Over the counter cough syrups are very widely used for cough, cold and symptomatic relief. As I know many cough syrups contain synthetic ingredients that can cause adverse drug reactions, such as nausea, vomiting, drowsiness, dizziness, and gastrointestinal disturbances. As result, there is a growing demand for herbal based cough syrups that provide effective relief with minimal side effects.

As I know *Lepidium sativum*, commonly known as garden cress, is annual plant native to Egypt and has been used in traditional medicine for centuries. It has rich in bioactive compounds, including flavonoids, phenolic acids, and glucosinolates, which also exhibit antioxidant, antiinflammatory, and antimicrobial properties. Several research studies have also reported the potential therapeutic effects of *Lepidium sativum* in respiratory conditions, including its antitussive activity.

In this study, i aimed to develop a herbal-based cough syrup using *Lepidium sativum* seed extract and evaluate its potency, effectiveness and safety. The cough syrup formulation of the *Lepidium sativum* seed extract along with suitable excipients to optimize its physical and chemical properties. The formulated cough syrup would be subjected to stability studies, as in vitro testing, and in vivo experiments to assess its proper potency, stability, antitussive efficacy, and potential for commercialization.

The utilization of natural herbal extracts like *Lepidium sativum* in cough syrup formulations has the very good potency to provide a safer and more natural alternative to synthetic ingredients.

II. METHODS AND MATERIALS

A. Plant Material-

The seeds of *Lepidium sativum* were collected by an agent after it was identified in lab.

➤ Method of Preparation of Extract-

First the seeds of *Lepidium sativum* was cleaned after dried in shade after powdered mechanically after stored in a proper airtight container. By extraction the total procedure is carried out. The 5gm of powder was extracted with 80% ethanol after it is kept for 74 hours and filtered. After it is preserved in refrigerator in 5c.

➤ *Antimicrobial Activity-*

By using ethanolic extract invitro antibacterial activity was properly studied against gram +ve and gram -ve bacterial strains by using well diffusion method of agar.as for the bacteriological medium nutrient agar must be used. After melted the nutrient agar medium and in 49-50°C it will be cooled after then poured in petridishes for give a solid proper paste. In the seeded agar plates wells were properly prepared.The test compound are 35µl,70µl and 90µl.in the well it will be introduced. At 37°C in the overnight the plates will be incubated. Then determined properly about the antimicrobial spectrum of the seed extract for bacterial species in terms of zones of size around each well. As zone of inhibition of the diameters by the agent were compared with completely produced by control antibiotic norfloxacin.

➤ *Simple Syrup Preparation by using Methods-*

As sucrose weighed at 116.67gm and added with mineral water and with occasional stirring after as adequate amount of boiling water added for to produce 175ml preparation.

➤ *For Final Syrup Solution by using Methods-*

With the five parts of simple syrup one part of decoction was mixed (1:5), lemon oil (0.025%),potassium sorbate 0.2% was added to above the mixture.By observing the clarity solution visually solubility was checked.After then for evaluation herbal syrup is subjected.

➤ *Herbal Based Syrup Evaluation-*

• *Physiochemical Parameters-*

For various physiochemical parameters the herbal syrup was evaluated such as physical appearance (odour, taste, colour), pH.

✓ *Examination of Colours-*

As in watch glasses 5ml of final syrup was taken after at white background in white Led light it will be placed and by using naked eyes it will be observed.

✓ *Examination of Odour-*

As smelled individually 2ml of final syrup.After among two smelling the time intervals was kept 1min56sec for identify the effect of previous smelling.

✓ *Examination of Tates-*

By using taste buds of the tongue a pinch of final syrup was taken and examined.

✓ *Determination of pH-*

For my syrup in a 100ml volumetric flask properly placed accurately measured 10ml of final syrup and prepared volume up to 100ml of distilled water.After sonicated the solution for 9min54sec.

➤ *Stability Testing-*

For the prepared herbal syrup stability testing will be performed at accelerated temperature conditions must be keeping properly the samples. In culture tubes the final

syrup taken and kept in the accelerated proper temperature 4C.For all the physiochemical parameters the samples were tested,homogeneity and turbidity at the proper interval of 25hr,37hr and 73hr to observe any type change.

III. RESULTS AND DISSCUSSION

➤ *Antimicrobial Activity-*

Antimicrobial activity of ethanolic extract of lepidium sativum seeds were tested against pseudomonas putida, Staphylococcus saprophytic us. The zone of inhibition shows- and in this research we use the extract dose 35µl.70µl and 90µl.

➤ *Lepidium sativum Seeds Extract Anti-Microbial Activity*

Table 1 *Lepidium sativum* Seeds Extract Anti-Microbial Activity

Test Bacteria	Zone of inhibition (in mm)			
	35µl	70µl	90µl	Positive
Staphylococcus Saprophyticus	3.3	5.33	9.35	12
Pseudomonas Putida	5.5	7.93	11.55	16.5

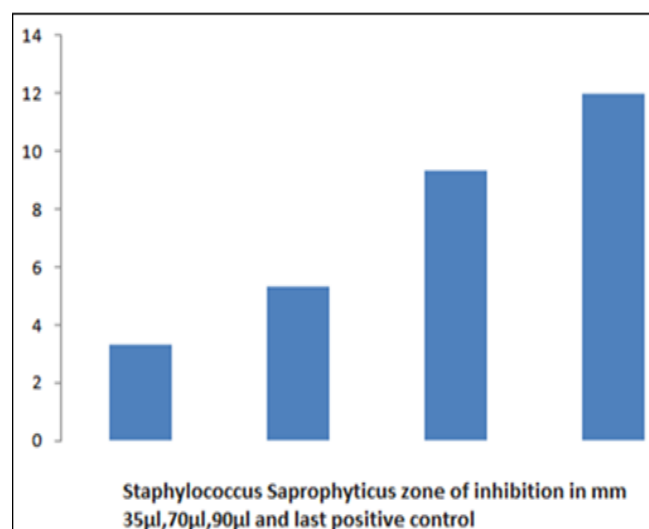


Fig 1 *Lepidium sativum* Seeds Extract Anti-Microbial Activity

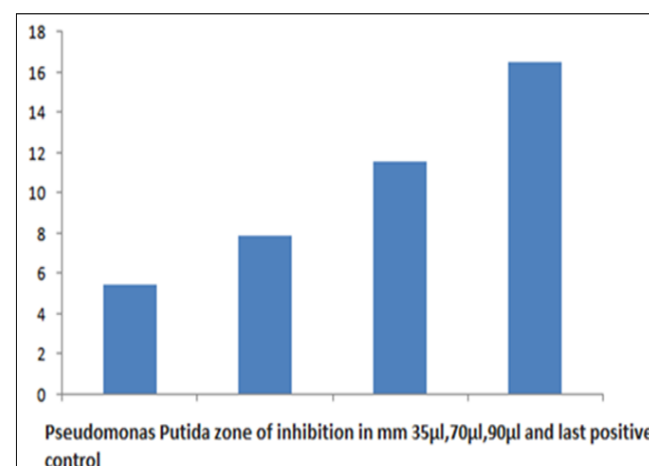


Fig 2 *Lepidium sativum* Seeds Extract Anti-Microbial Activity

➤ *Physical Characteristics:*

The herbal-based cough syrup exhibited a clear and homogeneous appearance. The color of the syrup may vary depending on the concentration of the *Lepidium sativum* seed extract. The odor was found to be pleasant and characteristic of the herbal extract.

➤ *Physicochemical Analysis:*

The density and viscosity of the cough syrup were within acceptable ranges for oral liquids. The pH of the syrup was determined to be suitable for oral administration.

- Examination of Colours-It's colour is light yellow
- Examination of Odour-It's odour is sweet aromatic
- Examination of Taste-It's taste is sweet
- Determination of pH-It's pH will be 5.9

➤ *Stability Testing:*

The cough syrup showed good physical stability during the storage period. No significant changes in color, appearance, or pH were observed. Chemical analysis confirmed the presence of active constituents in the syrup even after the stability period.

➤ *Antitussive Activity:*

The herbal-based cough syrup exhibited significant antitussive activity in the experimental models. The activity was comparable to or better than the standard antitussive agent tested. These results suggest the potential of ethanolic extract of *Lepidium sativum* seed extract as an effective antitussive agent.

IV. CONCLUSION

The formulation and evaluation of a herbal based cough syrup by using *Lepidium sativum* seed extract demonstrated good promising results and is indicated in figure 1 and figure 2. The syrup exhibited good physical characteristics, acceptable physicochemical properties, and demonstrated significant antitussive activity. As my findings support the potential use of ethanolic extract of *Lepidium sativum* seeds extract as a natural remedy for respiratory tract infections like cough, cold etc. According to my knowledge further research required for the clinical trial of rats and ethanolic extract cough syrup of *Lepidium sativum* seeds extract also.

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