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Research Paper

Phytochemical Analysis of Some Herbal Medicines

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Abstract

In this research, roots of *Mussaenda erythrophylla, Elaeocarpus ganitrus,* and *Cassia sophera were investigated* in a phytochemical manner. As part of the investigation, the extracts from crude drug powder of these plants were prepared. Furthermore, these plants were subjected to the Phytochemical Screening. Carbohydrates, cardiac glycosides, steroids, alkaloids, flavonoids, and anthraquinone glycosides existed in *Elaeocarpus ganitrus;* Cardiac glycosides, alkaloids, and carbohydrates existed in *Mussaenda erythrophylla*; and *carbohydrates, a*lkaloids, flavonoids, saponins, and anthraquinone glycosides existed in *Cassia sophera.*

Keywords: Phytochemical Screening; Mussaenda Erythrophylla; Elaeocarpus Ganitrus; Cassia Sophera Plant Species

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1. Introduction

Botanical medicine, Phytomedicine or more commonly known as Herbal medicine may be regarded as the science of using seeds of plants, flowers, and roots for medicinal purposes. Moreover, this branch of medicine has been practiced for centuries alongside the conventional medicine. Developments in clinical research and a significant progress in analysis and quality control have led to a considerable acceptance of herbal medicine in treating and preventing various diseases. Each plant possesses a unique medicinal effect with respect to the plant species which is fully consistent with the widely accepted concept that the combination of secondary metabolites in a specific plant is taxonomically different for three medicinal plants, their description, and application respectively. Three plants were considered for phytochemical screening in this research. Then, extracts from crude drug powder of these plants were prepared and assessed. Finally, in order to investigate the phytochemical constituents, a qualitative analysis was applied for different chemical performance.

2. Materials and Methods

2.1 Plant Materials

A procedure was implemented in order to identify the roots of plants *Mussaenda erythrophylla, Elaeocarpus ganitrus,* and *Cassia sophera.* They were then gathered from different areas of Guntur, Prakasham and Krishna districts of Andhra Pradesh, India.

2.2 Extraction of the solvent

These roots were then accumulated, washed, dried and powdered individually. Moreover, a conical flask containing 50g of dried powder, previously weighed, was liquefied with a sufficient amount of ethanol for about a week. This procedure should repeat with water. Then, the residue was obtained after the entire mixture was filtered and concentrated in a china dish on a hot plate. For further experimental use, the extracts were collected, labeled and stored accordingly.

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2.3 Detecting carbohydrates, alkaloids, flavonoids, saponins, steroids, cardiac glycosides, anthraquinone glycosides using qualitative analysis

Qualitative analysis was performed for the extracts and crude dried powders of *Mussaenda erythrophylla, Elaeocarpus ganitrus,* and *Cassia sophera* in order to validate the presence of chemical constituents.

3. Results and Discussion

Over the past few years, investigations concerning chemical constituents and the advent of numerous principles of medicinal plants have gained considerable traction around the globe. The phytochemical screening was used in our research for the root of plants *Mussaenda erythrophylla, Elaeocarpus ganitrus,* and *Cassia sophera.* In the next step, the plants were identified and gathered. Then, the phytochemical screening was performed before the extracts were dried and powdered. Moreover, the qualitative chemical tests were implemented for the ethanolic extracts. Our research suggested that carbohydrates, alkaloids, flavonoids, cardiac glycosides, anthraquinone glycosides, saponins, steroids, and tannins were present in *Mussaenda erythrophylla*. Furthermore, the results proposed that carbohydrates, flavonoids, alkaloids, steroids, cardiac glycosides, and tannins existed in *Elaeocarpus ganitrus*. Finally, based on the result, carbohydrates, flavonoids, saponins, steroids, and alkaloids were present in *Cassia sophera*. Table 1, Table 2, and Table 3 depict these results respectively.

Table 1. Phytochemical evaluation of *Mussaenda erythrophylla*

Chemical tests	Results
Test for Carbohydrates	
Molisch's test	Positive
Fehling's test	Positive
Benedict's test	Positive
Barfoed's test	Positive
Test for alkanoids	
Hager's test	Positive
Wagner's test	Positive
Test for flovonoids	
Lead acetate test	Positive
Test for saponins	
Foam test	Negative
Test for steroids	
Lieberman burchard test	Negative
Salkowski test	Negative
Test for cardiac glycosides	
Legal test	Positive
Kellet-killiani test	Positive
Test for anthraquinone glycosides	
Borntranger's test	Negative

Table2. Phytochemical evaluation of *Eleocarpus ganitrus*

Chemical tests	Result
Test for carbohydrates	
Molisch's test	Positive
Fehling's test	Positive
Benedict's test	Positive
Barfoed's test	Positive
Test for alkaloids	
Hager's test	Positive
Wagner's test	Positive
Test for flavonoids	
Lead acetate test	Positive
Test for saponins	
Foam test	Negative
Test for steroids	
Lieberman burchard test	Positive
Salkowski test	Positive
Test for cardiac glycosides	
Legal test	Positive
Keller-killiani test	Positive
Test for anthraquinone glycosides	
Borntrager's test	Positive

Table 3. Phytochemcial evaluation of *Cassia sophera*

Chemical tests	Result
Test for carbohydrates	
Molisch's test	Positive
Fehling's test	Positive
Benedict's test	Positive
Barfoed's test	Positive
Test for alkaloids	
Hager's test	Positive
Wagner's test	Positive
Test for flavonoids	
Lead acetate test	Positive
Test for saponins	
Foam test	Positive
Test for steroids	
Lieberman burchard test	Negative
Salkowski test	Negative
Test for cardiac glycosides	
Legal test	Negative
Keller-killiani test	Negative
Test for anthraquinone glycosides	
Borntrager's test	Positive

4. Conclusion

The root plants of *Mussaenda erythrophylla, Elaeocarpus ganitrus,* and *Cassia sophera* were investigated using phytochemical constituents screening. Carbohydrates, alkaloids, and flavonoids were present in all of the plants, the results suggested. Moreover, higher levels of metabolites existed in the plants. Finally, further investigations are needed while incorporating fractionated extracts and purified chemical components.

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