PHYTOCHEMICAL SCREENING AND FLUORESCENCE ANALYSIS ON METHANOLIC FLOWER EXTRACT OF *LITSEA FLORIBUNDA*(BLUME) GAMBLE.

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Abstract

Plant products are also of great importance in the process of drug discovery because of great diversity, permitting the identification of lead molecules for the development of new therapeutic agents. There is an increase in worldwide interest in the use of plant based pharmaceuticals as a complementary or alternative medicine, either to prevent or to ameliorate many diseases. The selected plant Litsea floribunda (Blume) Gamble is a dioecious tree species which is endemic to India and belongs to Lauraceae.To determine various phytoconstituents present in flowers of Litsea floribunda qualitative phytochemical analysis and fluorescence analysis was done by standard methods. The Phytochemical tests were carried out on the extracts using standard procedures to identify the constituents. The preliminary Phytochemical tests of methanolic flowers extract of L. floribunda were screened for the presence of active principles such as carbohydrates, glycosides, fatty acids, protein and amino acids, saponins, tannins, phenolic compounds, β-sitosterols, triterpenoids, anthocyanins and flavonoids using standard procedures. The result of fluorescence analysis showed that in visible light, the plant powder exhibit various shades of green and brown fluorescence and various shades of green, blue and brown were found in under UV light. The results of the present study suggest that flowers have various phytoconstituents that can act as a source of natural antioxidants and can be used for the development of plant based drugs.

Key words: Anthocyanins, Development, Fluorescence, Phytochemical and Source.

INTRODUCTION

The plant kingdom is a treasure house of potential drugs and in the recent years there has been an increasing awareness about the importance of medicinal plants. Drugs from the plants are easily available, less expensive, safe and efficient and rarely have side effects. The plants which have been selected for medicinal use over thousands of years constitute the most obvious choice of examining the current search for therapeutically effective new drugs such as

anticancer drugs (Dewick *et al*., 1996). Natural products especially from plant sources, including species have been investigated for their characteristics and health effects. Traditional medicine practices that have been used for thousands of years back by people in China, India and many other countries (Sneader, 2005).

According to World Health Organization (WHO) “Any plants and its organs containing any substance that can be used therapeutically, or can be used as raw material for chemical/pharmaceutical synthesis" is classified as drugs. Generally, the presence of different phytochemicals in crude plant extracts has been linked to the detrimental effects of leachates, root exudates or decomposing residues of such plants on the other vegetation or succeeding crops (Mubashir and Wajaht, 2011).

Owing to the significants in the above context, such preliminary phytochemical screening of plants is the need of the hour in order to discover and develop novel therapeutic agents with improved efficacy. Phytochemical analyses of several species of medicinal plants and allelopathic activities of the crude chemical compounds on crops and plants have yielded positive results (Fujii *et al*., 2004).

Litsea floribunda (Blume) Gamble leaves are used as one of the ingredients in the preparation of herbal shampoo, in Southern India (Girish et al., 2014). In the health traditions, the local inhabitants use *litsea floribunda* to treat certain gastrointestinal and respiratory disorders. Till now, no data are available on the phytochemical profile, antioxidant and hepatoprotective potentials of the species. Hence the present works, was carried out in the selected plant *Litsea floribunda.*

MATERIALS AND METHODS

Collection of the plant materials:

Figure -1

Litsea floribunda (Blume) Gamble was collected from Kothagiri. It is in Nilgiri district of Tamil Nadu. It is the oldest and third largest hill station in the Nilgiris. It has an average elevation of 1847 metres. It is surrounded by beautiful wilderness, misty medows and several waterfalls. It's a mesmerising beautiful hill.

Phytochemical screening of methanolic crude extract

The phytochemical tests were carried out using the standard procedures to identify the phytoconstituents (Harborne,1983).

Physicochemical analysis

a) Foreign matter analysis:

Foreign matter presence may be due to faulty collection of crude drug or due to deliberated mixing. It was separated from the drug so that results obtained from analysis of the drug gives accuracy. Its percentage in the crude drug was calculated (Mukherjee, 2002).

b) Determination of moisture:

10g of accurately weighed fresh flowers of the test plant was taken in a china dish. It was incubated at 105º c for 5 minutes. The content of the dish after incubation was weighed and the values were noted (Mukherjee, 2002).

c) Determination of extractive values:

10g of the air dried plant drug was transferred to an extraction thimble, extracts with various solvents in the order of increasing polarity by using Soxhlet extraction apparatus. The extract was filtered into a tarred evaporating dish and the solvent was evaporated on the water bath. The percentage of extractive values for various solvents was calculated with reference to the air-dried drug (Mukherjee, 2002).

d) Determination of alcohol soluble extractive values:

5g of air-dried drug macerated with 100ml of alcohol in a closed flask 24hrs was frequently shaken during first 6hrs and allowed to stand for 18hrs. It was rapidly filtered taking precautions against loss of solvents. 25ml of filtrate was evaporated to dryness in a tarred flat bottomed china dish and dried at 105ºc until constant weight was obtained (Mukherjee, 2002).

e) Determination of water soluble extractive values:

5g of air-dried drug macerated with 100ml of alcohol in a closed flask 24hrs was frequently shaken during first 6hrs and allowed to stand for 18hrs. It was rapidly filtered taking

precautions against loss of solvents. 25ml of filtrate was evaporated to dryness in a tarred flat bottomed china dish and dried at 105ºc until constant weight was obtained (Mukherjee, 2002).

Fluorescence analysis:

Fluorescence analysis of the drug was observed under day and UV light using various solvent extracts as well as acids and alkaline treated with solutions of the drug. The powder was treated with neutral solvents like hexane, benzene, chloroform, methanol, ethyl acetate, alcohol, acetone and acids like 1N Hydrochloric acid, 50% sulphuric acid and alkaline solutions (Chase and Pratt, 1949).

RESULTS AND DISCUSSIONS

Table -1

Phytochemical analysis of methanolic flower extract of *Litsea floribunda* (Blume) Gamble.

Phytoconstituents	Methanolic flower extract
Proteins	+
Carbohydrates	+
Alkaloids	-
Steroids	-
Triterpenoids	+
Glycosides	+
Saponins	+
Flavonoids	+
Tannins	+
Polyphenols	+
Anthocyanins	+
Fattyacids	+

Aminoacids	+

Table -2
Physicochemical analysis of *Litsea floribunda* (Blume) Gamble.

S.No	Parameters	% Of Concentration
1.	Foreign matter	1.00
2.	Moisture	7.51
3.	Hexane	0.649
4.	Chloroform	1.771
5.	Ethyl acetate	0.800
6.	Ethanol	35.54
7.	Methanol	63.3
8.	Water	61.4

Table -3
Fluorescence analysis of flowers of *Litsea floribunda* (Blume) Gamble.

S.N	Test	0 hours		24 hours		48 hours	
		Day light	UV Light	Day light	UV Light	Day light	UV Light
1	Drug + Aqueous	Brown	Brown	Brown	Brown	Brown	Brown
2	Drug + Methanol	Brown	Dark Brown	Red	Reddish Brown	Dark Brown	Black
3	Drug + Alcoholic 1N NaOH	Brown	Brown	Ash	Ash	White	Pale green

4	**Drug + 1N NaOH**	**Dark brown**	**Red**	**Orange**	**Orange**	**Pale orange**	**Orange**
5	**Drug + 50% HCL**	**Dark brown**	**Brown**	**Brown**	**Brown**	**Dark brown**	**Brown**
6	**Drug + Hexane**	**Light brown**	**Brown**	**Brown**	**Pink**	**Pale pink**	**Light brown**
7	**Drug + CH CL_3**	**Brown**	**Light Brown**	**Brown**	**Brown**	**Light brown**	**Brown**
8	**Drug + Ethyl acetate**	**Light brown**	**Brown**	**Dark brown**	**Brown**	**Precipitate**	**Brown**
9	**Drug + Acetone**	**Yellow**	**Yellow**	**Yellowish brown**	**Yellow**	**Yellow**	**Pale yellow**
10	**Drug + Benzene**	**Brown**	**Brown**	**Brown**	**Brown**	**Brown**	**Pale green**
11	**Drug + Alcohol**	**Yellow**	**Yellow**	**Yellowish brown**	**Yellow**	**Pale yellow**	**Light brown**
12	**Drug + water**	**Orange**	**Pale orange**	**Pale orange**	**Orange**	**Pale orange**	**Pale orange**

In the present study the powder of crude drug was investigated for the plant extracts revealed the presence of active principles such as carbohydrates, glycosides, fatty acids, protein and amino acids, saponins, tannins, phenolic compounds, β - sitosterols, triterpenoids, anthocyanins and flavonoids, alkaloids and steroides are absent using standard procedures , which were tabulated in table -1. Alkaloids are the basic natural products which occur in plants. They generally found in the form of salt with organic acids. They are considered to be the most efficient therapeutic agent among plant substances. Purely synthesized alkaloid can be used as medicinal agents. Because of their analgesic and anti- bacterial properties (Eleazu *et al*., 2012). Phytochemical analysis conducted on the plant extracts revealed the presence of constituents which are known to exhibit medicinal as well as physiological activites (Sofowra, 1993).

Phytochemical evaluation was performed for qualitative detection of various chemical constituents which aid in tracing the presence of active entity that elicit a major pharmacological response. Flavonoides have a wide range of biological and pharmacological activities according

to in vitro studies, which includes biological activities like anti - hyperlipidemic, anti - inflammatory, antioxidant and anti - allergic properties. The phytochemical tests are therefore significant and helpful in finding chemical constituents in the plant material that may lead to their quantitative estimation and also in locating the source of pharmacologically active chemical compounds (Sharanabasappa *et al*., 2007).

Physicochemical analysis of powder exposed the foreign matter, moisture content (loss on drying), water soluble extractives, chloroform soluble extractives, ethanol extractives, methanol extractives, ethyl acetate extractives and hexane soluble extractives are as shown in table - 2 .The extraction yield (mass of extract / mass of dry matter) used as an indicator of effects of the extraction conditions (Sarmani *et al*., 1999).

The fluorescence analysis of powdered flower material was subjected to analysis under long ultra violet light after treatment with various chemical and organic reagents. The fluorescence behavior was noted as in table - 3. The result of fluorescence analysis showed that in visible light, plant powder exhibit various shades of green and brown fluorescence and various shades of green blue and brown were found in under UV light. Fluorescence is an important phenomenon displayed by various phytoconstituents present in plant materials. Some show fluorescence in the visible range in daylight. The ultraviolet light produces fluorescence in many natural products, which do not visibly fluoresce in daylight. Some of the substances may be often converted into fluorescent derivatives by using different chemical reagents and chemicals though they are not fluorescent, hence we can often assess qualitatively some crude drugs using fluorescence as it is the most important parameter of pharmacognostical evaluation (Ansari, 2006).

CONCLUSION

The selected medicinal plant was the source of the secondary metabolites i.e carbohydrates, glycosides, fatty acids, protein and amino acids, saponins, tannins, phenolic compounds, β - sitosterol, triterpenoids, anthocyanins and flavonoids. Researches in bioactive substances might lead to the discovery of new compounds that could be used to formulate new and most potent antihyperlipidemic drugs to overcome the problem of resistant to the currently available allopathic drugs. The phytochemical assessment suggests that the screened Litsea *floribunda flower* and its associated bioactive compound may possess a strong potential as a chemo preventive and possibly as new tools for preventing various human diseases. The phytochemical analysis of the medicinal plants are also important and have commercial interest in both research institutes and pharmaceuticals companies for the manufacturing of the new drugs for treatment of various diseases.

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