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Evaluation of phytochemical screening of *Coleus forskohlii* L. leaf extract

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Abstract
The paper deals the Phytochemical analysis of leaf of *Coleus forskohlii*. It is cultivated in India and China for medicinal purpose. It is used as various folk medicine. Hence, the plant *Coleus forskohlii* has been chosen to establish scientific data for its traditional claim as anti-cancer. In the present study a chemical test performed against all the phytochemical constituents for their preliminary screening of each solvent extract of leaf like water, methanol, chloroform, ethyl acetate, and acetone. From the phytochemical investigation of the leaf extracts contains carbohydrates, glycosides, tannins, flavonoids, triterpenoids, and lipids in all the solvent extracts. But phenols are more retain in methanolic leaf extract remain all the phytochemical constituents.

Keywords: *Coleus forskohlii*, Phytoconstituents, carbohydrates, leaf extract, traditional

1. Introduction
Nature has been a source of medicinal agents. Nearly ninety percentage of the world's population relies on conventional medicine as well as traditional medicines for their primary health care, the majority of which involves the use of plant extract drugs and secondary metabolites (Chavhan, 2018 and Sandhya *et al.* 2006) [1, 2]. The study of the plants and plant compounds continues principally for the invention of new secondary metabolites (Patwardhan *et al.* 2004) [3]. Phytochemical screening is very essential in finding novel source of therapeutically and industrially precious medicinal compounds and secondary metabolites like phenols, flavonoids, tannins steroids, alkaloids, and terpenoids (Akindele and Adeyemi 2007) [4].
Plants are rich in a great diversity of phytocompounds such as phenolic acids, lignin, flavonoids, tannins, and other small compounds (Cowan, 1999) [5]. Its tuberous roots were found to be rich source of forskolin (Coleonol) used as a potential drug for hypertension, bronchitis, respiratory disorder, painful urination, and psoriasis (Ammon *et al.* 1982)[6] diseases. Clinical studies forskolin also indicate it may have therapeutic benefit in angina and prevention of cancer metastases**.** *Coleus forskohlii* has been used for treating heart diseases, respiratory disorder, and insomnia, and epilepsy, bronchitis, burning sensation, constipation, intestinal disorder and angina (Ammon and Muller 1985) [7]. This plant constitute thousands of natural bioactive compounds are phenolics, tannins, terpenoids, alkaloids, saponin, that may produce health beneficial effect by scavenging free radicals (Root *et al.* 2012) [8]. The present studies show that different solvent plant extract of *Coleus forskohlii* leaf extract contain medicinally important active drugs justifies the use of plant secondary metabolites as traditional medicine for treatment of various diseases.
Hence during present study due to medicinal value of leaf the phytochemical analysis has been carried out.

2. Material and Methods
The plant material was collected from forest nursery (Jayantikunj) Rewa and taxonomically identified and authenticated by, Department of Taxonomy, Govt. Science College Rewa (M.P.).

Preliminary phytochemical screening
Preparation of the leaf extract
The healthy and disease-free mature leaves of plant of *Coleus forskohlii* L. material were collected and two times washed thoroughly under running pump water, shade dried leaves in open air separately. Powder of the leaf is obtained by grinding the help of motar pistil. About 50g powder of the leaf powder were dissolved separately in 250 ml of different solvents like methanol, chloroform, acetone, ethyl acetate, petroleum ether and water. In conical flasks and then subjected to agitation on a rotary magnetic shaker for about 24-48 hours.
Concentrated plant extracts were preserved in sterilized air tight labeled bottles and preserved in refrigerator at 8ºC until required for further experimental uses. The plant extract was filtered under reduced pressure using rotary flash evaporator and for further preliminary phytochemical screening.

3. Results
Phytochemical Screening of the Leaf Extracts of *Coleus forskohlii*
The phytochemical constituents identified in different solvent extracts of *Coleus forskohlii* are as follows. The phytochemicals steroids, saponins, phenols, flavonoids, alkaloids, and tannins are present poorly in the aqueous extracts of *Coleus forskohlii* leaf whereas the terpenoids, cardiac glycosides, reducing sugars and amino acids, are absent. The methanol extract of leaf showed strong presence of the phenols whereas the saponins, terpenoidsare

moderately present, the steroids, alkaloids, cardiac glycosides and tannins, are poorly present. In the Chloroform extract poor presence of phenols, steroids. The acetone extract of leaf showed poor presence of phenols, saponins, steroids and cardiac glycosides. Saponins, steroids, phenols and cardiac glycosides are poorly present in the ethyl acetate extract of leaf. (Table 1).

Based on the phytochemical screening it is reported that the *Coleus forskohlii* L leaves are rich in phenols and moderate presence of saponins is also found.

Table 1: Qualitative phyto chemical analysis of various leaf extracts of *Coleus forskohlii*

S. No.	Phytochemicals	Aqueous	Methanol	Chloroform	Acetone	Ethyl acetate
1.	Steroids	+	+	+	+	+
2.	Saponins	+	+	-	+	+
3.	Phenols	-	+++	+	+	+
4.	Alkaloids	+	+	-	-	-
5.	Cardiac glycosides	-	++	-	++	-
6.	Reducing sugars	+	-	+	-	-
7.	Tannins	+	+	-	-	-
8.	Amino acids		-	-	-	-

(+++) = strongly present; (+) = poorly present; (++) = moderately present; (-) = absent

4. Discussion

Analysis of different leaf extracts of *Coleus forskohlii* L. is advantage for assessment of medicinal and pharmacological efficacies of this plant. The Aqueous leaf extract contains of steroids, saponins, alkaloids, reducing sugars, tannins and amino acids but phenols and cardiac glycosides are absent. In Methanolic leaf extract presence of steroids, saponins, phenols, alkaloids, cardiac glycosides, tannins and amino acids but reducing sugars are absent. In Chloroform leaf extract steroids, phenols and reducing sugars are present but saponins, cardiac glycosides, tannins and amino acids are absent. In Acetone leaf extract steroids, saponins, phenols, cardiac glycosides are present, but alkaloids, reducing sugars, tannins and amino acids are absent. In Ethyl acetate leaf extract steroids, saponins, phenols are present, but alkaloids, cardiac glycosides, reducing sugars, tannins and amino acids are absent Hence the phytochemical properties in leaves of *Coleus forskohlii* L. are said to improve the health condition of the rural peoples and also have a use in pharmaceutical and industrial products of commercial purpose.

5. Conclusion

Today there is growing interest in chemical composition of plant-based medicines and drugs. Several bioactive compounds were isolated and studied for phytochemical constituents. Thus, from the present study the plant leaf extracts of *Coleus forskohlii* shown an abundant production of Phytochemicals as secondary plant compounds and they can be used in the pharmaceutical companies for producing a potent novel drug against various serious ailments and disorders. The results of the phytochemical screening give a basis of its use in traditional and conventional medicine to manage diseases and disorders. It also contains some biologically active compounds worthy of further investigations.

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