



## Preliminary phytochemical screening of a medicinal plant *Ceropegia bulbosa* Roxb.

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### Abstract

Preliminary phytochemical screening of *Ceropegia bulbosa* (Roxb.) was carried out. Phytochemical study shows the presence of major Phytoconstituents starch, carbohydrate, alkaloids, flavonoides, triterpenoides and steroids are present in both ethanolic and aqueous plant extract.

**Keywords:** phytochemical constituents, medicinal plant, extraction, medicine, impotency

### Introduction

Traditional medicinal plants for health practices, minerals and human based medicines, applied singularly or in combination to treat and well being for prevent illnesses. For present study, all the ingredients of *Ceropegia bulbosa* extract. Its formulation for marketed were taken for the investigation and very important of herbal formulation has drawn great direction from scientist at national and international level. Ancient ethnic communities around the world had learnt to utilize their neighbored herbal wealth for curative as well as offensive purpose (Subramannium and Pushpagadan, 1995).

People have been using medicinal plant for various diseases like diabetes, dysentery, diarrhoea, skin disease, and piles. Various substances of plant origin have been administrative in folk medicine of different culture to energize, vitalize and improve disability. Literature study reveals that several research papers on plants improving various diseases have been published. (Britto *et al*, 2003; Pandit *et al*, 2008; Nikam *et al*, 2012; Murthy *et al* 2012; Palawat and Lodha, 2014;

Khavan *et al*, 2014; Patel *et al*, 2014) [3, 9, 8, 10] present investigation was carried out to screen out various active chemical constituents in *Ceropegia bulbosa*.

### Methodology

Fresh Plant and plant parts were collected in different seasons. Plants were shed dried and plant extracts were prepared using standard method (Kokate *et al*, Harborne, 1998) [1]. The plant material extracted with different solvents using soxhlet apparatus. Different qualitative tests were performed for screening the presence of various active plant constituents. These tests are Alkaloids (Mayer's test), Glycosides (Borntragers test), Carbohydrates (Benedicts Test and Barfoed Test), Protein and Amino Acids (Biuret and Ninhydrin test), Flavonoids (Lead acetate test, alkaline reagent test, shinoda test), Triterpenoids and Steroids (Salkowaski's, Libberman and Burchard's test), Tanin and Phenolic compounds (Ferric Chloride test, Lead acetate test, Iodine solution test, Gelatine test).

**Table 1:** Phytochemical Screening of *Ceropegia bulbosa* Roxb.

S. No.	Name of the Phytochemical	Name of the test	Ethanol Extract	Aqueous Extract
1	Glycosides	Borntrager's Test	-ve	-ve
2	Alkaloids	Mayer's Test	+ve	+ve
		Hager's Test	+ve	+ve
		Wager's Test	+ve	+ve
3	Carbohydrates	Fehling Test	+ve	+ve
		Benedict's Test	+ve	+ve
		Barfoed's Test	-ve	+ve
4	Protiens and Amino Acids	Biuret's Test	-ve	+ve
		Ninhydrin Test	-ve	+ve
5	Flavonoids	Lead Acetate Test	+ve	+ve
		Alkaline Reagent Test	+ve	+ve
		Shinoda Test	+ve	+ve
6	Triterpenoids and Steroids	Salkowski's Test	+ve	+ve
		Libbermann burchard's Test	+ve	+ve
7	Tanin and Phenolic Compounds	Ferric Chloride Test	-ve	-ve
		Lead Acetate Test	-ve	-ve
		Dilute Iodine Solution Test	-ve	-ve
		Gelatin Test	-ve	-ve

+ve = Present and -ve = absent

**TLC Study**

TLC study was carried out in different developers Solvent 1 Developers (chloroform: Ethyl acetate 60:40) Solvent 2 Developers (chloroform: Acitonic formaldehyde 75:16.5:8) Chemical test for shows the presence of akaloids (Different test applied in shown in table 1. Primary taking the help of RF value in different solvent system there are four values of RF in

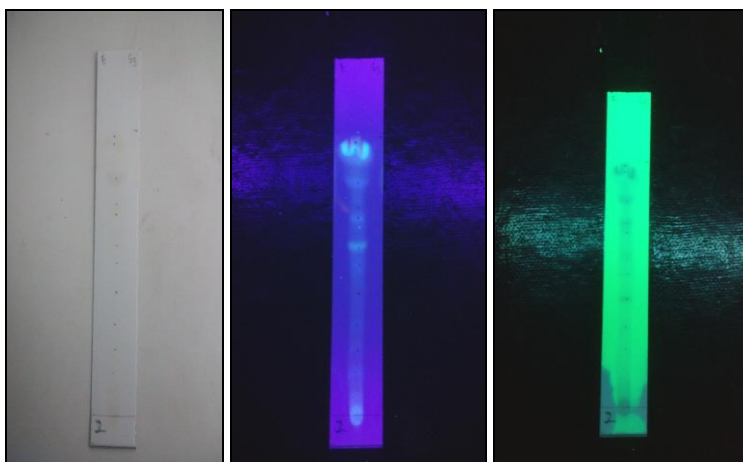
solvent system 1 while in solvent system 2 these are ten RF value. it leads that tentatively lead phytochemical are present in *Ceropegia bulbosa*. The RF values in two system suggest the presence of (range from 0.2 to 0.9) higher alkaloids, carbohydrate, flavonoids are contains amino acid supply by chemical test using different specific reagent for natural product. They have their specific biochemical role in plants.

**Table 2:** R<sub>f</sub> value of ethanol extract

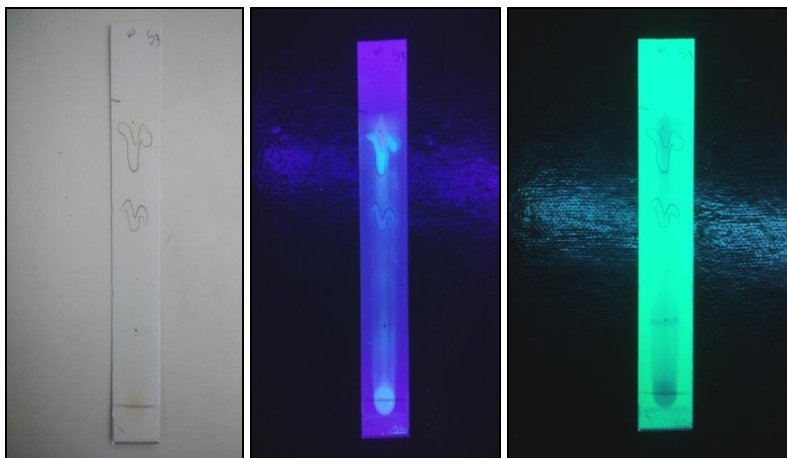
S. No.	Solvent 1 (chloroform: Ethyl acetate 60:40)	Solvent 2 (chloroform: Acitonic formaldehyde 75:16.5:8)
1.	0.923	0.986
2.	0.615	0.958
3.	0.410	0.847
4.	0.256	0.763
5.		0.722
6.		0.680
7.		0.541
8.		0.444
9.		0.402
10.		0.250

**Table 3:** R<sub>f</sub> value of aqueous extract

S. No.	Solvent 1 (chloroform: Ethyl acetate 60:40)	Solvent 2 (chloroform: Acitonic formaldehyd 75:16.5:8)
1.	-	0.240
2.	-	0.132



**Fig 1:** TLC plates of Ethanol Extract solvent 1



**Fig 2:** TLC plates of Ethanol Extract solvent 2

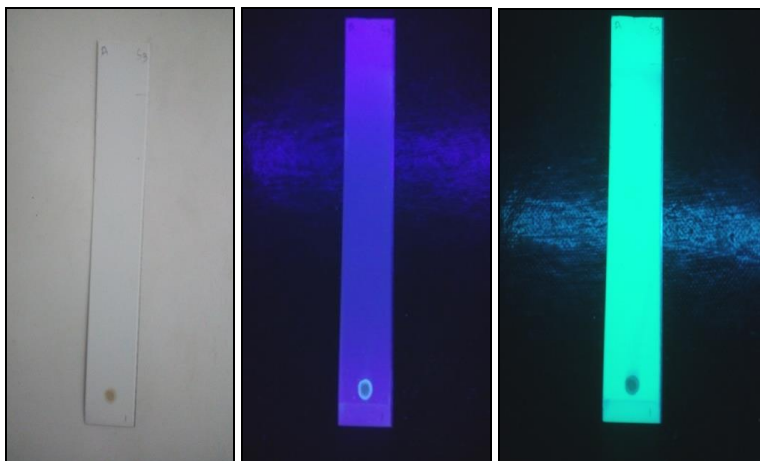


Fig 3: TLC plates of Aqueous Extract solvent 1

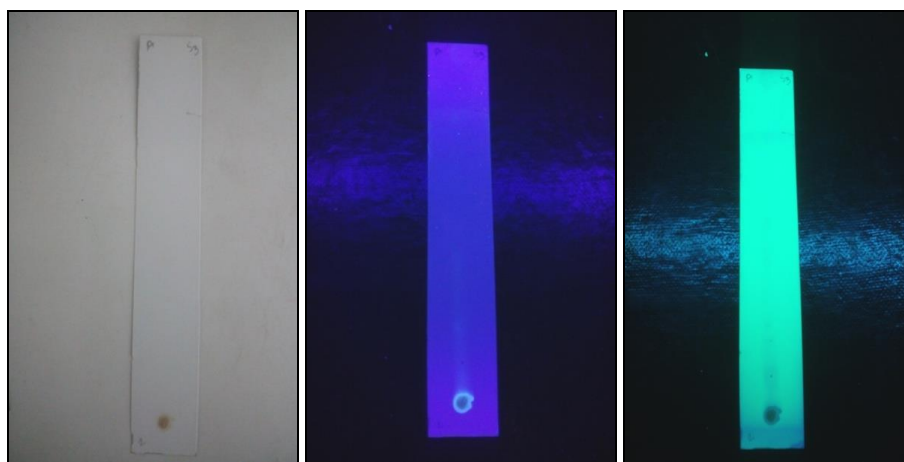


Fig 4: TLC plates of Aqueous Extract solvent 2

### Result & Discussion

This plant Sample is also subjected for Soxhlet extraction using ethanol a solvent and the chemical test were performed for presence of different class of compounds. This plant material shows positive chemical test for alkaloids, carbohydrates, protein and amino acids, flavonoides, Triterpenoides, steroids and Phenolic compounds Qualitative test were performed and phytoconstituents were observed (Table-1). Ethanolic extract showed the presences of Alkaloids, Flavonoids, Triterpenoids and Steroids almost in all investigated plants. Some phytochemical tests present or absent in ethanolic extract.

- **Glycosides:** Borntragers test shows Negative.
- **Carbohydrate:** Fehling test and Benedicts test positive and Barfoed test show negative.
- **Protein and Amino Acids:** Biuret's test and Ninhydrin test show Negative.
- **Tanin and Phenolic Components:** Ferric Chloride test, Lead Acetate test, Dilute Iodine solution test and Gelatin test shows negative.
- **Flavonoides:** Lead Acetate test, Alkaline reagent test and shinoda test shows positive.
- **Triterpenoides and Steroids:** Salkowaski test and Libbermann- burchards test shows positive.
- **Tanin and Phenolic Components:** Ferric Chloride test, Lead Acetate test, Dilute Iodine solution test and gelatin

test shows Negative.

Following phytochemical tests show positive or negative in water or aqueous extract.

- **Glycosides:** Borntrager,s test shows negative.
- **Alkaloids:** Mayer's test, Hager's test and Wager's test show positive.
- **Carbohydrate:** Fehling test, Benedicts test and Barfoed test shows positive.
- **Protein and Amino Acids:** Biuret's Test and Ninhydrin test shows Positive.
- **Flavonoids:** Lead acetate test, Alkaline reagent test, Shinoda Test shows positive.
- **Triterpenoids and Steroids:** Salkowaski's Test and libbermann-burchard's test positive.
- **Tanin and Phenolic Components:** Ferric Chloride test, Lead Acetate test, Dilute Iodine solution test and gelatin test shows Negative.

### Conclusion

Phytochemical screening of these medicinal plants reveals that the maximum classes of phytoconstituents present in ethanol and aqueous extract. The major phytoconstituents Alkaloids, flavonoides, Triterpenoides and Steroids are present in both ethanolic as well as aqueous plant extract. Study will definitely be helpful for scientific validation of investigated plant.

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### References

1. Harborne JB. Methods of Phytochemistry, Chapman and Hall Ltd London 1998; P.110-113.
2. Arora S, Meena S. Pharmacognostic of *Ceropegia bulbosa* Roxb Var. Lushi (Grah.) Hook F.; An endangered plant from Thar Desert Rajasthan India. Int. Res. J Pharm. 2011; 8(6):77-82.
3. Britto SJ, Natrajan, Aruckiasamy DI. Invitro flowering and Shoot multiplication from nodal explants of *Ceropegia bulbosa* Roxb. Var. Bulbosa Taiwan 2003; 48:106-111.
4. Kalimuthu K, Prabakaran R. Preliminary Phytochemical Screening and GC-MS analysis of methanol extract of *Ceropegia pusilla*. Int. Journal of Research in Applied, Natural and Social Sciences. 2013; (3):49-58.
5. Khan MA, Pradhan D. Antiurolithic activity of *Ceropegia bulbosa* extracts in rats, Der pharmacia Sinica. 2009; 3(1):148-152.
6. Khan MA, Pradhan D. Antiurolithic activity of *Ceropegia bulbosa* extract in rats. Der Pharmacia Sinica, 2012; 3:148-152.
7. Muthukrishnan S, Franklin Benjamin JH. Sathishkannan G, Senthilkumar T, Rao MV. In Vitro Propagation of genus *Cerogia* and retrosynthesis of Ceropegin- a review. Int. J Pharm. Sci. Rev. Res. 2013; 22:315-330.
8. Murthy S. Ethnomedicinal Plants used by gond of Adilabad district Andhra Pradesh, India. Int. J of Pharm. & Life Science. 2012; 3(10):2034-2043.
9. Nikam TD, Patil JD, Ahire ML, Ghane SG, Nitaware KM, Naikwadi VB, *et al.* Axillary multiplication of *Ceropegia mahabalei* Hemadri and Ansari and *Ceropegia media* (Huber) Ansari: Critical endangered ethnomedicinal herbs of Western Ghats, Maharashtra State of India. International Journals of Plants Developmental Biology, 2012; 6:27.
10. Palawat R, Lodha P. Qualitative Screening of Phytochemical and GC-MS analysis of *Ceropegia bulbosa* - An endangered tuberous plant. International Journal of Pharm. 2014; 4(1):100-107.
11. Patil MV, Patil DA. Ethnomedicinal practices of Nasik district, Maharashtra, Ind. J. traditional Knowledge. 2005; 4(3):287-90.
12. Pushpagadan P, Kumar, BM. Ethnobotany CBD, WTO and the Biodiversity Act of India, Ethnobotany, 2005; 17:2-12.
13. Subbaiyan B, Samyurai P, Venkatesh R, Thangapandian V. Invitro multiple shoot induction of selected *Ceropegia* species-medicinally important plants, International Journals of consa Sci. 2015; 6:253-260.