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Preliminary Phytochemical Investigation of the Root, Stem and Leaf methanol Extracts of *Oxalis corniculata* (L.)

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Abstract
The aim of the present study to preliminary phytochemical screening carried out in important medicinal plants of *Oxalis corniculata* (L.). Oxalis is a small procumbent herb and narrow creeping stem belonging to the family Oxalidiaceae. The objective of this research is to find out the result of different phytochemical screening of different parts *Oxalis corniculata* viz. roots, Stem and leaf. The *O.corniculata* various plant parts extracts were subjected to qualitative phytochemical screening using standard procedure. Furthermore, phytochemical screening of *Oxalis* plant the root, stem and leaf extract indicated the presence of alkaloids, steroids, flavonoids, tannins, saponins, phenolic compounds, reducing sugars, terpenoids and cardiac glycosides, but carbohydrates, anthraquinones and anthocyanosides compounds are absent.

Keywords
Oxalis corniculata, Phytochemical, Preliminary, Screening and Medicinal plants.

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INTRODUCTION:-
Medicinal plants are playing an important role in economic value all over the world. So, at the present situation the quality of medicinal plants are major problem, because of affected by the number of environmental factors which affect the growth of plants. Therefore, they directly effect on the variation of bioactive compounds in medicinal plants.[1] This has resulted in the use of large number of medicinal plants with curative properties to treat various diseases.[2] Nearly 80% of the world's population relies on traditional medicines for primary health care, most of which involve the use of plant extracts.[3] Plants have been source of medicines throughout human history among ancient civilization. India is well suited for development of drugs from medicinal plants, because it is rich in unique medicinal plants, traditional knowledge and heritage of herbal medicines. [4] The properties of plants are due to presence of phytochemical compounds present in leaves, roots, flowers and seeds. Mallikaharajuna et al., [5] reported that, the major phytochemical components are made up for Alkaloids, Flavonoids, Saponins, Phenolic Compounds, Phytosterols, Proteins and amino-acids, gums and mucilage and lignin. Therefore, present investigation to finding the primary phytochemical analysis of *Oxalis corniculata*.
Oxalis corniculata Linn. is a sub-tropical annual herb. It is a commonly known as 'Indian Sorrel' belonging to Oxildaceae. Oxalis is a small procumbent medicinal herb, with stems rooting and pubescent

with appressed hairs, leaves palmately 3-foliolate. This plant is well known traditional medicinal uses. It is also known to cure dysentery, diarrhea and skin diseases.[6] The plant is traditionally used as a remedy for convulsions in children and for healing fractured bones.[6] [7] In this plant presence of valuable phytochemical constituents such as a number of fatty acids, amino acids, proteins, carbohydrates, glycosides, phytosterols, flavonoids and volatile oils.[8] [9] [10] [11] [12]. The environmental impact is directly effects on phytochemical constitutes of any plants. Recently, we observed that, tremendous variation in environmental cycle. For that reason, its urgent need to analysis the phytochemical constitutes of all important medicinal plants those are present in earth. Therefore, in the present study to finding out primarily phytochemical of *Oxalis corniculata* important medicinal.

MATERIAL AND METHODS:-

Sample Collection and Identification

In the present investigation, the identified plant of *Oxalis corniculata* was collected from different localities of Sangamner Tehsil of Ahmednagar district India. The taxonomic characteristics of the plant confirmed with the Flora of Presidency of Bombay[13] and The Flora of Ahmednagar District [14]. The plant materials of leaves stems and seeds were separated and dried under shade in the laboratory for 15 days and then ground to fine powder using a mechanical grinder and stored in airtight bottles. After, it extracted in methanol and then the solvent were filtered off. All the extracts thus obtained from the plant were then subjected to qualitative tests.

Phytochemical Screening:-

Preliminary Phyto-chemical screening were performed to assess the qualitative chemical composition of different samples of crude extracts using commonly employed precipitation and coloration reaction to identify the major active secondary metabolites. The root, stem and leaves extracts of *Oxalis corniculata* were analyzed for the presence of secondary metabolites by using standard procedures as described by [15] to identify the major phtyoconstituents *i.e.* alkaloids, steroids, flavonoids, tannins, saponins, phenolic compounds, reducing sugars, Terpenoids, Cardiac glycosides, Carbohydrates, anthraquinones and anthocyanosides. The triplicate samples were taken for analysis.

Test for Alkaloids:-

Extract 1 ml was mixed with 2 ml. of Dragendoff's reagent; a turbid orange colour indicated the presence of alkaloids. The confirmation test was done using Mayer's reagent, a yellow precipitate indicated the presence of the alkaloids.

Test for Tannins

The extract1 ml was mixed with 2 ml of FeCl3 and observed a dark green colour indicated a positive test for the tannins.

Test for Saponins:-

Extract 1 ml was diluted with 2 ml of distilled water and then shaken vigorously shaken for 5 min and checked for the development of foam on the surface, indicates the presence of saponins.

Test for Anthraquinones:-

Extract 1 ml was shaken with 10 ml of benzene and the mixture was filtered and 5 ml of 10% (v/v) ammonia was added. Then, it was observed a pinkish solution indicates a positive test.

Test for Anthocyanosides:-

Extract 1 ml was mixed with 5 ml of dilute HC1and then a pale pink colour indicates the positive test.

Test for Phenols:-

The 1ml extract, 3ml of distilled water added fallowed by few drops of 10% aqueous ferric chloride solution was added. Formation of blue or green colour indicates the presence of phenols.

Test for Steroids:-

Extract 2 ml was mixed with 0.5ml acetic anhydride, 2 ml H_2SO_4 and noted for the formation of a red coloured.

Test for Terpenoids (Salkowoski test):-

2ml plant extract dried and defatted with petroleum ether. The defatted extract mixed with 2ml chloroform then placed into a test tube.1 ml sulphuric acid is added test tube wall. The sulphuric acid was then mixed slowly a colour changed observed immediately and gradually over an hour. Development of reddish brown colour confirms the presence of terpenoids.

Test for Flavonoids:-

Extract 1 ml was mixed with 2 ml of dilute NaOH, shows development of a golden yellow colour indicated the presence of flavonoids.

Test for Reducing Sugars:-

Extract 1 ml was mixed with Fehling A and Fehling B separately and then observed a brown color with Fehling B and a green color with Fehling A indicate the presence of reducing sugars**.**

Test for Cardiac glycosides:-

2 ml glacial acetic acid and few drops of 5% ferric chloride added to 0.5% of the extract. This was undertaken with 1 ml concentrated sulphuric acid. Formation of brown ring at the interface indicates the presence of cardiac glycosides.

Test for Carbohydrates: -

Benedict's Reagent: - Take 1 ml extract with 5ml Benedict's reagent and boil for 5 min. Bluish green colour indicates the presence of carbohydrates.

Molisch Reagent: - Take 1 ml extract add few drops of molisch reagent and few drops of conc. H_2SO_4, which gives purple colour.

Fehling's Reagent: - Take 1 ml extract add few drops of Fehling's and it gives green colouration.

RESULT AND DISCUSSION:-

In the present research work to study phytochemicals are extracted from the root, stem and leaves of *Oxalis corniculata by using methanol solvent and results are given in Tables-1.* This table shows the presence of active phytochemical constituent compounds which are organic compounds contained in several extracts of medicinal plant that have been studied. Preliminary phytochemical test results showed that all the selected plant part studied contained alkaloids, steroids, flavonoids, tannins, saponins, phenolic compounds, reducing sugars, terpenoids and cardiac glycosides. But, carbohydrates, anthraquinones and anthocyanosides compounds were not found in all three plant parts of *Oxalis corniculata* medicinal plant. The results are similarly observed in the previously reported study of *Oxalis corniculata*.

It was revealed earlier that the phytochemical screening and biological potential of methanolic extract of *Oxalis corniculata.* They finding out phytochemical checked by qualitative screening using different chemical tests indicated the occurrence of alkaloids, phenols, tannins, flavonoids, terpenoids and sulphates while carbohydrates, steroids and carbonates were absent. [16] Aruna. et al., [17] were reported that quantitative analysis of the major bioactive constituents of medicinally important plant *Oxalis corniculata* L. flavonoids, alkaloids, tannins, phenols by using ethanol extract. Similarly, the qualitative analysis of extracts indicated the presence of these compounds verified earlier phytochemical studies. [18 19 20]

The various phytochemical compounds detected are known to exhibit medicinal activity as well as physiological activity. In the present study methanol and ethanol extract of *Oxalis corniculata* showed that good antibacterial activity due to the presence of phenolic compounds.[9]. *O.corniculata* had a positive antibacterial activity in water extract.[9] 80% ethanol extracts of *O.corniculata* shows antibacterial activity.[21] The methanolic extract of Oxalis corniculata has been experimentally observed that to possess antioxidant activity in in-vitro methods.[22]

The presence of alkaloids has a wide range of pharmacological properties including antimalarial, antiasthma, anticancer properties as reported by[23]. Phenols is responsible for the anti-inflammatory, immune enhancers and hormone modulators.[24] Tannins is also play an important role in physiological astringent, haemostatic properties and very stable and potent anti-oxidants. [25 26 27]. Saponins exhibit cytotoxic effect and growth inhibition against a variety of cell making them have anti-inflammatory and anti-cancer properties. [28]

CONCLUSION:-

In the present study concludes that, the medicinally important plant of *Oxalis corniculata* is selected for phytochemical analysis by using methanol. In this study three different plant parts of *Oxalis corniculata* are used for qualitative analysis. In the this study, we observed the alkaloids, steroids, flavonoids, tannins, saponins, phenolic compounds, reducing sugars, terpenoids and cardiac glycosides. But, carbohydrates, anthraquinones and anthocyanosides compounds are absent in the plant extract of *Oxalis*. The results revealed the presence of medicinally important constituents in the plant studied. Therefore, extracts from these plants could be seen as a good source for useful drugs.

Table.No.1:- Results of phytochemical analyses of the selected Root, Stem and Leaves *Oxalis corniculata* plants

Sr.No	Photochemical Test	Root	Stem	Leaves
1	Alkaloid	+	+	+
2	Anthraquinines	–	–	–
3	Anthocyanosides	–	–	–
4	Carbohydrates			
	Benedict's Test	–	–	–
	Molisch's Test	–	–	–
	Fehling'S Test	–	–	–
5	Cardiac glycosides	+	+	+
6	Flavanoides	+	+	+
7	Saponins	+	+	+

8	Tannins	+	+	+
9	Terpenoids	+	+	+
10	Steroids	+	+	+
11	Reducing Sugars	+	+	+
12	Phenol compounds	+	+	+

REFERENCE:-

1. Rajak, N., Mutahir, A. and Rai, S.K. Qualitative phytochemical analysis of medicinal plants in Garhwal Region. Journal of Biological and Scientific Opinion, Vol. 3(4):163-166, (2015).
2. Verpoorte, R. Chemo diversity and the Biological Role of Secondary metabolites, some thoughts for selecting plant material for drug development. Proc. Phytochem. Soc. Europe, Kluwer Publishers, 43: pp11-24, (1998).
3. Sandhya, B., Thomas, S. Isabel, W. and Shenbagarathai, R. Complementary and alternative medicines, 3: pp101-114,(2006).
4. Ncube B., Finnie J.F. and Staden J.V. Quality from the field: The impact of environmental factors as quality determinants in medicinal plants. S.Afr. J. Bot., 82:pp11-20,(2012).
5. Mallikaharajuna, P.B, Rajanna, L.N, Seetharam, Y.N. and Sharanabasappa, G.K. Phytochemical studies of *Strychonas potatorm* L.F- A Medicinal Plant. E J Chem 4: pp510-518,(2007).
6. Kirtikar, K.R. and Basu, B.D. Indian Medicinal Plants. 3rd edition. *MS Periodical Experts*, *New Dehli,* 1:pp437-442,(1975).
7. Mohammad, I.S. and Mir, A.K. Folk use of medicinal herbs of Margalla Hills National Park, Islamabad. Journal of Ethno pharmacology. 69:pp 48-56,(2000).
8. Unni, B.G., Archana, B., Wann, S.B., Singh, H.R., Barabruni, D. and Minakshi, B. Phytochemical and anti-bacterial study of traditional medicinal plants of north east India on Escherichia coli. Asian Journal of Experimental Science. 23:pp103-108,(2009).
9. Raghvendra, M.P., Satish, S. and Ravesha, K.A. Phytochemical analysis and antibacterial activity of *Oxalis corniculata*, a known medicinal plant, My Science. 1:pp 72-78,(2006).
10. Han, S.T. Medicinal plants in the South Pacific. WHO Regional Publications, Western Specific Series, 19:pp135,(1998).
11. Daniel, M. Medicinal Plants: Chemistry and Properties. Science Publishers, Enfield, pp.210, (2006).
12. Hioki, M., Kaori, T., Yokotani and Kunijiro, Y. Flavonoids in the leaves of *Oxalis corniculata* and sequestration of the flavonoids in the wing scales of the pale grass blue butterfly, *Pseudozizeeria maha*. Journal of Plant Research. 121:pp.133-136,(2008).
13. Cooke .T. Flora of Presidency of Bombay, volume 1; Published under the Authority secretary of State for Council.(1903).
14. Pradhan, S.G and Singh, N.P. Flora of Ahmednagar District (M.S) Bishen Singh Mahendra Pal Singh, Dehradun, India. (1999).
15. Harborne, J.B. Phytochemical Methods. Chapman and Hall Ltd., London, pp. 49-188, (1973).
16. Sarabjit Kaur, Gurcharn Kaur and Jatinder Singh. Phytochemical screening and biological potential of methanolic extract of using different parts of plant *Oxalis corniculata.* Research Journal of Chemical Vol. 7(7):pp26-32, July (2017).
17. Aruna,K., Devi Raja Rajeswari, Prabu,K., Ramkumar, M., Chidambaram, R. and Raja Sankar. Quantitative Phytochemical Analysis of *Oxalis Corniculata* L. (Oxalidaceae) World Journal of Pharmacy and Pharmaceutical Sciences,Volume 3, Issue 55:pp711—716,(2014)
18. Irfan Sohail, Muhammad Tanveer Khan, Fakhra Zahid, Sohail Amjad, Romia Javed, Surriya Naheed and Khalid Hussain. Pharmacognostical and Phytochemical Studies of *Oxalis Corniculata*, Pak. J. Pharm. 25 (1 & 2):pp27-36, (2012).
19. Mohd. Adnan Siddiqui, Ravi Kant Singh and Ankit Kumar. Phytochemical Screening And Antibacterial Activity Of *Oxalis Corniculata* Human Pathogens", International Journal Of Current Research 9, (12):pp 62114-62118,(2017)
20. Karunanithi, S.,Rajkishore, V.B, Pol, V.G., Sitharathul, M.M., Abirami, D, and Jayshree. Pharmacognostical and phytochemical studies on leaves of *Oxalis corniculata* Linn. J Phytopharmacol ,5(6):pp 225-229, (2016).
21. Valsaraj, R., Pushpangadan, P., Smit, U.W., Adsersen, A. and Nyman, U. Antimicrobial screening of selected medicinal plants from India. *Journal of Ethnopharmacology*. 58;pp 75-83,(1997)
22. Yalla Reddy, K., A. Saravana Kumar., S. Mohana Lakshmi, and Surendar Angothu.2010. Antioxidant properties of methonolic extract of *Oxalis corniculata*, International Journal of Phytopharmac ology, 1:pp-43-46, (2010).
23. Kittakoop, P., Mahidol, C., and Ruchirawat, S. Alkaloids as important Scaffolds in therapeutic drugs for the treatments of cancer, tuberculosis and smoking cessation. Cur Top Med Chem.Vol.14, no.2:pp239-252, (2014).
24. Okwu, D.E. and Omodamino, O.D. Effects of hexane extract and phytochemical content of *Xylopia aethiopica* and *Ocimum gratissimum* on uterus of guinea pig. Bio.Research. Vol.3:pp 40-44,(2005).
25. Trease, G.E and Evans W.C. Pharmacognosy, 11th edn., Bailliere Tindall, London. pp. 45-50, (1989).
26. Tyler, V.E., L.R, Brady and J.E. Roberts. Pharmacology Lea and Ferbiger, Philadelphia: pp85-90,(1988).
27. Awosike, F.Local medicinal plants and health of consumers clinical pharmacology and herbal medicine.Vol.9:pp 28-29,(1991).
28. Akindahunsi, A.A. and S.O.Salawu. Phytochemical screening and nutrient-antinutrient composition of selected tropical green leafy vegetables.Afr.J. Biotech.4:pp 497-501,(2005).

29. Ajayi OB, Akomolafe SF, Adefioye A, Sofowara A (1993) Medicinal Plants and Traditional medicine in Africa. Spectrum Books Ltd., Ibadan, Nigeria, p: 289.