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Physicochemical Constituent, Phytochemical Analysis and Antimicrobial Activity in Ethanolic Extract of Cyanotis Axillaris

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ABSTRACT

Cyanotis axillaris belong to family Commellianaceae. The present investigation deal with the physicochemical constituent, phytochemical analysis and antimicrobial activity in ethanolic extract of whole plant of Cynotis axillaris. The plant part decoction used in Ayurveda to cure many diseases [2]. The evaluation of physicochemical constituents was carried out by ash value, extractive value and phytochemical constituent in plant. The antibacterial activity was tested by cup plate agar diffusion method. The antibacterial activity carried out against E. coli, Staphylococcus Aureus, Bacilis subtilis and Proteus species

Keywords : Cyanotis axillaris, physicochemical, phytochemical, antimicrobial activity.

I. INTRODUCTION

Family Commelinaceae monocotyledon, Cyanotis axillaris is a species of perennial plant in the family. It is native to Indian Subcontinent, Southern China, Southeast Asia, Northern Australia. Grow in monsoon forest and Grassland Paddy field. It is medicinal plant in India and it used as food for pig [1]. It is used to treat boils and ascites, whole plant decoction used in swelling above the abdomen [2]. Cyanotis axillaris is terrestrial annual prostrate herb up to 70cm long, rooting at node, root fibrous white or brown, stem rounded solid glabrous, succulent, leaves simple, lobed, spiral, alternate, sessile, entire margin parallel veined hairs [3], flower bisexual axillary covered by spathe petals blue opening with three valves. The whole plant contain sterol and alkaloids [4.5].

II. MATERIALS AND METHOD

The plant Cyanotis axillaris. Linn. Where collected from grassland paddy field, local area of Bhandara District of Maharashtra during August, 2022 and authenticated by department of Botany Hislop Collage Nagpur.

Preparation of Extract;

The plant part washed and cut into small pieces and dried under shade. Plant material extracted with ethanol in soxhlet extractor. The extract dried and concentrated by using rotavepore under vacuum. The concentration of ethanol up to 9.4 percent.

Physicochemical Analysis

The percentage of Ash value and extractive value performed according to WHO guideline in quality control method for medicinal plant material [6].

Phytochemical Analysis

Preliminary phytochemical analysis carried by using standard procedure Kokate, C.K.(1986-2000) and Harborne (1998-1999).

Microbial Test

1) Strain of gram positive, like Bacllis subtilis, Staphylococcus aurenus and their antibiotics Tetracyline used.
2) gram gram negative Bacteria, like Proteus, E. coli whose antibiotics Erythromycin used.

Table 1. Ash value and Extractive value of Cyanotis axillaris plant.

Parameter	Ash value%(w/w)	Parameter	Extractive value%(w/w)
1)Total ash	5.32	1)Alcohol soluble extractive	3.91
2)Acid insoluble ash	1.82		
3)Water soluble ash	2.16	2)Water soluble extractive	5.13
4)Sulphated ash	8.41		

Physicochemical content;

From table no,1. The ethanolic extract showed that the sulphated value is higher and followed by Total ash, Water soluble ash, Acid insoluble ash. So the Sulphated ash value and Total ash value present in higher concentration are preliminary useful for the determination of exhausted of adulterated drug.

Table 2. Preliminary phytochemical analysis of ethanolic extract of Cyanotis axillaris.

Sr.No.	Chemical compound	Inference	Sr.No.	Chemical compound	Inference
1	**Alkaloids** (Mayers Test)	Present	7	**Saponins** (Forthin Test with olive oil)	Present
2	**Carbohydrates** (Fehling &Benedict's Test)	Present	8	**Sterol** (Libbermann's Burchard's Test)	Present
3	**Tannin** (Ferric chloride Test)	Absent	9	**Terpenoides** (Salkowski Test)	Absent
4	**Flavonoids** (Lead acetate Test)	Present	10	**Glycosides** (Borntrager's Test)	Present
5	**Gum and Resin** (Hydrolitic Test)	Absent	11	**Amino acids** (Ninhydrine Test)	Absent
6	**Fixed Oil** (Spot Test)	Absent	12	**Indole Alkaloids** (Vanurk's Test)	Absent

Table 3. Antibacterial activity of ethanolic extract of Cyanotis axillaris.

Test Organism	Zone of inhibition (in mm)					
	25µg/ml	50µg/ml	75µg/ml	100µg/ml	5µg/ml	5µg/ml
E.coli	09	11	12	09	19	--
Proteus species	10	12	17	11	18	--
Staphylococcus Aurenus	11	13	15	12	--	19
Bacillis subtilis	10	12	13	10	--	20

Antibacterial activity is studied by using 24 hrs culture using nutrient agar medium. The bacterial strain were transferred to sterile plate. The plate adjust at room temperature and allow for solidification. At different dilution of ethanolic extract of Cyanotis axillaris, (25mg,50mg, 75mg, 100mg) with single concentration of erythromycin (5mg/ml) and Tetracyline (5mg/ml) solution were transferred and labeled accordingly. The plates were incubated at 37 0c for 24 hours. the diameter of zone inhibition surrounded is well recorded.

III. RESULT AND DISCUSSION

The result of antimicrobial screening of the ethanolic extract show antimicrobial activity. The active component like Alkaloids,, Flavonoids, Carbohydrates, sterol, Glycosides, Saponin, present in Cyanotis axillaris, Which emphasis significant scavenging potential. The presence of these bioactive component in plant have been linked to their activity against disease causing microorganism and also offering the plant themselves protection against infection by pathogenic microorganism [11].

IV. CONCLUSION

The ethanolic extraction of plant produced good inhibition zone against the test of organism in comparison with standard erythromycin and tetracycline. So it is expected that they could be fight against the infection and disease caused by microorganism. It justify that continue use of this plant in traditional system for medical purposes.

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