

## Assessment on Phytochemical Composition from Leaves of *Heteropogon contortus* (L.)

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### ABSTRACT

*Heteropogon contortus* (L.), a perennial tussock grass with a somewhat variable growth habit, is a member of the Poaceae family. It can reach a height of 1.5 meters. Green to blue-green in colour, leaves and stems are typically hairless or have a few stray hairs. They are known to possess a variety of bioactivities, including antioxidant, anti-inflammatory, membrane and mast stabilization, antimicrobial and many more. Alkaloids, flavonoids, diterpenes and glycosides were detected in specific plant sections by phytochemical analysis, whereas phenols, proteins and amino acids were present throughout the entire plant. It is probable that the antibacterial activity is mediated through a multitude of synergistic mechanisms. *Heteropogon contortus* (L.) presents a strong possibility for the development of a safe and effective antibacterial agent. The current study's objectives are to investigate the presence of phytochemicals and to quantitatively assess the content of alkaloids, steroids, phenols, flavonoids, carbohydrates and resins as well as the total phenol, flavonoid and tannin content.

**KEYWORDS:** Phytochemical analysis, *Heteropogon contortus* (L.), Leaves

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### I. INTRODUCTION

Medicinal plants and their natural products characterize an innovative source for antimicrobial agents [1]. They have the ability to alter a great deal of the adverse effects that are frequently associated with synthetic antimicrobial agents when they are used to treat infectious diseases [2-3]. Raw pharmaceuticals with a variety of therapeutic qualities are extracted from various plant parts, including the fruit, stem, root, twigs, flower and modified plant organs [4]. Only a small portion of plant species have undergone phytochemical testing, despite hundreds of species having been screened for antimicrobial activity. This study examined the antibacterial activity and phytochemical profile of the medicinal plant *Heteropogon contortus* (L.) in light of those gaps in the body of existing literature [5]. *H. contortus* (L.) is a perennial grass that is a member of the Poaceae family. Its slender stems are compressed towards the base and are heavily tufted [6]. At flowering, stems branched above ground. Green to grey-green leaves with linear blades that are 3-30 cm long and 2-8 mm wide, sharply narrowing at the tip and laterally compressed basal sheaths [7]. This grass grows in Southern Asia, Southern Africa, and Northern Australia, is also referred to as Bellary grass, black spear grass, and spear grass [8-10]. The plant has been used to treat a variety of conditions, including asthma, bronchial illnesses, jaundice, toothaches, fever, dysentery, muscular aches, and scorpion stings [11-13]. The plant's roots have diuretic and stimulant properties. So, as we mentioned above all the benefits of this plant Considering all these facts it is of great interest to investigate the phytochemical contents in *Heteropogon contortus* (L.) of the leaves.

### II. MATERIALS AND EXPERIMENTAL METHODS

#### Collection of samples

Through current work, freshly prepared solutions are used. All chemicals of AR grade are employed in the current analysis. Prior to use, the solvents underwent standard method purification. The plant *Heteropogon contortus* (L.) sample was collected from Wazzar village; 08 km away from sub district headquarter of Achalpur of Maharashtra state of India. The plant leaves were chopped, dried in the shade, and then the dried leaves were put in a mortar and pestle to be ground into a fine powder. Several phytochemical analyses are conducted using this fine powder.

**Phytochemical Tests of *Heteropogon contortus* (L.)**

**Test for elements in ash analysis**

Test for elements in ash content were performed by two methods.

1. Ash dissolved in 20% hydrochloric acid.
2. Ash dissolved in 20% nitric acid.

**1) Ash dissolved in 20% hydrochloric acid**

Leaves sample of *Heteropogon contortus* (L.) was taken and kept in furnace. After formation of ash of leaves sample, it was transferred into conical flask. Hydrochloric acid was added in it, the reaction mixture was continuously shaken vigorously for 1 hr and it was filtered [14]. For determination of Ca, Fe, Mg and S elements present in the ash of the root sample of *Heteropogon contortus* (L.) the filtrate was taken for qualitative analysis.

**Test for calcium**

Filtrate was taken in a test tube to it ammonium hydroxide was added. A reaction mixture was filtered and in filtrate few drops of saturated solution of ammonium oxalate was added, white precipitate was obtained indicating presence of calcium.

**Test for iron**

Filtrate was taken in a test tube to it solution of potassium ferrocyanide was added, a clear solution obtained, Fe is absent.

**Test for magnesium**

Filtrate was taken in a test tube to it excess ammonium oxalate solution was added. It was shaken vigorously; white precipitate was obtained. It was filtered by Whatman's filter paper No. 34. (The precipitate obtained was calcium). To the filtrate disodium biphosphate was added, it was cooled and allowed to stand at room conditions, crystals of ammonium magnesium phosphate  $(\text{NH}_4)_3\text{MgPO}_4$  was obtained, which indicated presence of magnesium.

**Test for Sulphur**

Filtrate was taken in a test tube to it few drops of 5% barium chloride solution was added, white crystalline precipitate was obtained indicating presence of Sulphur.

**2) Ash dissolved in 20% nitric acid**

leaves sample of *Heteropogon contortus* (L.) was taken, it was kept in furnace for 12 hrs. After formation of ash, it was transferred in a conical flask to it 20% nitric acid was added, the reaction mixture was continuously shaken for 1 hr and it was filtered [15]. To determine Na and Cl elements present in the ash of the sample of the *Heteropogon contortus* (L.) filtrate was taken for qualitative analysis.

**Test for chlorine**

Filtrate was taken in a test tube to it few drops of silver nitrate solution was added. White precipitate of silver chloride obtained which was soluble in ammonium hydroxide indicating presence of chlorine.

**Test for sodium**

Filtrate was taken in a test tube to it uranyl acetate and solution of zinc acetate in acetic acid was added. Pale yellow needle shape crystals were obtained which indicate sodium is present in the ash content.

**III. RESULT AND DISCUSSION**

The test of ash sample of leaves were carried out and the outcome demonstrates the discovery of elements like Ca, Mg, Cl, Fe, Na and S as well as organic compounds like alkaloids, flavonoids and saponins were showed in **Table No 1** and **Table No. 2**

**Table No. 1**  
Elements obtained in Leaves of *Heteropogon contortus* (L.)

Sr. No	Element/compound	Test	Result
1	Calcium	+ve	present
2	Chlorine	+ve	present
3	Iron	-ve	Absent
4	Magnesium	+ve	present
5	Sodium	+ve	present
6	Sulphur	+ve	present

**Materials and Methods**

Plant collection and preparation of samples were mentioned as above

### Plant Extraction

Extract for each grass in each solvent were prepared by cold maceration method  
Extraction yield was determined using the following formula,

$$\text{Yield (\%)} = \frac{\text{Dry weight of extract}}{\text{Dry weight of plant powder}} \times 100$$

Leaves extract of *Heteropogon contortus* (L.) in polar and non-polar solvents were taken for detection of secondary metabolites and the results obtained are given in **Table No. 2**

**Table No. 2**

Sr. No.	Compounds Identified*	Polar solvents			Non-polar solvents	
		Water	Ethanol	Acetone	Diethyl ether	n-hexane
1	Phenol	Present	Present	Absent	Absent	Absent
2	Glycosides	Present	Present	Present	Present	Absent
3	Proteins	Present	Present	Absent	Absent	Absent
4	Alkaloids	Present	Absent	Absent	Present	Absent
5	Steroids	Present	Present	Absent	Absent	Present
6	Flavonoids	Present	Present	Absent	Absent	Absent
7	Tannin	Absent	Present	Present	Absent	Absent
8	Saponin	Present	Present	Absent	Absent	Absent
9	Terpenoides	Absent	Present	Absent	Absent	Present

### IV. CONCLUSION

The stem of *Heteropogon contortus* (L.) sample was collected from Wazzar village; 08 km away from sub district headquarter of Achalpur of Maharashtra state of India showed good phytochemical contents according to the good results of the phytochemical analysis have natural physicochemical, physiological, and anatomical activities that make them useful for medicinal purposes.

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