

## STUDY OF FLUORESCENCE ANALYSIS IN *COSTUS SPECIOSUS* (J. Koenig) Sm.

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### ABSTRACT

The plant *Costus speciosus* (J. Koenig) Sm. is commonly called as Spiral ginger. According to Bentham and Hooker, the plant was placed in the family Scitaminae Sub-family: Zingiberaceae. This spice is medicinally important and used as cure for diabetes. Bruised leaves are applied in fever. The plant possesses purgative, anti-inflammatory and anti-arthritic effect, anti-fungal activities and is used in gout rheumatism and bronchial asthma. In the present study the fluorescence study of powder of *Costus* was undertaken. Fluorescences under ultraviolet light and visible light are observed and can be used as a tool for identification of the powdered drug. The results indicate the presence of bioactive molecules. With these tests it can be said that

there is a potential for this plant drug to be used as medicine.

**KEYWORDS:** *Costus speciosus*, Scitaminae, Zingiberaceae, fluorescence analysis, ultraviolet light, bioactive

### INTRODUCTION

*Costus speciosus* belongs to family Scitaminae and sub family Zingiberaceae (Hooker, 1883). But recently, APG has placed *Costus speciosus* in its own family Costaceae. In Ayurveda, *Costus speciosus* is used to subdue vata and kapha and promote complexion. It is reported to cure dyspepsia, fever, cough, and other respiratory disorders. It is one of the constituents of indigenous drug 'amber mezhugu' useful in rheumatism. *Costus speciosus* leaves showed 0.58% of diosgenin. (Sulakshana *et al.*, 2014).

The plant is often cultivated as ornamental. Juice of boiled plant is used in earache. (Pandey *et al.*, 2011). Leaves also possess hypoglycemic properties and insulin potentiating action in addition to decreasing blood glucose. (Kala *et al.*, 2016). In India it is used to control diabetes and it is known that diabetic people eat one leaf daily to keep their blood glucose low. (Vihalakshi *et al.*, 2010). Leaves are given in mental disorders. The methanolic extract of *C. speciosus* exhibited a significant anti-arthritic activity in a dose dependent manner. Methanolic extract of *C. speciosus* could significantly inhibit the progression of the rheumatoid arthritis in treated animals. (Srivastava *et al.*, 2012).

## MATERIALS AND METHODS

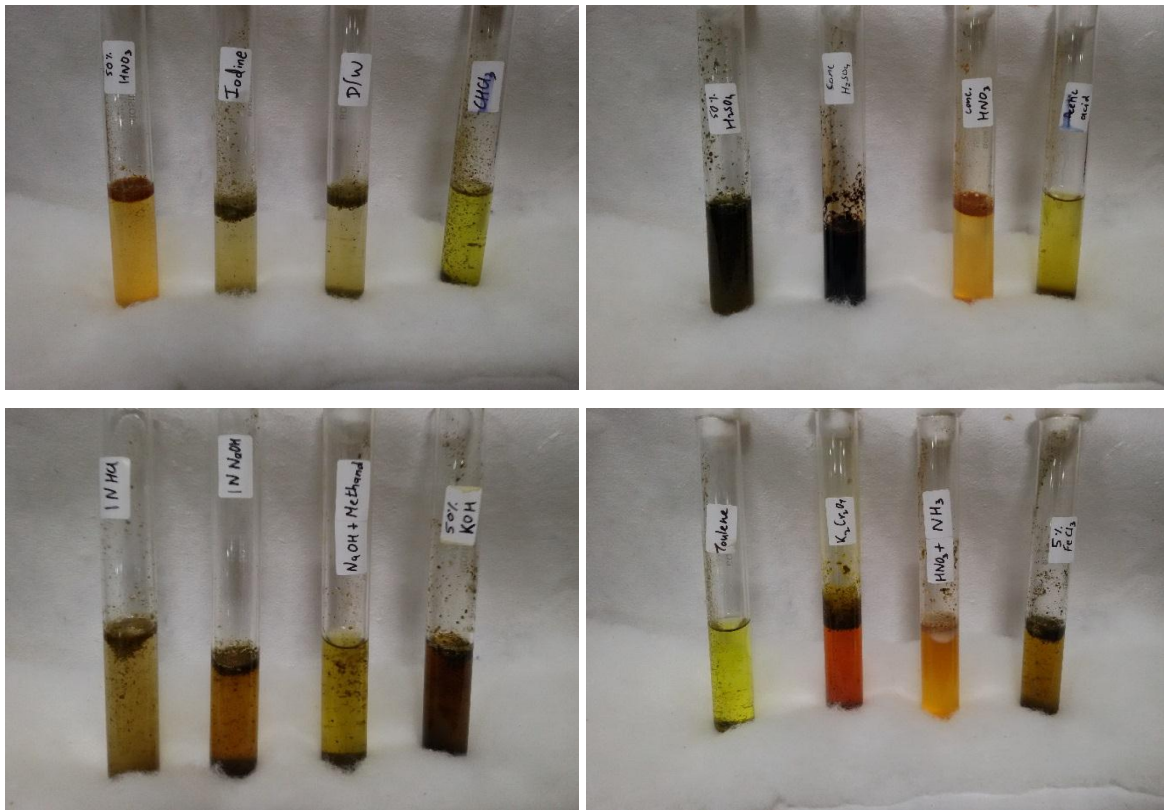
The plant material i.e. leaves of *Costus speciosus* for the present work was collected from Tungareshwar forest (Vasai) and Sanjay Gandhi National Park (Borivali) & authenticated. The dried powdered material was used to carry out the analysis. For fluorescence study of powder is as per the method described by Chase & Pratt (1969).

## OBSERVATIONS AND RESULTS

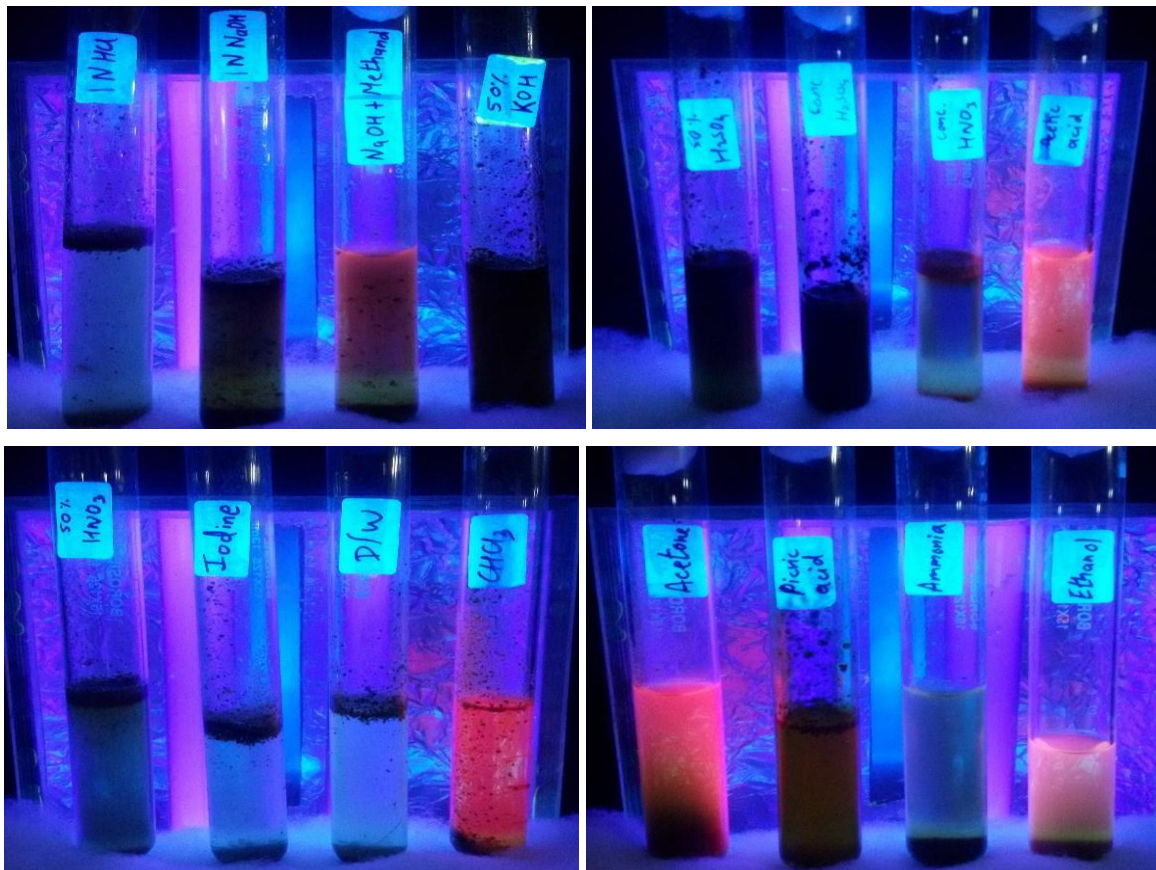
The tests carried out showed the following results:

Fluorescence analysis of leaf powder of <i>Costus speciosus</i>		
Powder+Reagent	Visible light	U.V. light
1N HCl	Brown	Light green
1N NaOH	Brown	Green
1N NaOH+ Methanol	Green	Pink
50% KOH	Brown	Brown
50% H <sub>2</sub> SO <sub>4</sub>	Green	Green
Conc. H <sub>2</sub> SO <sub>4</sub>	Black	Dark blue
Conc. HNO <sub>3</sub>	Orange	Pale green
Acetic Acid	Green	Pink
50% HNO <sub>3</sub>	Orange	Green
Iodine solution	Colorless	Light green
Distilled water	Colorless	Light green
CHCl <sub>3</sub>	Green	Pink
Acetone	Green	Pink
Picric acid	Yellow	Blue green
Ammonia	Brown	Green
Ethanol	Green	Pinkish green
Toluene	Green	Dark pink
K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	Red	Red brown
HNO <sub>3</sub> + NH <sub>3</sub>	Yellow	Green
5% FeCl <sub>3</sub>	Yellow	Green

**UNDER VISIBLE LIGHT (LEAF POWDER)**



**UNDER UV LIGHT (LEAF POWDER)**



## CONCLUSION

Fluorescence analysis is an important parameter for pharmacognostic evaluation of crude drugs. (Zhao et al., 2011). Some phytoconstituents show fluorescence in the visible range in day light whereas UV light produces in many natural products which do not visibly fluoresces in day light. Substances which are not fluorescent get converted in fluorescent derivates or decomposition product by applying different reagents. (Kokori et al., 1958). (Selvam and Bandopadhyay, 2005) analysed the roots of the plant *Rauwolfia serpentine* (L.) Benth. Ex Kurz under ultraviolet radiation and also under daylight. *Actinodaphne hookeri* leaf powder exhibited fluorescence under fluorescent light. The plant *Musa paradisiaca* L. shows a good result in the fluorescence analysis it could be explored for bioactive molecules, which are medicinally important (Vaidya, 2016 a).

The results obtained suggest that *Costus speciosus* also has the potential to be used as medicine as the results for fluorescence analysis indicates the presence of bioactive molecules and also for checking the quality and purity of the crude drug.

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