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Research Article

EVALUATION OF PHYTOCHEMICAL CONSTITUENT IN CONVENTIONAL AND NON CONVENTIONAL SPECIES OF CURCUMA

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ABSTRACT

Plants and plant based medicaments are the basis of many of the modern pharmaceutical we use today for our various aliment. Plant show medicinal properties as it contain phytochemical constituent. Phytochemical constituent are non nutritive plant chemical that have disease preventive properties .This paper reports an investigation of phytochemical constituent present in the Methanolic crude rhizome extract of conventional and non conventional Curcuma species i.e Curcuma caecia , Curcuma amada and Cucrcuma longa .The phytochemical analysis was performed to detect the presence of Carbohydrates ,Starch, Amino acid, Steroid, Tannin ,Alkaloid , Flavanoid ,Glycoside and Saponin . Presence of phytochemical constituent shows the protective and disease preventive properties of plants.

Keywords: Phytochemical , Curcuma caesia, Curcuma longa , Curcuma amada

INTRODUCTION

The genus Curcuma is a member of the ginger (family Zingiberaceae), which comprises over 70 species of rhizomatous herbs[1]. The plants has a lot of potential in terms of medicinal properties. Literature reveal its anti inflammatory, cholagogue, hepatoprotective, blood purifier,antioxidant, taoxifier antiasthamatic , anti-tumour, stomachic, carminative properties and regenerator of liver tissue[2]. The plant originates from India and South-East Asia. It grows in rich, humid and clayey soils. Among them *Curcuma longa* is commonly known as Haldi" in Hindi, is a perennial plant having a short stem with large oblong leaves. It bears ovate pyriform or oblong, ovate or cylindrical rhizomes, which are often branched and brownish yellow in color. It is commonly cultivated in Ceylon, Belgium, Indonesia, France, and in South India and Bengal[3] and used in the Indian traditional systems of medicine and also in several food stuff preparation for its medicinal properties[4]. Rhizome of another species *Curcuma amada.* (Mango ginger) commonly known as Aamba Haldi. Grown in West Bengal and on the hills of West Coast of India. It has Rhizome buff coloured with short and smooth fracture[5]. It is used in the manufacture of pickles, culinary preparations, and salads as a source of raw mango flavour and high medicinal properties[6]. However the rhizome of specie *Curcuma Caecia* called as Kali haldi is a very less known and almost untouched drug. Rhizomes of the plant are used for sprains and bruises and also employed in the preparation of cosmetics. Therefore the present work was aimed to analyze the phytochemical constituent of the non conventional curcuma species *Curcuma amada* , *Curcuma caecia* , in comparison with conventional *Curcuma longa* .

MATERIAL AND METHOD

Plant Collection And Preparation

Fresh rhizome of Curcuma species were collected during May. They were cut into small pieces, shade dried and ground to fine powder.

Crude Extraction

Know quantities of the ground rhizome material were extracts with methanol using Soxhlet apparatus for 18 hr and solvent was evaporated to dryness at constant temperature of 72ºC at reduce pressure. The residues were weighed and stored at low temperature until use. Identification test for various active chemical constituents are carried out to test alkaloid, flavanoid, saponin, phenol carbohydrate starch by the following procedure:

IDENTIFICATION TEST

1.Test For Carbohydrate

To Two ml test solution adds Two drops of the Molish reagent (a solution of ∝-napthol in 95% ethanol). The solution is then poured slowly into a tube containing two ml of concentrated sulfuric acid so that two layers form. The formation of a purple product at the interface of the two layers indicates the presence of Carbohydrates.

2. Test For Protein

It is used to determine the presence of peptide bonds in protein. To 3 ml of test sample add 3% NaOH and few drops of 1% CuSO4. The solution turns from blue to violet (purple) or to pink. Show the presence of protein.

3. Test For Starch

Mix 3 ml test solution and few drops of dilute iodine solution. Blue color appears. It disappears on boiling and reappears on cooling.

4. Test For Amino Acid

To 5 ml of test sample solution add few drop of 40 % NaOH and 10% lead acetate boiled the solution formation of black precipitate show the presence of amino acid.

5. Test For Steroid

To 2ml of extract add 2ml chloroform and 2 ml conc. H_2SO_4. Shake well, chloroform 1 layer appear red and acid layer show greenish yellow florescence [7].

6. Test For Glycoside

To the solution of the extract add glacial acetic acid, few drops 5% ferric chloride and concentrated sulphuric acid are added, and observed for a reddish brown coloration at the junction of two layers and the bluish green color in the upper layer[9].

7. Test For Flavanoid

To 4 ml of extract add 1.5 ml of 50% methanol solution. The solution was warmed and metal magnesium was added. To this solution, 5-6 drops of concentrated hydrochloric acid was added, red color was observed for flavonoids and orange color for flavones[8].

8. Test For Alkaloid

To 0.5g of each extract adds 5ml of 1 % aqueous hydrochloric acid and kept in water bath; 1ml of the Filtrates is to be treated with Mayer's reagent (Potassium Mercuric Iodide). Formation of a yellow coloured precipitate indicates the presence of alkaloids.

9. Test For Tannin

To 0.5 ml of extract solution, 1 ml of water and 1-2 drops of ferric chloride solution was added. Blue color was observed for gallic tannins and green black for catecholic tannins[9].

10. Test For Saponin

To 1 ml extract add 2 ml distilled water and shake it. Persistent foam was observed.

RESULT AND DISCUSSION

Table show the result of phytochemical screening for three different curcuma species considered in this study. The result indicate that quantitative chemical analysis was useful preliminary phytochemical characterization of the Curcuma species and possible predication which have the more bioactive compound .The result provide an empirical basis for the potential use of these plant in making new drug. The extract from *Curcuma caecia* revealed the presence of carbohydrate, flavanoid, steroid, phenol alkaloid tannin amino acid, glycoside compounds are known to have curative activity against diseases producing pathogen. Therefore it could be used pharmacologically to develop new compounds for heath benefit.

CONCLUSION

The methanolic extracts of studied plants showed the presence of bioactive compounds in all the three species but among the three curcuma caecia have maximum bioactive compounds. Thus it is pharmacologically more important than *Curcuma longa* and *Curcuma amada*.

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Table – 1: Phytochemical screening of three species of Curcuma

S.No	Phytochemical constituent	Curcuma longa	Curcuma amada	Curcuma Caecia
1.	Carbohydrate	-	+	+
2.	Protein	+	+	+
3.	Starch	-	-	-
4.	Amino Acid	+	-	+
5.	Steroid	+	+	+
6.	Glycoside	-	+	+
7.	Flavonoid	+	-	+
8.	Alkaloid	-	+	+
9.	Tannin	-	-	+
10.	Saponin	-	-	-
+ = present , - = Absent				

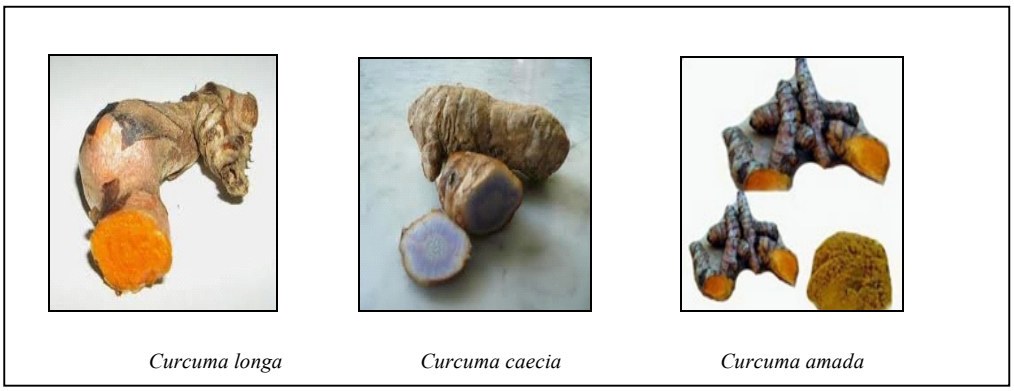

Figure- 1: Rhizomes of three species of Curcuma