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GC-MS ANALYSIS OF *CASSIA AURICULATA* LINN LEAF EXTRACT-TRADITIONAL VALUABLE PLANT

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ABSTRACT

The aim of the study was to investigate the *Cassia auriculata* leaf for Phytochemical compounds and GC-MS analysis. The presence of phytochemical compounds was screened by qualitative method. The results showed the presence of Phytochemical compounds of carbohydrates, phenol, lipid, protein, saponin, flavonoids, tannin, terpenoids and Cardiac glycosides. GC-MS analysis, 13 bioactive phytochemical compounds were identified in the ethanolic extract of *cassia auriculata*, the components were identified by comparing their relation indices and mass spectra Fragmentation patterns with those stored on the MS-Computer library and also form the published literatures. The major constituents were phytol, octadecane 1-(ethenyloxy)-, E-10-Pentadecenol.

INTRODUCTION

Plants have basic nutritional importance by their content of protein, carbohydrate, Fats and oils minerals, vitamins and water responsible for growth and development in man and animals. Much more than these, researchers have come up with the fact that some plant chemical which have been regarded as nutritional or anti-nutrients have Potentials in helping to reduce the risk of several deadly diseases in man [1,2,3]. Reports show that these phytochemical reduce LDL i.e. the Chloestrol involved in depositing fat in arteries prevent blood clotting which can reduce the risk For a heart attack or stroke [4]. Sulphur compounds, which are examples of phytochemicals are known also to reduce the cholesterol production in the body and through that keep the blood pressure down [5].

*Cassia auriculata*is a member of caesalpiniaceae family. *Cassia auriculata* (Tamil Name: Avaram) A large shrub grows up to 2-3 meters in height, Leaves Paripinnately compound, leaflet ovate-lanceolate, large stipule at the base of each compound leaf. Flowers yellowish, terminal corymbs. Fruits pods, brown when ripe contain 10-12 dark brown seeds [6].

In this present study *Cassia auriculata* phyto chemical compound analysis (qualitative method) and GC-MS analysis provide information for use in medicine.

MATERIALS AND METHODS

Collection of Plant Material: The leaves of *Cassia auriculata* (Leaves) was collected from Paramathy, near the Karur District in Tamilnadu.

Preparation of Plant Extract: The leaves of *Cassia auriculata* was shade dried at room temperature. The dried material was then homogenized to obtain coarse powder and stored in air-tight bottles for further analysis. The shade dried, powdered leaves were extracted [7] with ethanol solvent by hot extraction using soxhlet apparatus collected and stored in a vial for further analysis.

Phytochemical Screening: The leaf extract was subjected for qualitative phyto chemical analysis [8-9].

Gas Chromatography- Mass Spectrometry Analysis: The Gas Chromatography-Mass Spectrometry (GC-MS) analysis of the extracts was

performed using a clarus 500 Perkin Elmer gas chromatography equipped with a Elite-5 capillary coloumn [5% Phenyl and 95% methyl Polysaccharides Siloxane] and mass detector turbomass gold of the compant which was operated in E1 mode. Elite wax (Polyethylene glycol) (30mm X 0.25mm X 0.25 um df) is a polar coloumn used in the estimation).

An insert gas such as Hydrogen or Nitrogen or Helium is used as a carrier gas at a flow rate 1ml/min, split 10:1. The components of test sample is evaporated in the injection part of the GC equipment and segregated in the coloumn by adsorption and desorption technique with suitable temperature programmes of the over controlled by software different components are eluted from based on the boiling point of the individual components [10].

The GC coloumn is heated in the oven between 110 C to 280 C. The time at which each component eluted from the GC coloumn is termed as retention time (RT). The total GC running time is 36 min. The eluted component is detected in the mass detector. The spectrum of the known components stored in the NIST library and ascertains the name, molecular weight and structure of the components of the test material in GC-MS study.

Table 1: Qualitative Analysis of Phytochemical Components

Sl.No	Phytochemical Components	Ethanol extract
1	Tannin	+
2	Carbohydrates	+
3	Phenol	+
4	Lipid	+
5	Protein	+
6	Steroids	-
7	Flavonoids	+
8	Saponin	+
9	Phlobatannins	-
10	Terpenoids	+
11	Cardiacglycosides	+

"+" Referred to Presence
"-" Referred to Absence

Table 2: Phyto compounds identified from the leaf of *Cassia auriculata*

Sl.No	RT	Name of the Compound	Molecular Formula	MW	Peak Area%
1	6.12	Resorcinol	C6H6O2	110	5.82
2	10.54	3-O-Methyl-d-glucose	C7H14O6	194	59.71
3	11.60	1,14-Teradecanediol	C14H30O2	230	1.49
4	12.09	3,7,11,15-Tetramethyl-2-hexadecen-1-ol	C20H40O	296	0.36
5	14.95	Phytol	C20H40O	296	0.28
6	17.41	2H-Cyclopropa[a]naphthalen-2-one, 1,1a,4,5,6,7,7a,7b-octahydro-1,1,7,7a-tetramethyl-, (1aa,7a,7aa,7ba)-	C15H22O	218	11.57
7	18.60	Azulene, 1,2,3,5,6,7,8,8a-octahydro-1,4-dimethyl-7-(1-methylethenyl)-, [1S-(1a,7a,8aa)]-	C15H24	204	10.80
8	20.88	1,2-Benzenedicarboxylic acid, diisooctyl ester	C24H38O4	390	2.95
9	23.24	Octadecane, 1-(ethenyloxy)-	C20H40O	296	0.44
10	24.81	Squalene	C30H50	410	1.18
11	26.09	1-Cyclohexylnonene	C15H28	208	1.44
12	28.04	E-10-Pentadecenol	C15H30O	226	1.46
13	29.24	1-4-[(2-Diethylamino]ethyl]amino]-6-methyl-2-pyrimidinyl]-3-[3,4,5-trimethoxyphenyl] gunidine	C21H33N7O3	431	2.51

Identification of components was based on comparison of their mass spectra with those of Wiley and NIST Libraries and as well as on comparison of their retention indices with literature [11, 12].

RESULTS AND DISCUSSION

The present study carried out on the *cassia auriculata*the presence of medicinal active constituents. Phytochemical screening of the ethanolic extract indicted the presence of carbohydrates, phenol, lipid, protein, saponin, flavonoids, tannin and cardiac glycosides. The qualitatively analysed and the result are presented in Table-1.

In the GC-MS analysis, 13 bio active phytochemical compounds were identified in the ethanolic extract in this plant (Table-2). The identification of phytochemical compounds is based on the peak area, molecular weight and molecular formula. The identified high peak area 3-0-methyl-d-glucose(C7 H14O6)with RT 10.54 has peak area 59.71%, 2H-Cyclopropa [a] naphthalen-2-one, 1,1a,4,5,6,7, 7a,7b-octahydro-1,1,7,7a-Tetramethyl-, [1aa,7a,7aa,7ba]

C15H22O with RT 17.41 has peak area 11.57. This study has revealed the presence of many secondary metabolites and bioactive phytocomponents in the leaf of *cassia auriculata*which might be of a very important medicinal value and further plan of study include isolation and purification of bioactive phyto components.[13]

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