

GC-MS ANALYSIS OF PHYTOCHEMICALS IN THE METHANOLIC EXTRACT OF CASSIA FISTULA SEEDS COAT GEL FROM INDIA.

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Abstract

The analysis was conducted to identify the phytochemical components of the methanolic extract from the seed coat gel of Cassia fistula analysis by GC-MS. The phytocomponent analysis of the methanolic Cassia fistula seed coat gel extract by using agilent technology Gas chromatography-Mass spectroscopy. Chromatogram of methanolic extract of seed coat gel of cassia fistula showed the thirty seven peaks which having presence of phytochemical constituents. The phytochemical constituent highly present in extract are 1H-Imidazole (0.87%), 1-Methoxy-1-buten-3-yne (1.03%), 4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl-(1.72%), 2-Butenenitrile (21.8%), Decanoic acid, 3-methyl (1.52%), 1,2-Benzenedicarboxylic acid, bis(2-methylpropyl) ester (8.65%), Ethylvinyl sulfide (1.54%), m-Phenoxybenzoic acid (1.73%) Ethyl .gamma.-[1-naphthyl]butyrate (13.9%), 7,9-Di-tert-butyl-1-oxaspiro(4,5)deca-6,9-diene-2,8-dione (1.7%), Myo-Inositol, 4-C-methyl- (0.81%), Myo-Inositol, 4-C-methyl- (5.11%), Dibutyl phthalate (2.35%), Ethyl hydrogen malonate (4.09%), 2-Nitro-1-buten-3-ol (3.79%), Ethyl hydrogen malonate (6.89%), Methyl 4-O-methyl-d-arabinopyranoside (3.13%), Heptanoic acid (13.1%), 6-Octadecenoic acid (0.74%). from thirty seven compounds were identified only ten were shows major biological activities in analysis gives that Cassia fistula seeds coat gel having different bioactive components.

Keyword: Cassia fistula, methanolic extract, phytochemical, GC-MS, Medicinal plant.

Introduction

Medicinal plant species having several of chemical compounds with major pharmacological potential. Cassia fistula is a traditional medicinal plant known for its significant biological importance. This plant is also name as Yellow shower. Cassia fistula is belongs to Leguminous family. In pharmacological application plant found to cure disease in liver problem, plant having natural resources of medicinal benefits. Part of plant flowers shows, different pharmacological activities antifungal, antibacterial seeds of Cassia fistula are applicable in anti-inflammatory, anti-tumors, anti-cancer activities, dried pulp having anti-inflammatory benefits. Plant has wide range of bioactive chemical compounds used in anti bacterial, antiviral, antitumor, anticancer, antioxidant, anti diabetic, anti plastics properties.

The part of plant gives bioactive compounds with powder pulps, juices, flowers and leaves. Cassia fistula belongs to leguminous family is grows in several countries. In the start of summer season in India plant having beautiful yellow flowers in April-May. The plant grows up to 20-30 m tall. Bark is brown in color and flower with golden yellow color [1]. Plant part extract contains rhein, triterpens, sugar and potassium research analysis on animal model to confirmed that Cassia fistula and their chemical compounds are beneficial for cure diseases. Cassia fistula having lower side effects on pharmacological applications plant part extracts confirmed by in vivo and in vitro to inhabit the disease.

The aqueous extract of the fruit pulp of Cassia fistula exhibits hepato protective activity. Extract was treated on rats confirmed to cure wound increase tissue generation [2].

Material and Methods

Plant material collection and Process

Seeds of Cassia fistula were collected from plant which cultivated on the region at Jalgaon in north of Maharashtra in India. Seeds were covered with black color gel. Gel was separated from seed coat is used for analysis of GC-MS.

Preparation of extract

25 g of seed coat gel were immersed in 95% methanol for 7 days. The Whatman filter paper No. 41 was used to filtrate methanolic extract. The filtrate was then concentrated by rotary evaporator and prepared for analysis.

GC-MS Analysis

The Cassia fistula seeds coat gel methanolic extract was examined by Agilant Technology GC7890B-MS5977A System.

Phytochemical analysis

The analysis of chemical compounds was conducted by the available data in the National Institute of Standards and Technology (NIST 20.L Library) database. The Name, Retention Time, Percentage area, Molecular formula of constitutes was found.

Result and discussion

Gas chromatography-Mass spectroscopy chromatogram examination of Cassia fistula seeds coat gel methanolic extract [Table-1] having thirty seven peaks major values which indicates the presences of phytochemicals compounds. The database was comparing with NIST 20.L library resource. The compounds having The Name, Retention Time, Percentage area, Molecular formula in Table 1 from the database phytochemical compounds shows the reported biological

activities they were contributes in medicinal activities. Out of thirty seven compounds nineteen compounds was major biological activities reported compounds were 1H-Imidazole (0.87%), 1-Methoxy-1-buten-3-yne (1.03%), 4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl- (1.72%), 2-Butenenitrile (21.8%), Decanoic acid, 3-methyl (1.52%), 1,2-Benzenedicarboxylic acid, bis(2-methylpropyl) ester (8.65%), Ethylvinyl sulfide (1.54%), m-Phenoxybenzoic acid (1.73%) Ethyl .gamma.-[1-naphthyl]butyrate (13.9%), 7,9-Di-tert-butyl-1-oxaspiro(4,5)deca-6,9-diene-2,8-dione (1.7%), Myo-Inositol, 4-C-methyl- (0.81%), Myo-Inositol, 4-C-methyl- (5.11%), Dibutyl phthalate (2.35%),Ethyl hydrogen malonate (4.09%),2-Nitro-1-buten-3-ol (3.79%),Ethyl hydrogen malonate (6.89%),Methyl 4-O-methyl-d-arabinopyranoside (3.13%),Heptanoic acid (13.1%),6-Octadecenoic acid (0.74%). The bioactive compounds detected in the methanolic extract of Cassia fistula seed coat gel are associated with different chemical categories. The major compounds in the extract 2-Butenenitrile was reported antimicrobial activity [11].

Conclusion

The analysis of results of the methanolic extract of cassia fistula seeds coat gel having various bioactive phytochemical constituents reported in medicinal activities. The further analysis was important to isolate respective phytochemicals from methanolic extract of Cassia fistula seeds coat gel and analysis for their respective biological activities. It is helps to used in pharmaceutical applications.

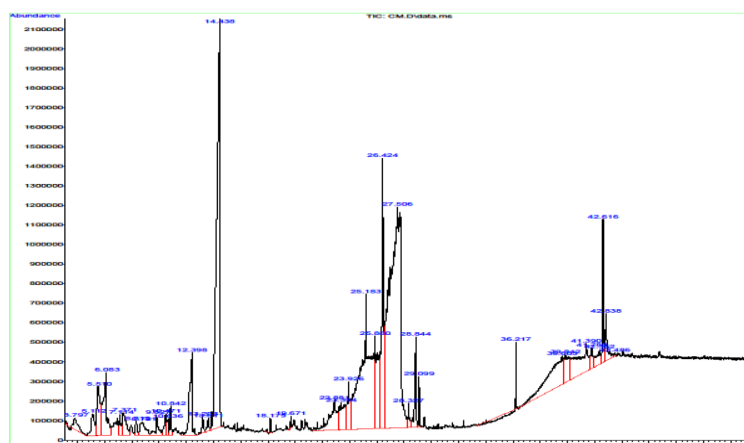


Fig.1GC-MS analysis of phytocomponent in the methanolic extract of Cassia fistula seeds coat gel from India.

Table-1: Phytocomponent identified in methanolic extract of Cassia fistula seeds coat gel.

Sr. No	RT	Are a	Name of the Compound	Biological Activity	MF
1	5.055	0.87	1H-Imidazole, 1,4-dimethyl-	Anticancer, Antifungal, Antioxidant, Antihypertensive, Anticoagulant	C ₅ H ₈ N ₂ [3]

2	5.488	1.03	1-Methoxy-1-buten-3-yne	NR	C ₅ H ₆ O
3	12.36	1.72	4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl-	Antioxidant	C ₆ H ₈ O ₄ [4]
4	14.51	21.8	2-Butenenitrile	Antimicrobial Activity	C ₄ H ₅ N [6]
5	24.02	1.52	Decanoic acid, 3-methyl-	Antibacterial Activity	C ₁₁ H ₂₂ O ₂ [5]
6	25.19	8.65	1,2-Benzenedicarboxylic acid, bis(2-methylpropyl) ester	Antibacterial Activity	C ₁₆ H ₂₂ O ₄ [7]
7	25.46	1.54	Ethylvinyl sulfide	NR	C ₄ H ₈ S [8]
8	25.64	1.73	m-Phenoxybenzoic acid	Insecticides	C ₁₃ H ₁₀ O ₃ [9]
9	25.79	13.9	Ethyl .gamma.-[1-naphthyl]butyrate	NR	NR
10	26.05	1.7	7,9-Di-tert-butyl-1-oxaspiro(4,5)deca-6,9-diene-2,8-dione	Antimicrobial Activity	C ₁₇ H ₂₄ O ₃ [10]
11	26.15	0.81	Myo-Inositol, 4-C-methyl-	NR	NR
12	26.46	5.11	n-Hexadecanoic acid	Antioxidants, Hypocholesterolemic, Nematicide, And Pesticide	C ₁₆ H ₃₂ O ₂ [11]
13	26.56	2.35	Dibutyl phthalate	Antimicrobial Activity	C ₁₆ H ₂₂ O ₄ [12]
14	26.84	4.09	Ethyl hydrogen malonate	NR	C ₅ H ₈ O ₄
15	27.01	3.79	2-Nitro-1-buten-3-ol	NR	C ₄ H ₇ NO ₃
16	27.37	6.89	Ethyl hydrogen malonate	NR	C ₅ H ₈ O ₄
17	27.51	3.13	Methyl 4-O-methyl-d-arabinopyranoside	NR	NR
18	27.76	13.1	Heptanoic acid	NR	C ₇ H ₁₄ O ₂
19	28.84	0.74	6-Octadecenoic acid	Antioxidant, Antimicrobial.	C ₁₈ H ₃₄ O ₂

RT-Retention time, MF- Molecular formula**References**

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