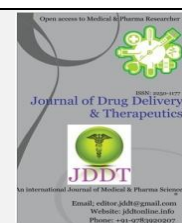


Available online on 15.07.2018 at <http://jddtonline.info>

Journal of Drug Delivery and Therapeutics

Open Access to Pharmaceutical and Medical Research

© 2011-18, publisher and licensee JDDT, This is an Open Access article which permits unrestricted non-commercial use, provided the original work is properly cited

Open  Access

Research Article

COMPARATIVE PHYTOCHEMICAL PROFILE OF *CRINUM DEFIXUM* KER-GAWLER LEAVES USING GC-MS

A. Elaiyaraja^{1*}, G. Chandramohan²¹ Department of Chemistry, A.V.V.M. Sri Pushpam College, Poondi, Thanjavur -613 503, Tamilnadu, India.² Department of Chemistry, Jairams Arts and Science College, Karur-3, Tamilnadu, India.

ABSTRACT

The present investigation was carried out to determine the possible phytochemical compounds present in the various extracts of *Crinum defixum* Ker-Gawler leaves. It is an important medicinal plant worldwide trends towards the utilization of natural plant remedies has created an enormous need for the use of medicinal plants. Different pharmacological properties of *C. defixum* Ker-Gawler have already been reported. Thus, the present study was performed to investigate the preliminary phytochemical screening, separation, identification of compounds and compare the phytochemical composition of various fractions of *C. defixum* Ker-Gawler leaves using gas chromatography-mass spectrometry. The plant was extracted for various solvents in increasing order of polarity from using n-hexane, chloroform, ethyl acetate, acetone, ethanol, butanol and methanol. The extracts were subjected to GC-MS analysis and also confirmed by spectral analysis.

Keywords: *Crinum defixum* Ker-Gawler, Phytochemical screening, Separation and identification of compounds, GC-MS, Spectral analysis.



Cite this article as:

Elaiyaraja A, Chandramohan G, Comparative Phytochemical Profile of *Crinum Defixum* Ker-Gawler Leaves Using GC-MS, Journal of Drug Delivery and Therapeutics. 2018; 8(4):365-380 DOI: <http://dx.doi.org/10.22270/jddt.v8i4.1758>

*Address for Correspondence

Elaiyaraja A., Department of Chemistry, A.V.V.M. Sri Pushpam College, Poondi, Thanjavur -613 503, Tamilnadu, India

1. INTRODUCTION

Medicinal plants are important role in human health. They are used to relief human illness. The medicinal values of the plants are responsible for the presence of some chemical substances. These substances produce a definite physiological action to the human body. Many plants have antioxidant potential, because they possess flavonoids and phenolic compounds¹. Free radical reactions have been involved in the pathology of human disease including atherosclerosis, ischemic heart diseases, the aging process, inflammation diabetes and other conditions².

C. defixum Ker-Gawler (Family -Amaryllidaceae), has a widely distributed in tropical and sub – tropical regions of the world. It is commonly called Bon-naharu (meaning wild garlic) in Assam. The bulb of the plant is stoloniferous, fusiform and cylindrical like neck. The flowers are directly attached to the bulb and pleasant

odour³. The *Crinum* species have highly medicinal, commercial and economic importance. The *C. defixum* Ker-Gawler is one of the *crinum* genuses⁴. *Crinum* species are used in medicine for many diseases; mainly leaf and bulb extracts have highly medicinal value.

The leaf extract is used in treating pimples, body-ache, edema, ear-ache, paronychia, leprosy, fever and diarrhoea. The bulbs are crushed and applied on to piles, burns, itching, whitlow and carbuncle⁵. *C. defixum* Ker-Gawler is reported to presence of such active constituents like Caranine, Crinamine, galanthamine, galanthine, haemanthamine and hippestrine⁶. A new alkaloid 5 α -hydroxyhomolycorine has also been reported⁷. Ethanol and methanol extracts of dried leaves of *C. defixum* Ker-Gawler has been reported to exhibit a free radical scavenging activity⁸. And also exhibits an analgesic and anti-inflammatory activities^{9,10}. The main focus of this study was variety of chemical constituents

present in the various extracts of *C. defixum* Ker-Gawler leaves was determined by GC-MS studies.

2. MATERIALS AND METHODS

2.1. Collection of plant materials

The leaves of *C. defixum* Ker-Gawler were collected from Poondi village, Thanjavur District, Tamilnadu. The botanical identity (Voucher No: A.A.R 003 on 04-02-2015) of the plant of was confirmed by Dr. S.John Britto, Rapinat Herbarium, St. Joseph's College, Tiruchirappalli.

2.2. Preparation of Extracts

The fine powder (5 kg) was extracted with 95% ethanol at room temperature for ten days. The extract were filtered and concentrated under reduced pressure in a

rotary evaporator and extracted for various solvents in increasing order of polarity from using n-hexane, chloroform, ethyl acetate, acetone, ethanol, butanol and methanol. After that the extract was taken in a beaker and kept in a water bath and heated at 30-40 °C till all the solvent got evaporated. The dried extracts were subjected to preliminary phytochemicals and GC- MS studies. All the extracts were tested for the presence bioactive compounds by using standard methods.

2.3. Phytochemical screening

The preliminary phytochemical analysis of various extracts of *C. defixum* Ker-Gawler plant leaves revealed the following phytochemicals (Table.1).

Table 1: Preliminary phytochemical constituents of *C. defixum* Ker-Gawler leaves.

S.N	Phytochemicals	Hexane Extract	Chloroform Extract	Ethyl acetate Extract	Acetone Extract	Ethanol Extract	Butanol Extract	Methanol Extract
1.	Alkaloids	-	Present	Present	Present	Present	-	-
2.	Flavonoids	-	Present	-	-	-	Present	Present
3.	Terpenoids	Present	Present	Present	-	-	-	-
4.	Glycosides	-	-	-	-	-	-	-
5.	Saponins	-	Present	Present	Present	Present	-	-
6.	Steroids	-	-	-	-	-	-	-
7.	Carbohydrates	-	-	-	-	-	-	-
8.	Phenolic compounds	Present	Present	Present	Present	Present	Present	-
9.	Tannins	-	-	-	-	-	-	-
10.	Amino acids	Present	-	-	Present	Present	Present	Present

GC-MS Analysis

Identification of phytochemicals

GC-MS is one of the most reliable biophysical method for its specificity and repeatability, was utilized for the phytochemical profiling of *C. defixum* Ker-Gawler plant leaves. Interpretation on Mass-Spectrum GC-MS was conducted using the database of National Institute Standard and Technology (NIST) having more 62,000

3.1 GC-MS spectrum of n-hexane extract of *C. defixum* Ker-Gawler leaves.

patterns. The spectrum of the unknown components was compared with the spectrum of known components stored in the NIST library. The name, molecular weight and structure of the components of the test materials were ascertained. In the present study many phytochemical constituents have been identified from various fractions of *C. defixum* Ker-Gawler leaves by GC-MS analysis (Table.2, 3, 4, 5, 6 and 7).

3. RESULTS AND DISCUSSION

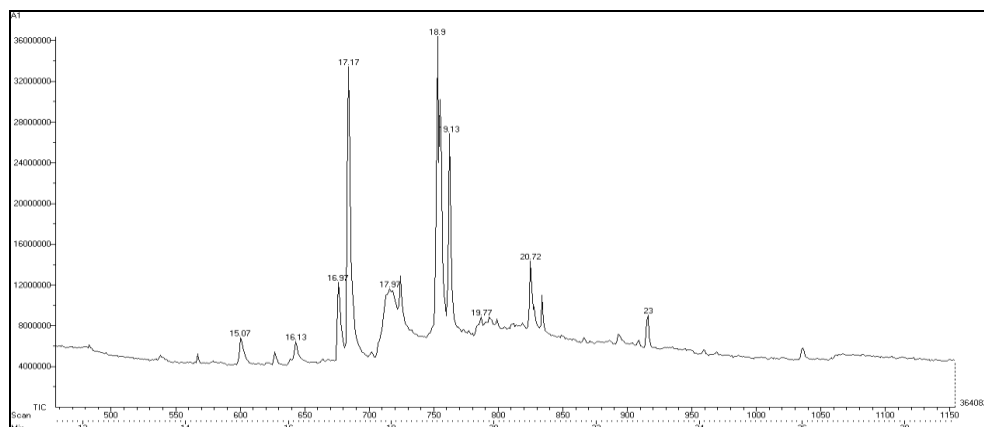


Figure 1: GC – MS with n-hexane extract of *C. defixum* Ker – Gawler leaves.

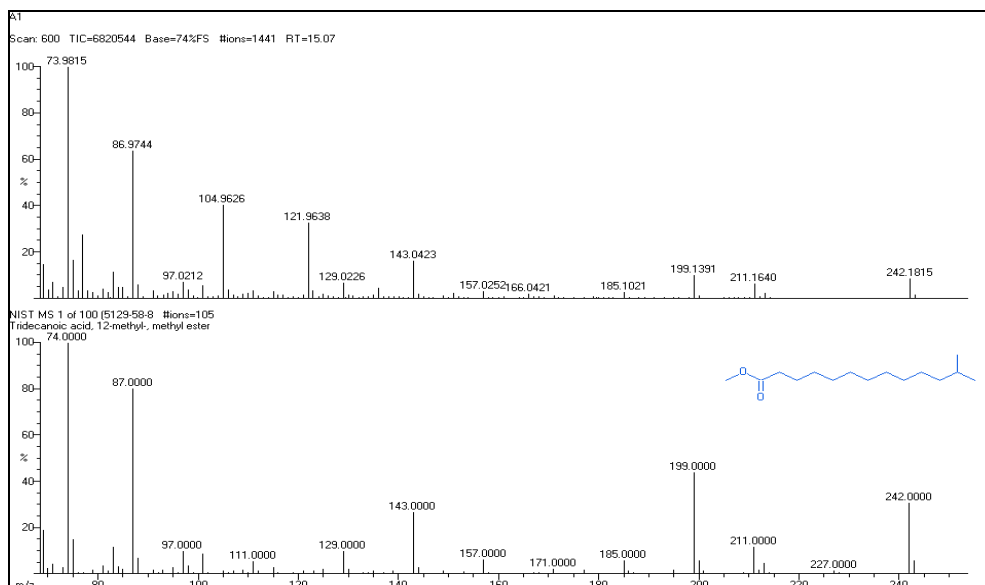


Figure 2: Mass spectrum of Tridecanoic acid, 12-methyl-, methyl ester.

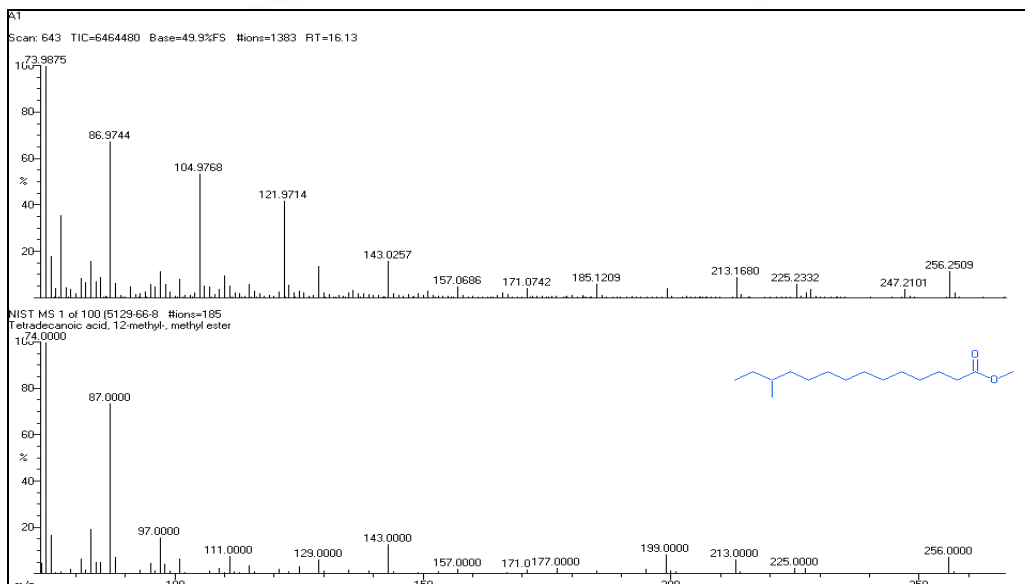


Figure 3: Mass spectrum of Tetradecanoic acid, 12-methyl-, methyl ester

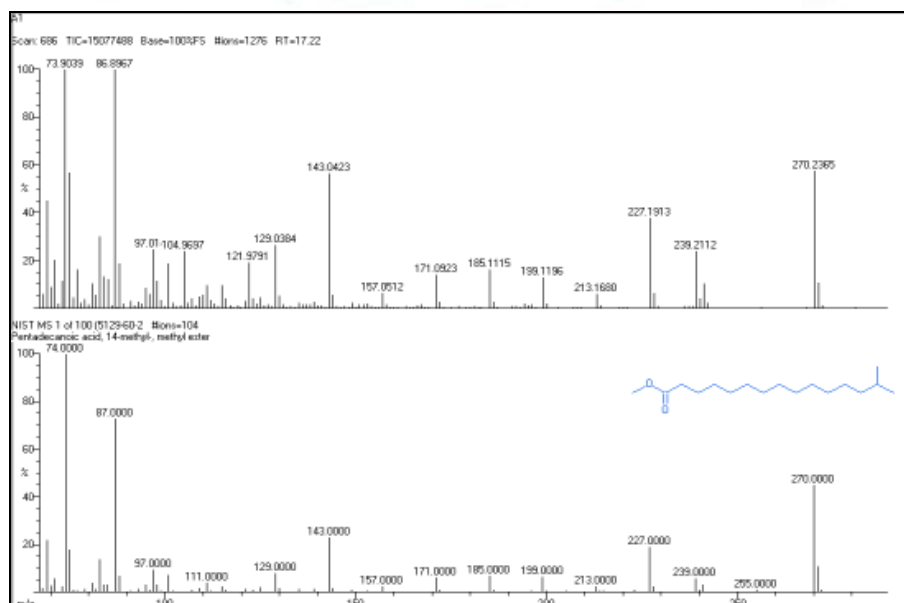


Figure 4: Mass spectrum of Pentadecanoic acid, 14-methyl-, methyl ester

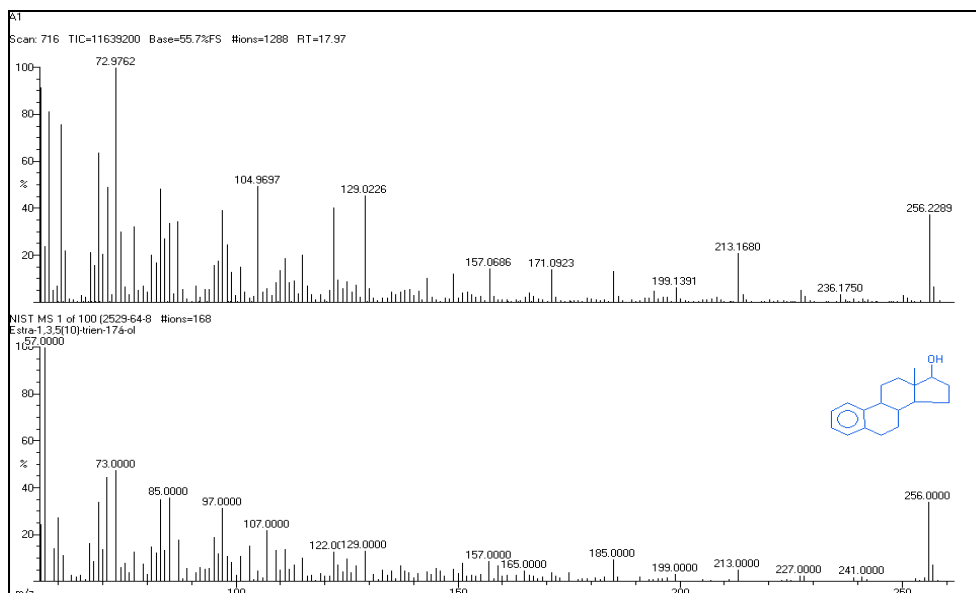


Figure 5: Mass spectrum of Estra-1,3,5(10)-trien-17a'-ol

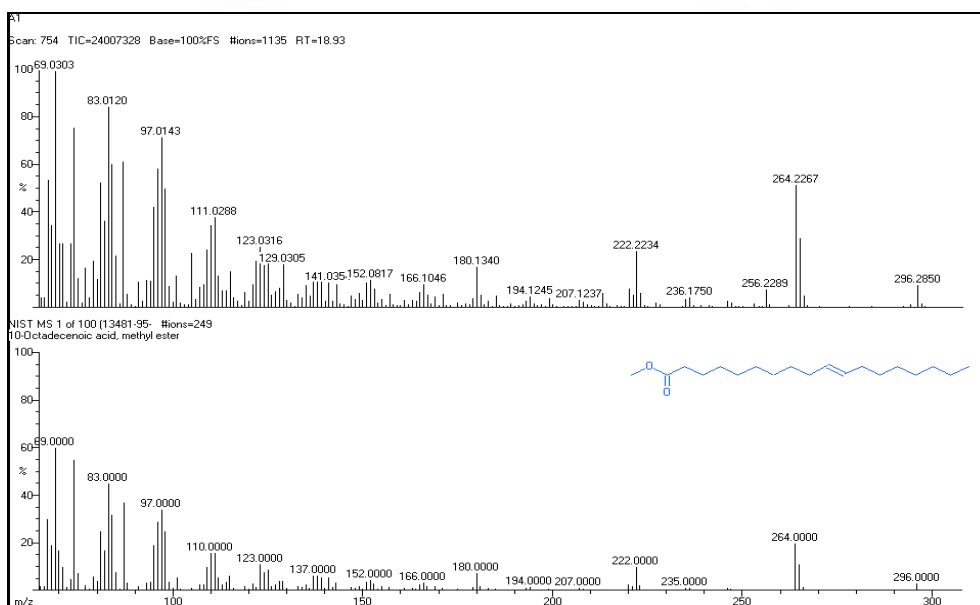


Figure 6: Mass spectrum of 10-Octadecenoic acid, methyl ester

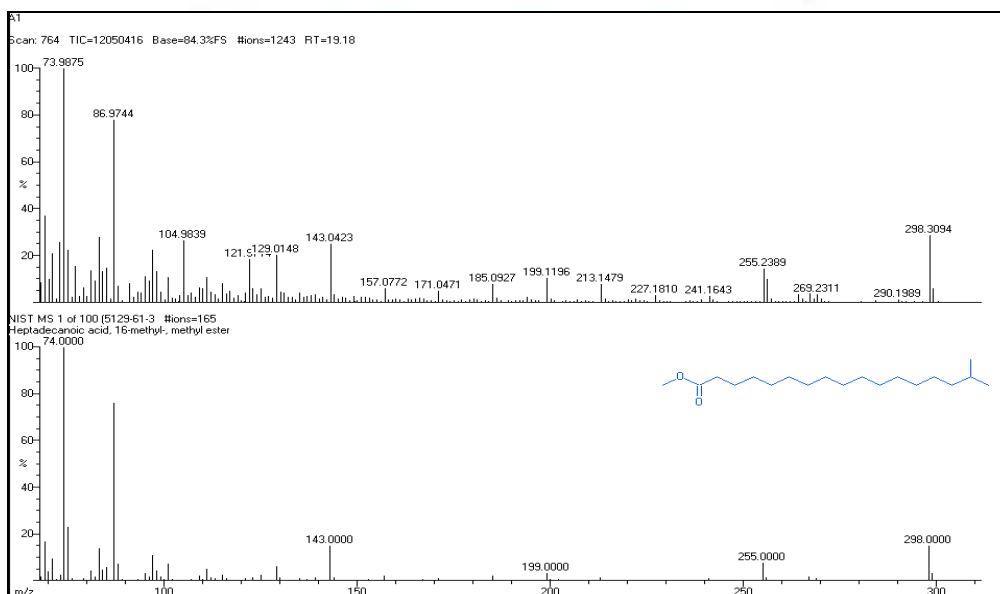


Figure 7: Mass spectrum of Heptadecanoic acid, 16-methyl-, methyl ester

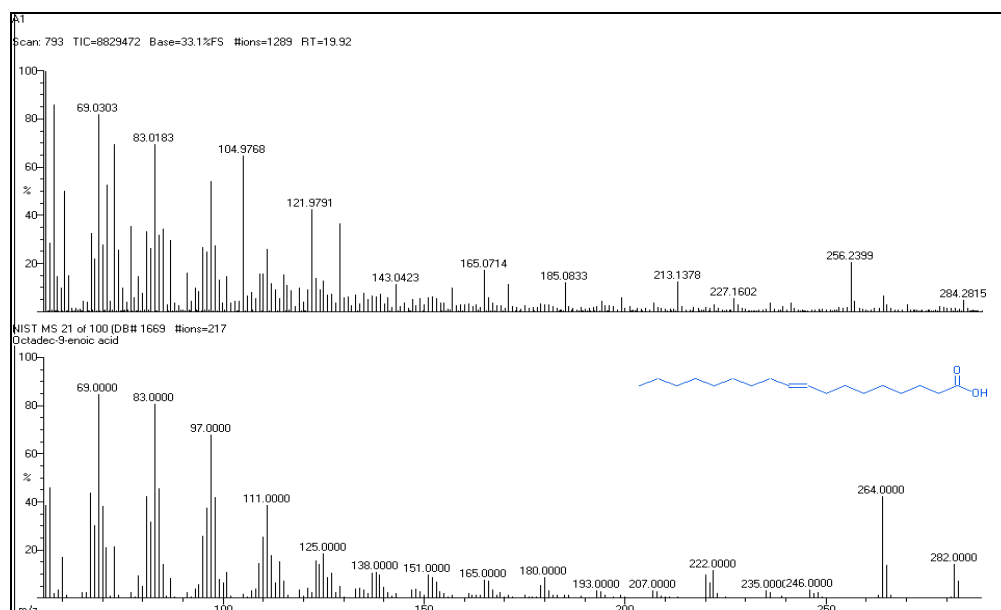


Figure 8: Mass spectrum of Octadec-9-enoic acid

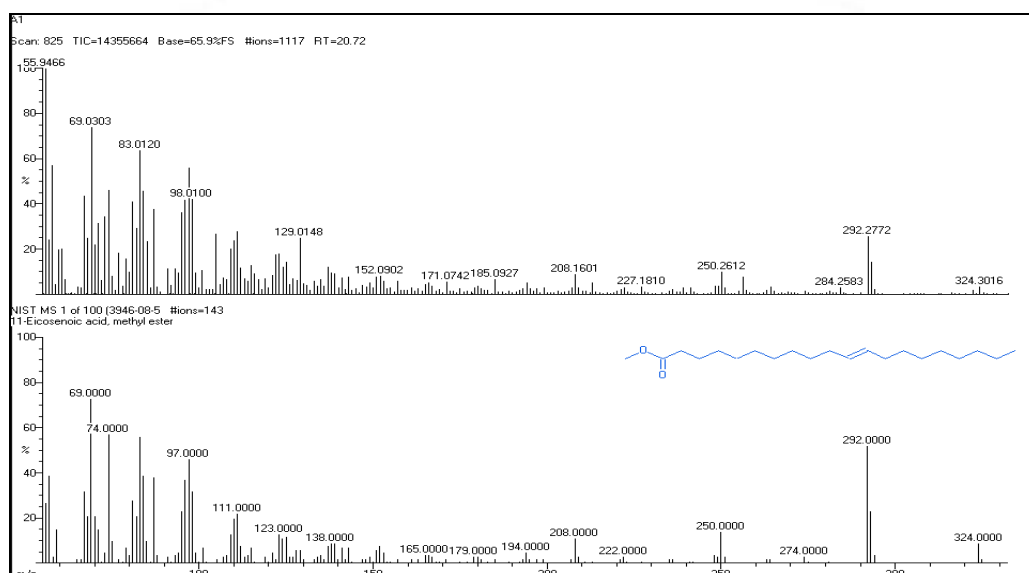


Figure 9: Mass spectrum of 11-Eicosenoic acid, methyl ester

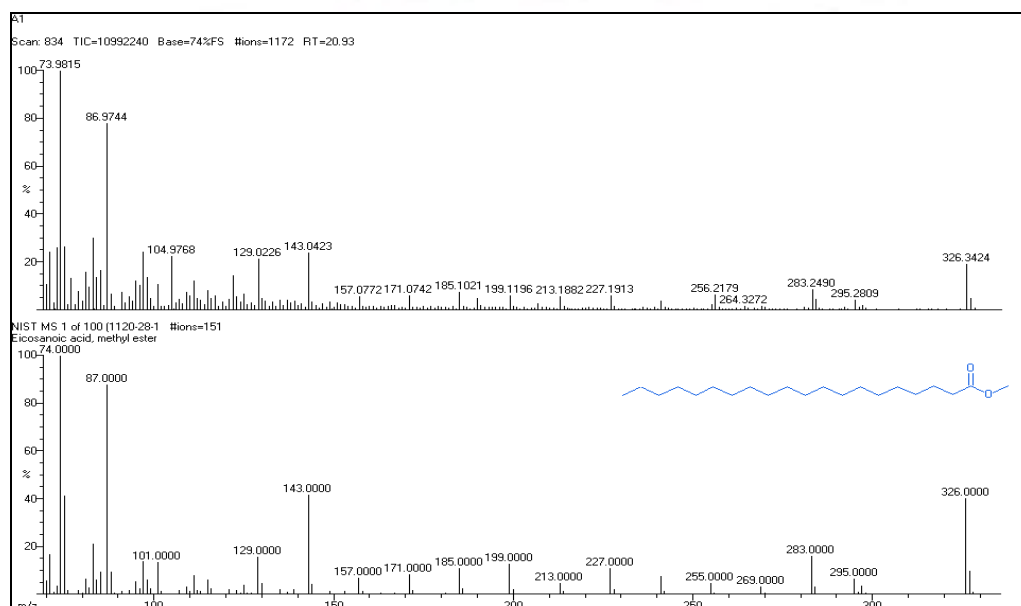


Figure 10: Mass spectrum of Eicosanoic acid, methyl ester

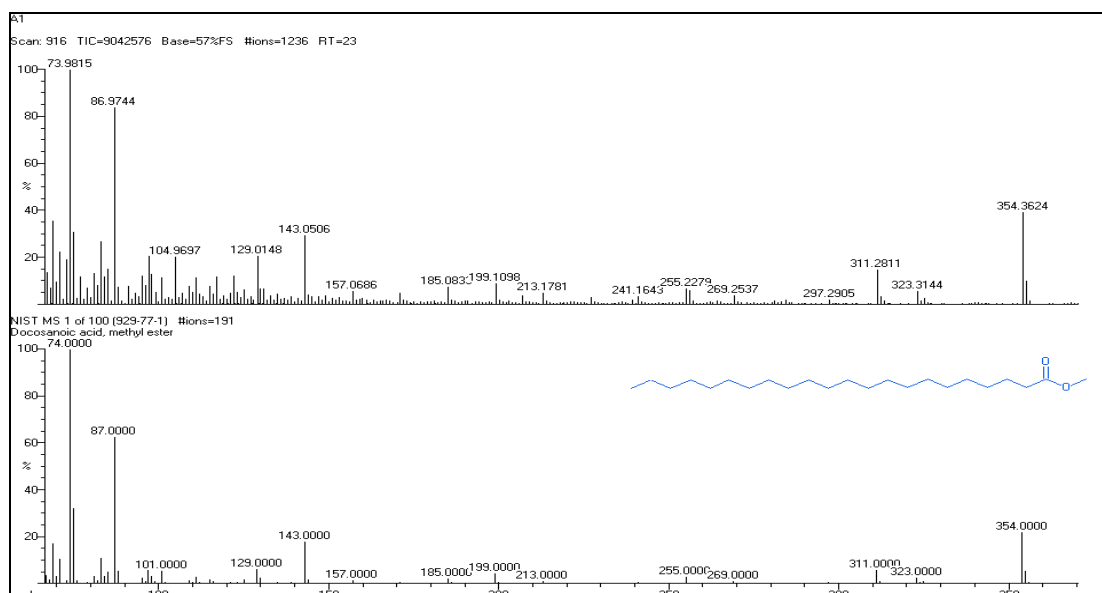


Figure 11: Mass spectrum of Docosanoic acid, methyl ester

Ten phytochemicals appearance in the n-hexane extract of *C.defixum* Ker-Gawler leaves are listed in table 2.

Table 2: Phytochemical components identified for n-hexane extract of *C.defixum* Ker-Gawler leaves (GC-MS Study).

S.N	RT	Name of the compound	Molecular Formula	Molecular Weight	Peak Area (%)	Compound Nature	Activity
1.	15.07	Tridecanoic acid, 12-methyl-, methyl ester	C ₁₅ H ₃₀ O ₂	242.3975	74	Fatty acid methyl ester	Antifungal and antibacterial activities.
2.	16.03	Tetradecanoic acid, 12-methyl-, methyl ester	C ₁₆ H ₃₂ O ₂	256.4241	49.9	Fatty acid methyl ester	No activity reported.
3.	17.22	Pentadecanoic acid, 14-methyl-, methyl ester	C ₁₇ H ₃₄ O ₂	270.4507	100	Palmitic acid methyl ester	Antioxidant, antifungal and antimicrobial activities.
4.	17.97	Estra-1,3,5(10)-trien-17a'-ol	C ₁₉ H ₂₆ O ₂	286.4085	55.7	Steroid	Androgenic-alopecia (Hair loss) activity.
5.	18.93	10-Octa decenoic acid, methyl ester	C ₁₉ H ₃₆ O ₂	296.4879	100	Fatty acid Ester	Antioxidant and antimicrobial activities.
6.	19.18	Hepta decanoic acid, 16-methyl-, methyl ester	C ₁₉ H ₃₈ O ₂	298.5038	84.3	Stearic acid	Used against skin cancer Protein.
7.	19.92	Octadec- 9-enoic acid	C ₁₈ H ₃₄ O ₂	282.46136	33.1	Oleic acid	Antimicrobial, antioxidant, cancer preventive, anemiagenic and anti-androgenic activities.
8.	20.72	11-Eicosenoic acid, methyl ester	C ₂₁ H ₄₀ O ₂	324.5411	65.9	Fatty acid	Antioxidant, pesticide and nematicide activities.
9.	20.93	Eicosanoic acid, methyl ester	C ₂₁ H ₄₂ O ₂	326.5570	74	Arachidic Acid	Alpha-glucosidase inhibitors activity.
10.	23	Docosanoic acid, methyl ester	C ₂₃ H ₄₆ O ₂	354.6101	57	fatty acid	Therapeutic, diagnostic activities.

Activity Source**: Dr. Duke's Phytochemical and Ethnobotanical Databases, NCBI-Pubmed, ChemSpider (Royal Society of Chemistry) and other available literatures.

3.2 GC – MS spectrum of chloroform extract of *C. defixum* Ker-Gawler leaves.

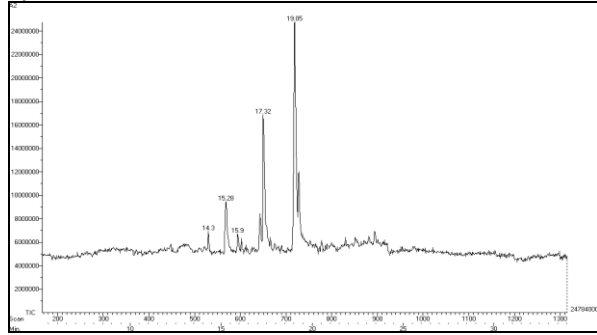


Figure 1: GC – MS with chloroform extract of *C. defixum* Ker – Gawler leaves.

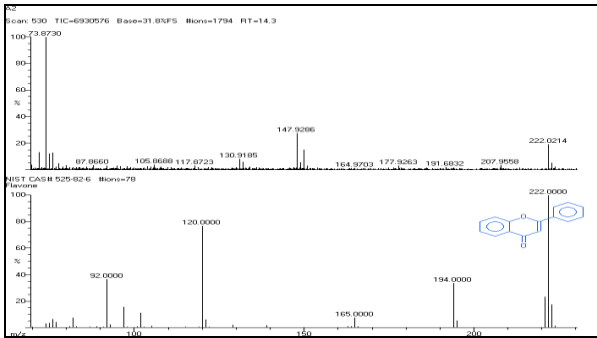


Figure 2: Mass spectrum of Flavone

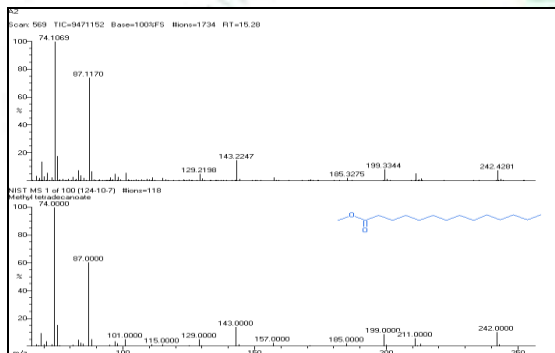


Figure 3: Mass spectrum of Methyl tetradecanoate

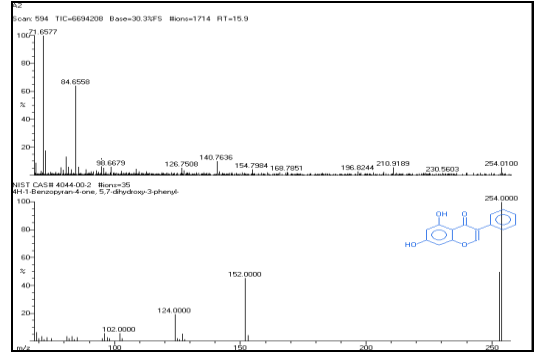


Figure 4: Mass spectrum of 4H-1-Benzopyran-4-one, 5,7-dihydroxy-3-phenyl-

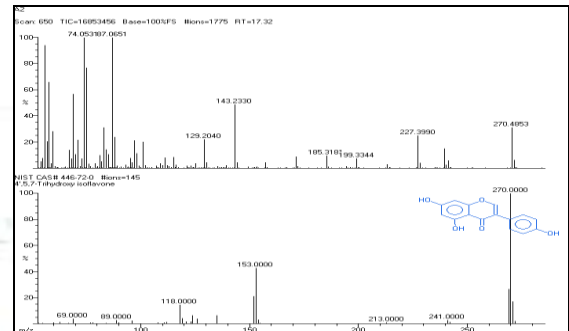


Figure 5: Mass spectrum of 4',5,7-Trihydroxy isoflavone

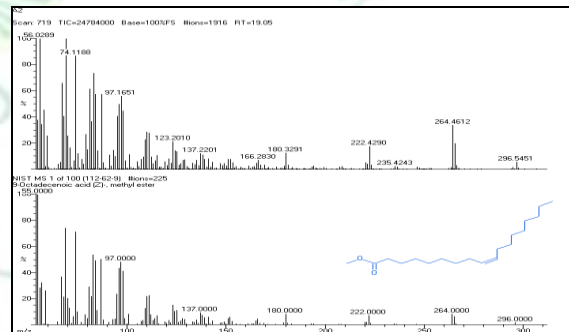


Figure 6: Mass spectrum of 9-Octadecenoic acid (Z)-, methyl ester

Five phytochemicals appearance in the chloroform extract of *C. defixum* Ker-Gawler leaves are listed in table 3.

Table.3: Phytochemical components identified for chloroform extract of *C. defixum* Ker-Gawler leaves (GC-MS Study).

S.N	RT	Name of the compound	Molecular Formula	Molecular Weight	Peak Area (%)	Compound Nature	Activity
1.	14.3	Flavone	C ₁₅ H ₁₀	222.239	31.8	Poly phenolic compound	Antibacterial, hepato- protective, anti-inflammatory, anticancer, and antiviral activities.
2.	15.28	Methyl tetra decanoate	C ₁₅ H ₃₀ O ₂	242.3975	100	Myristic acid ester	Antioxidant, cancer-preventive, hypercholester-olemic and

							Nematicide activities.
3.	15.9	4H-1-Benzopyran-4-one, 5,7-dihydroxy-3-phenyl-	-	-	30.3	Unknown compound	-
4.	17.32	4',5,7-Trihydroxy isoflavone	C ₁₅ H ₁₀ O ₅	270.2369	100	Phytoestrogen compound	Antitumor agent, antioxidant, antiangiogenic and immunosuppressive activities.
5.	19.05	9-Octadecenoic acid(Z)-, methyl ester	C ₁₉ H ₃₆ O ₂	296	100	Fatty acid Ester	Anti inflammatory, antiandrogenic, cancer preventive, dermatitogenic, hypocholesterolemic, 5-alpha reductase inhibitor, anemiagenic and insectifuge activities.

Activity Source**: Dr. Duke's Phytochemical and Ethnobotanical Databases, NCBI-Pubmed, ChemSpider (Royal Society of Chemistry) and other available literatures.

3.3 GC – MS spectrum of acetone extract of *C.defixum* Ker-Gawler leaves.

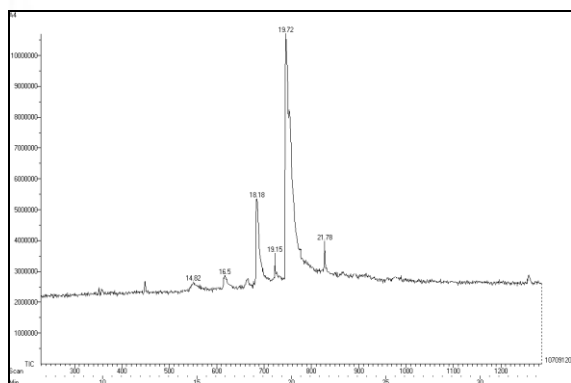


Figure 1: GC – MS with acetone extract of *C. defixum* Ker-Gawler leaves.

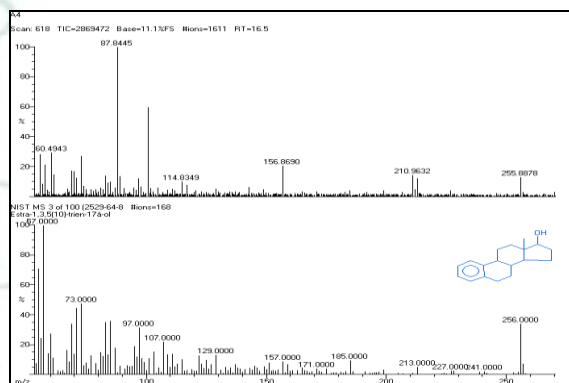


Figure 3: Mass spectrum of Estradiol.

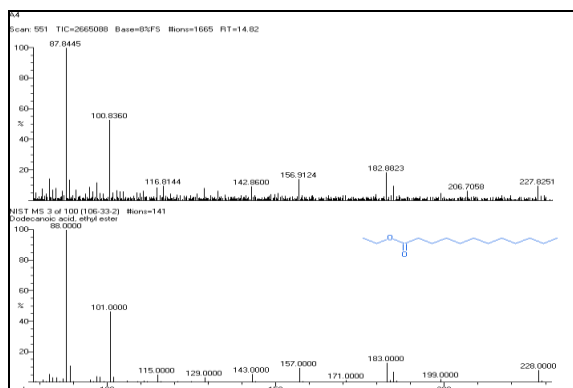


Figure 2: Mass spectrum of Dodecanoic acid, ethyl ester.

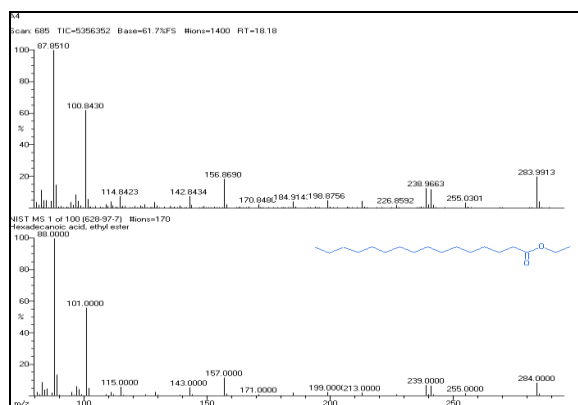


Figure 4: Mass spectrum of Hexadecanoic acid, ethyl ester.

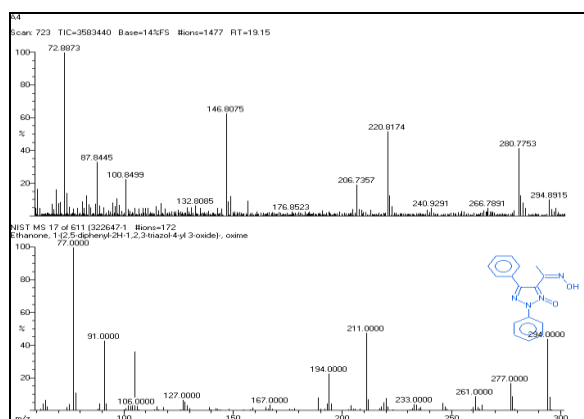


Figure 5: Mass spectrum of Ethanone,1-(2,5 diphenyl-2H-1,2,3-triazol-4-yl 3-oxide)-,oxime.

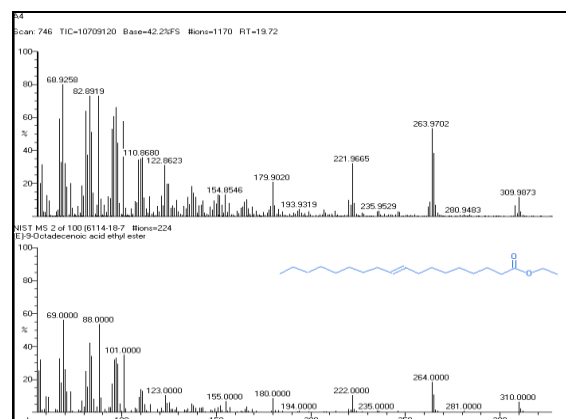


Figure 6: Mass spectrum of (E)-9-Octadecenoic acid ethyl ester.

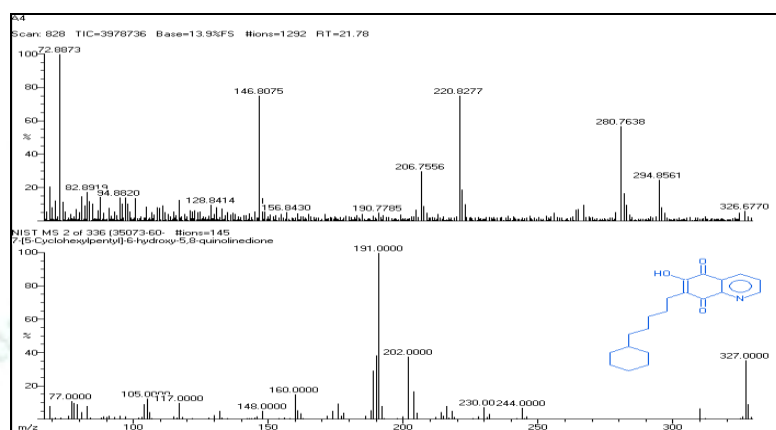


Figure 7: Mass spectrum of 7-(5-Cyclohexylpentyl)-6-hydroxy-5,8-quinolinedione.

Six phytochemicals appearance in the acetone extract of *C. defixum* Ker-Gawler leaves are listed in table 4.

Table.4: Phytochemical components identified for acetone extract of *C. defixum* Ker-Gawler leaves (GC-MS Study).

S.N	RT	Name of the compound	Molecular Formula	Molecular Weight	Peak Area (%)	Compound Nature	Activity
1.	14.82	Dodecanoic acid, ethyl ester	C ₁₄ H ₂₈ O ₂	228.3709	8	Fatty acid ethyl ester	No activity reported.
2.	16.5	Estra-1,3,5(10)-trien-17a'-ol	C ₁₉ H ₂₆ O ₂	286.4085	11.1	Steroid	Androgenic- alopecia (hair loss)activity.
3.	18.18	Hexadecanoic acid, ethyl ester	C ₁₈ H ₃₆ O ₂	284	61.7	-	Antioxidant, hypo-cholesterolemic nematocide, pesticide, lubricant, antiandrogenic and flavor activities.
4.	19.15	Ethanone,1-(2,5 diphenyl-2H-1,2,3-triazol-4-yl 3-oxide)-,oxime	-	-	14	Unknown compound.	-
5.	19.72	(E)-9-Octadecenoic acid ethyl ester	C ₂₀ H ₃₈ O ₂	310	42.2	Oleic acid ester	Antioxidant and anti-inflammatory activities.
6.	21.78	7-(5-Cyclohexylpentyl)-6-hydroxy-5,8-quinolinedione	-	-	13.9	Unknown compound.	-

Activity Source**: Dr. Duke's Phytochemical and Ethnobotanical Databases, NCBI-Pubmed, ChemSpider (Royal Society of Chemistry) and other available literatures.

3.4 GC – MS spectrum of ethanolic extract of

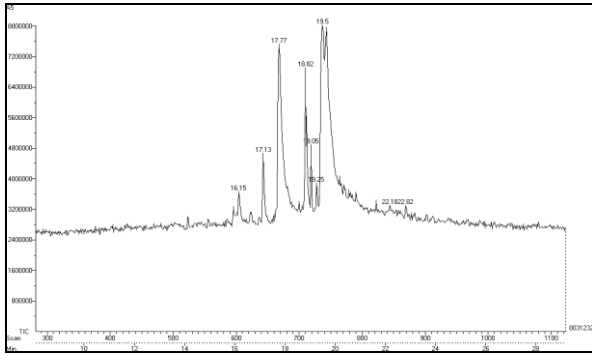


Figure 1: GC – MS with ethanolic extract of

C.defixum Ker-Gawler leaves.

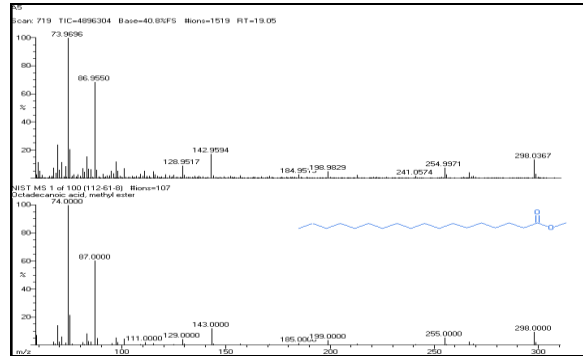


Figure 5: Mass spectrum of Octadecanoic acid, methyl ester.

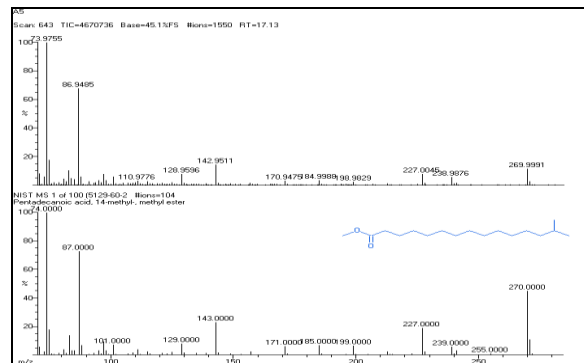


Figure 2: Mass spectrum of Pentadecanoic acid, 14-methyl-, methyl ester.

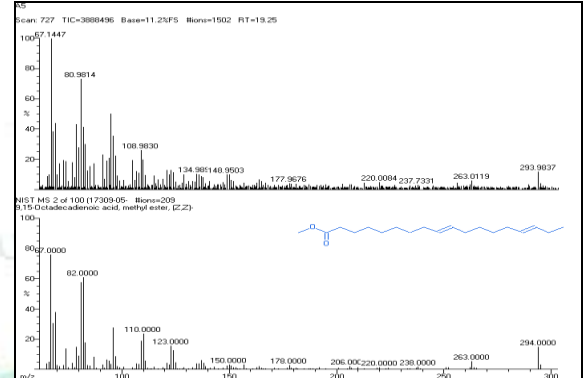


Figure 6: Mass spectrum of 9,15-Octadecadienoic acid, methyl ester,(Z,Z)-.

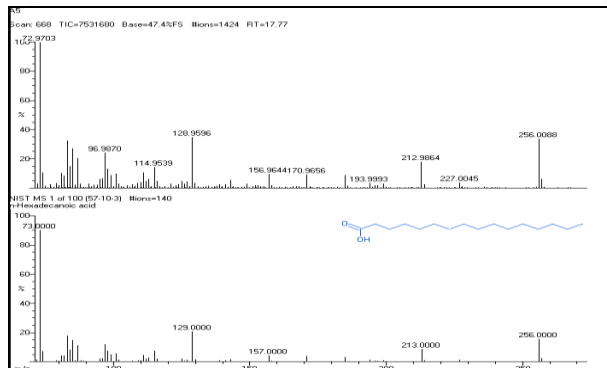


Figure 3: Mass spectrum of n-Hexadecanoic acid.

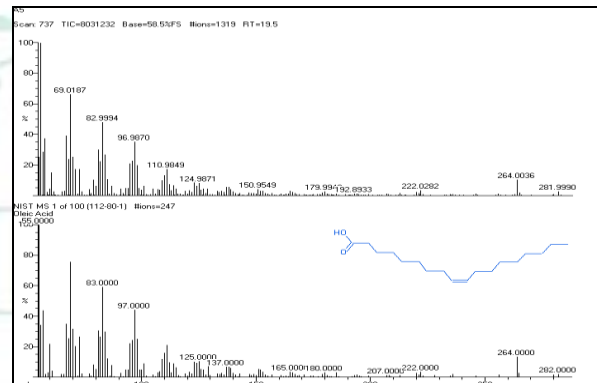


Figure 7: Mass spectrum of Oleic Acid.

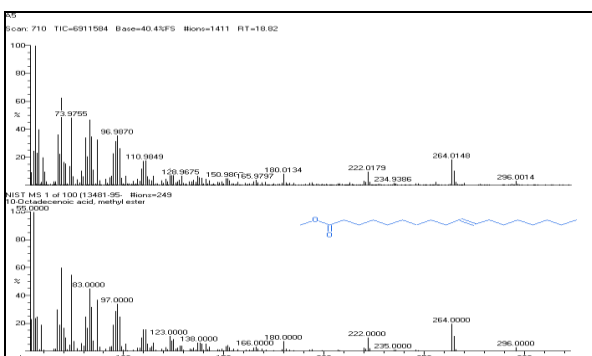


Figure 4: Mass spectrum of 10-Octadecenoic acid, methyl ester.

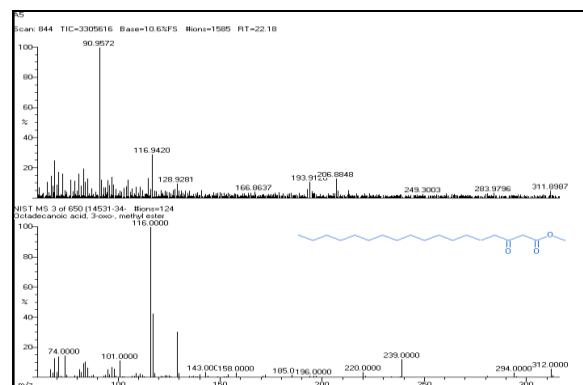


Figure 8: Mass spectrum of Octadecanoic acid, 3-oxo-, methyl ester.

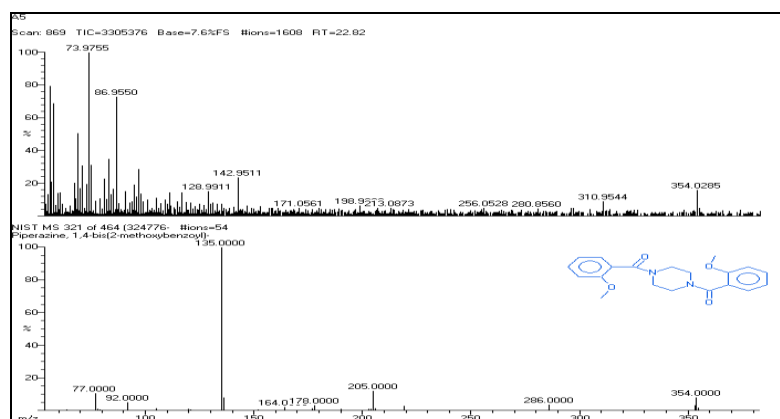


Figure 9: Mass spectrum of Piperazine, 1,4-bis(2-methoxybenzoyl)-.

Eight phytochemicals appearance in the ethanolic extract of *C.defixum* Ker-Gawler leaves are listed in table 5.

Table 5: Phytochemical components identified for ethanolic extract of *C.defixum* Ker-Gawler leaves (GC-MS Study).

S.N	RT	Name of the compound	Molecular Formula	Molecular Weight	Peak Area(%)	Compound Nature	Activity
1.	17.13	Pentadecanoic acid, 14-methyl-, methyl ester	C ₁₇ H ₃₄ O ₂	270.4507	45.1	Palmitic acid methyl ester	Antioxidant, antifungal and antimicrobial activities.
2.	17.77	n-Hexadecanoic acid	C ₁₆ H ₃₂ O ₂	256.4241	47.4	Palmitic acid	Antioxidant, hypocholesterolic, nematocidal, pesticide, lubricant, antiandrogenic, flavor, haemolytic and 5-Alpha reductase inhibitor activities.
3.	18.82	10-Octadecenoic acid, methyl ester	C ₁₉ H ₃₆ O ₂	296.4879	40.4	Fatty acid ester	Antioxidant and antimicrobial activities.
4.	19.05	Octadecanoic acid, methyl ester	C ₁₉ H ₃₈ O ₂	298.50382	40.8	-	Potent antifungal, Antimicrobial and antibacterial
5.	19.25	9,15-Octadecadienoic acid, methyl ester,(Z,Z)-	C ₁₉ H ₃₄ O ₂	294.47206	11.2	-	No activity reported.
6.	19.5	Oleic Acid	C ₁₈ H ₃₄ O ₂	282.47	58.5	Fatty acid	Antibacterial, Cancer preventive, anemiagenic, insectifuge, antiandrogenic and dermatitigenic activities.
7.	22.18	Octadecanoic acid, 3-oxo-, methyl ester	C ₁₉ H ₃₆ O ₃	312.49	10.6	-	No activity reported.
8.	22.82	Piperazine, 1,4-bis(2-methoxybenzoyl)-	C ₂₀ H ₂₂ N ₂ O ₄	354.39968	7.6	-	No activity reported.

Activity Source**: Dr. Duke's Phytochemical and Ethnobotanical Databases, NCBI-Pubmed, ChemSpider (Royal Society of Chemistry) and other available literatures.

3.5 GC – MS spectrum of butanol extract of *C. defixum*

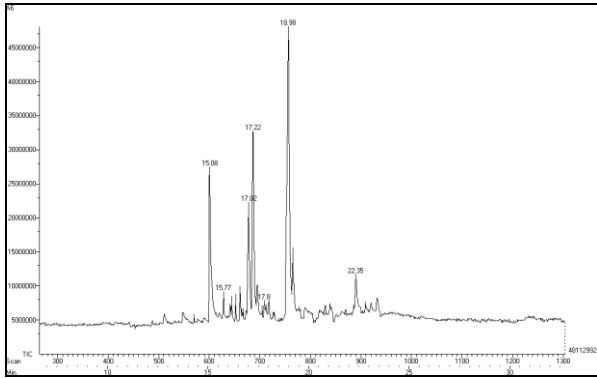


Figure 1: GC – MS with butanol extract of *C. defixum* Ker-Gawler leaves.

defixum Ker-Gawler leaves.

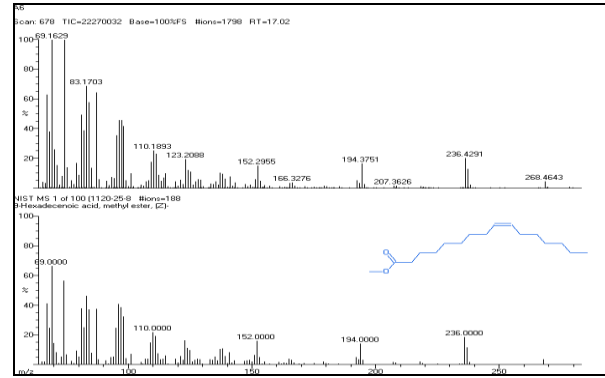


Figure 4: Mass spectrum of 9-Hexadecenoic acid, methylester, (Z)-

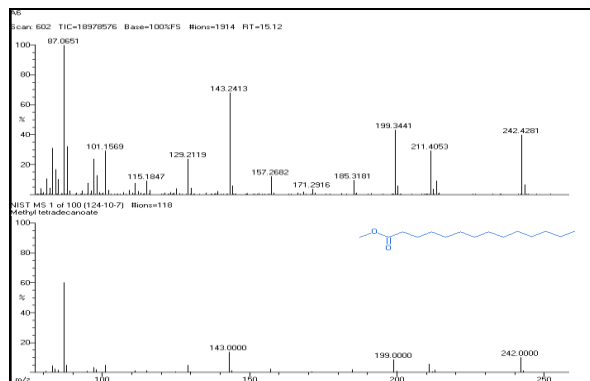


Figure 2: Mass spectrum of Methyl tetradecanoate.

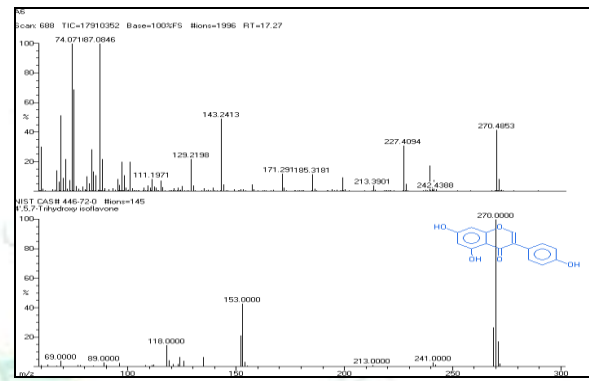


Figure 5: Mass spectrum of 4',5,7-Trihydroxy isoflavone

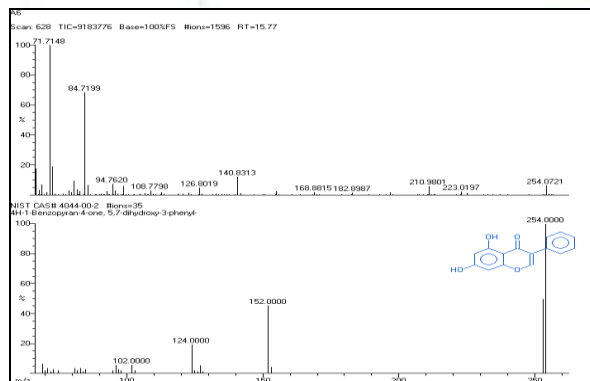


Figure 3: Mass spectrum of 4H-1-Benzopyran-4-one, 5,7-dihydroxy-3-phenyl-

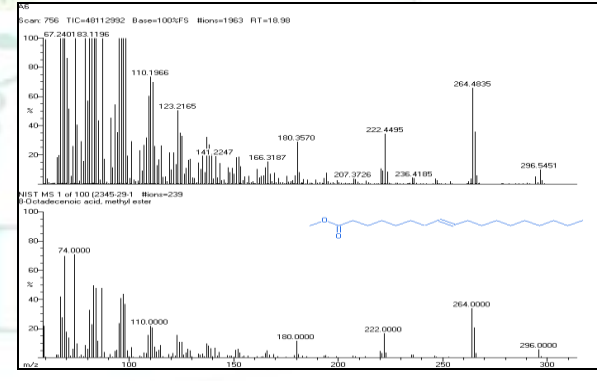


Figure 6: Mass spectrum of 8-Octadecenoic acid, methyl ester

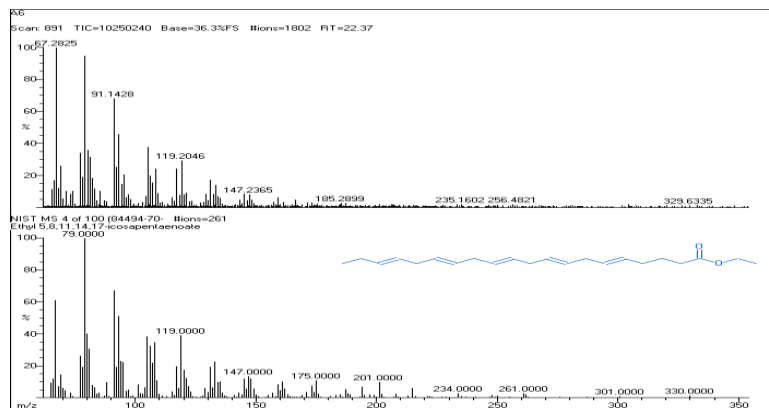


Figure 7: Mass spectrum of Ethyl 5,8,11,14,17-icosapentaenoate

Six phytochemicals appearance in the butanol extract of *C.defixum* Ker-Gawler leaves are listed in table 6.

Table.6: Phytochemical components identified for butanol extract of *C.defixum* Ker-Gawler leaves (GC-MS Study).

S.N	RT	Name of the compound	Molecular Formula	Molecular Weight	Peak Area (%)	Compound Nature	Activity
1.	15.12	Methyl tetradecanoate	C ₁₅ H ₃₀ O ₂	242.3975	100	Myristic acid Ester	Antioxidant, cancer-preventive, hypercholesterolemic and nematocidal activities.
2.	15.77	4H-1-Benzopyran-4-one, 5,7-dihydroxy-3-phenyl-	-	-	100	Unknown compound	-
3.	17.02	9-Hexadecenoic acid, methylester, (Z)-	C ₁₇ H ₃₂ O ₂	268.4348	100	-	No activity reported.
4.	17.27	4',5',7-Trihydroxy isoflavone	C ₁₅ H ₁₀ O ₅	270.2369	100	Flavonoid	Antitumor agent, antioxidant, antiangiogenic and immunosuppressive activities.
5.	18.98	8-Octadecenoic acid, methyl ester	C ₁₉ H ₃₆ O ₂	296.49	100	Fatty acid ester	Antioxidant and antimicrobial activities.
6.	22.37	Ethyl 5,8,11,14,17-icosapentaenoate	-	-	36.3	Unknown compound	-

Activity Source*: Dr. Duke's Phytochemical and Ethnobotanical Databases, NCBI-Pubmed, ChemSpider (Royal Society of Chemistry) and other available literatures.

3.6 GC – MS spectrum of methanolic extract of *C. defixum* Ker-Gawler leaves.

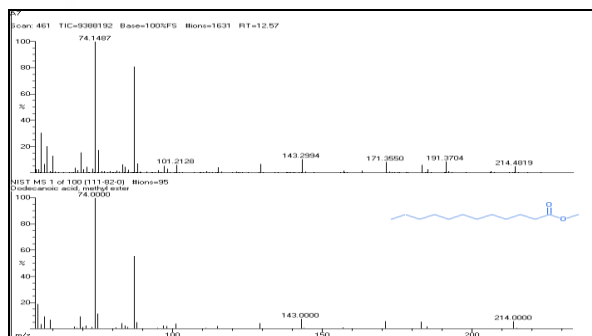


Figure 1: Mass spectrum of Dodecanoic acid, methyl ester

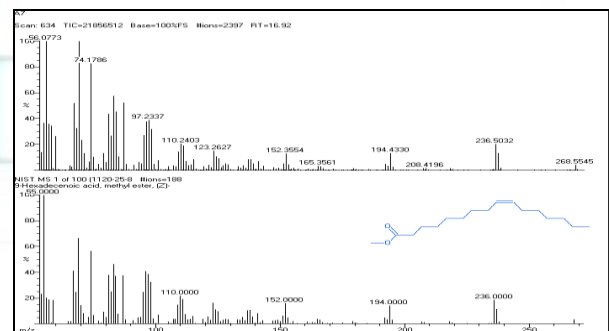


Figure 3: Mass spectrum of 9-Hexadecenoic acid, methyl ester, (Z)-

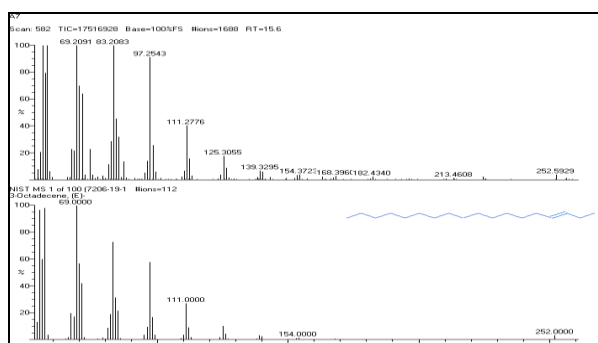


Figure 2: Mass spectrum of 3-Octadecene, (E)-

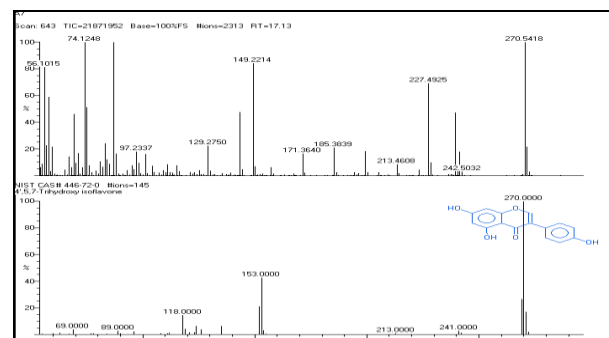


Figure 4: Mass spectrum of 4',5',7-Trihydroxy isoflavone

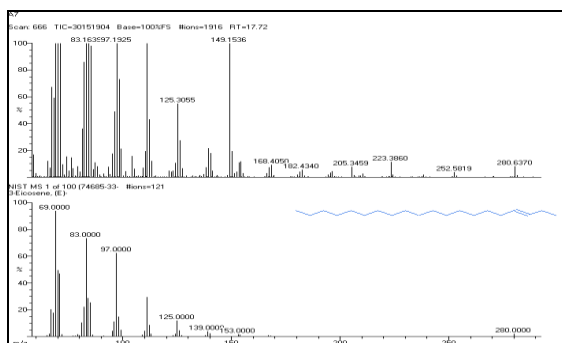


Figure 5: Mass spectrum of 3-Eicosene, (E)-

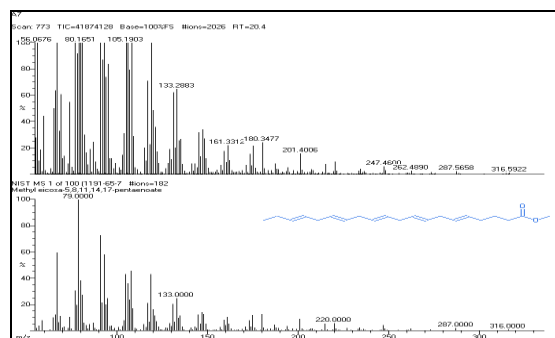


Figure 8: Mass spectrum of Methyl eicosa-5,8,11,14,17-pentaenoate

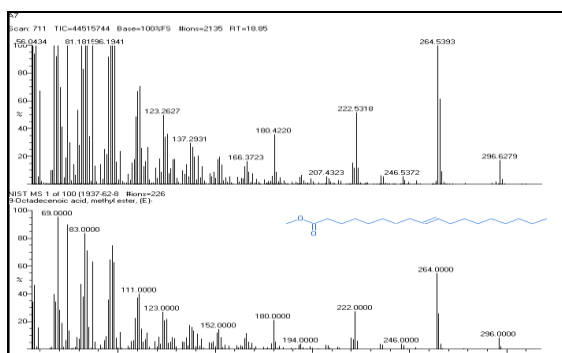


Figure 6: Mass spectrum of 9-Octadecenoic acid, methyl ester, (E)-

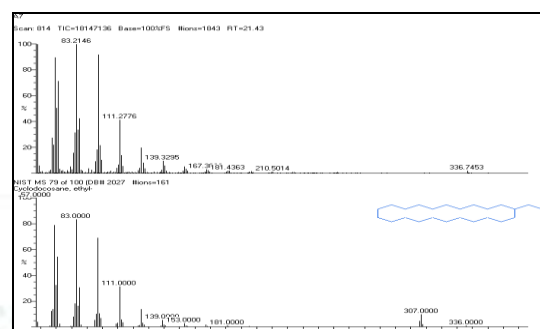


Figure 9: Mass spectrum of Cyclodocosane, ethyl-

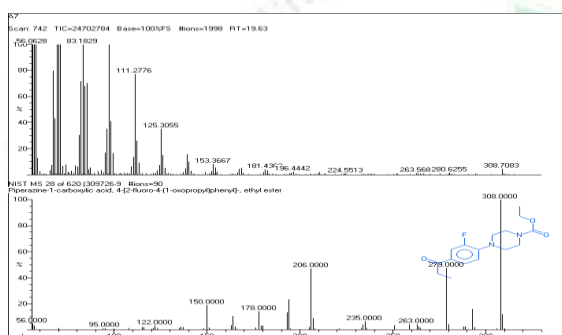


Figure 7: Mass spectrum of Piperazine-1-carboxylic acid, 4-(2-fluoro-4-(1-oxopropyl)phenyl)-, ethyl ester

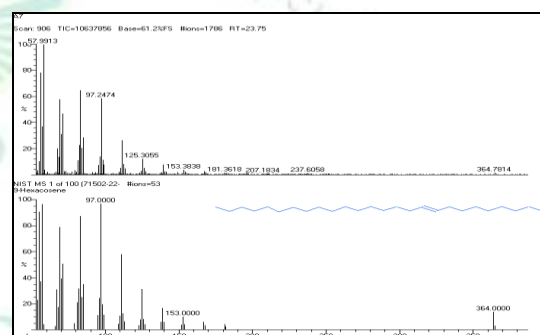


Figure 10: Mass spectrum of 9-Hexacosene

Eleven phytochemicals appearance in the methanolic extract of *C.defixum* Ker-Gawler leaves are listed in table 7.

Table 7: Phytochemical components identified for methanolic extract of *C.defixum* Ker-Gawler leaves (GC-MS Study)

S.N	RT	Name of the compound	Molecular Formula	Molecular Weight	Peak Area (%)	Compound Nature	Activity
1.	12.57	Dodecanoic acid, methyl ester	C ₁₃ H ₂₆ O ₂	214.3443	100	-	No activity reported.
2.	15.6	3-Octadecene, (E)-	C ₁₈ H ₃₆	252.4784	100	-	No activity reported.
3.	16.92	9-Hexadecenoic acid, methyl ester, (Z)-	-	-	100	Unknown compound.	-
4.	17.13	4',5,7-Trihydroxy isoflavone	C ₁₅ H ₁₀ O ₅	270.2369	100	Flavonoid	Antitumor agent, antioxidant, antiangiogenic and immunosuppressive activities.
5.	17.72	3-Eicosene, (E)-	C ₂₀ H ₄₀	280.5316	100	Alkene	No activity reported.
6.	18.85	9-Octadecenoic acid, methyl ester, (E)-	C ₁₉ H ₃₆ O ₂	296	100	-	No activity reported.
7.	19.63	Piperazine-1-carboxylic	-	-	100	Unknown	

		acid, 4-(2-fluoro-4-(1-oxopropyl) phenyl)-, ethyl ester				compound.	-
8.	20.4	Methyl eicosa-5,8,11,14,17-pentaenoate	C ₂₁ H ₃₂ O ₂	316.478	100	-	No activity reported.
9.	21.43	Cyclodocosane, ethyl-	C ₂₄ H ₄₈	336.63792	100	-	No activity reported.
10.	23.75	9-Hexacosene	C ₂₆ H ₅₂	364.6911	61.2	Unsaturated hydrocarbon	Analgesic and anti-inflammatory activities.

Activity Source**: Dr. Duke's Phytochemical and Ethnobotanical Databases, NCBI-Pubmed, ChemSpider (Royal Society of Chemistry) and other available literatures.

N. Thi Ngoc Tram *et al* (2002) reported that (-) Galanthamine, (+) Haemanthamine (3-Epicrinamine, Hemanthamine), Hipeastrine, (-) Lycorine (Narcissine, Galanthidine) types of alkaloids are reported that the after 1985. Recently a new alkaloid 5 α -hydroxy homolycorine has also been isolated from *Crinum defixum* Ker – Gawler bulbs and M.Bordoloi *et al*, (2009) reported that (E)-N' – [(E)-2-butenoylhydrazide] has been isolated from *Crinum defixum* Ker-Gawler root bulb. This Hydrazide compound imparted a clear dose dependent protective effect against the genotoxic effect of H₂O₂ with those reported in the literature.

In the present study is carried out for phytochemical screening of *Crinum defixum* Ker-Gawler leaves. Alkaloids, flavonoids, terpenoids, saponins, amino acids and phenolic compounds are qualitatively analysed and the results are listed in table -1. GC-MS studies were reported that the many phytochemicals such as flavones, sesquiterpenoids, fatty acid methyl ester, palmitic acid methyl ester, steroid, fatty acid ester, stearic acid, oleic acid, arachidic acid, alcoholic compounds, poly phenolic compounds, myristic acid ester and unsaturated alcoholic compounds are appearance in the various extract of the *Crinum defixum* Ker-Gawler leaves. The presences of phytochemicals are listed in the table -2,3,4,5,6 and 7.

CONCLUSION

The preliminary phytochemical analysis of various extract of *Crinum defixum* Ker-Gawler leaves contains many bioactive chemicals like alkaloids, flavonoids, saponins, terpenoids, amino acids and phenolic compounds. The GC- MS studies of *Crinum defixum* Ker-Gawler leaves clearly indicate that the major compounds are 4',5,7-Trihydroxy isoflavone (chloroform, butanol and methanol fractions), 9-Hexadecenoic acid, methyl ester, (Z)- (butanol and methanol fractions), Pentadecanoic acid, 14-methyl-, methyl ester (hexane and ethanol fractions), Dodecanoic acid, methyl ester (acetone and ethanol fractions), Methyl tetradecanoate (chloroform and butanol fractions) are identified.

Unknown compounds such as 4H-1-Benzopyran-4-one, 5,7-dihydroxy-3-phenyl-, Ethanone,1-(2,5 diphenyl-2H-1,2,3-triazol-4-yl 3-oxide)-,oxime, 7-(5-

Cyclohexylpentyl)-6-hydroxy-5,8-quinolinedione, Ethyl 5,8,11,14,17-icosapentaenoate, 9-Hexadecenoic acid, methyl ester, (Z)-, Piperazine-1-carboxylic acid, 4-(2-fluoro-4-(1-oxopropyl) phenyl)-, ethyl ester are identified.

Minor compounds are Flavone, Tridecanoic acid, 12-methyl-, methyl ester, Tetradecanoic acid,12-methyl-, methyl ester, Pentadecanoic acid,14-methyl-, methyl ester, Estra-1,3,5(10)-trien-17a'-ol, 10-Octadecenoic acid, methyl ester, Heptadecanoic acid, 16-methyl-, methyl ester, Octadec-9-enoic acid, 11-Eicosenoic acid, methyl ester, Eicosanoic acid, methyl ester, Docosanoic acid, methyl ester, Methyl tetradecanoate, 9-Octadecenoic acid(Z)-, methyl ester, Dodecanoic acid, ethyl ester, Estra-1,3,5(10)-trien-17a'-ol, Hexadecanoic acid, ethyl ester, (E)-9-Octadecenoic acid ethyl ester, n-Hexadecanoic acid, 10-Octadecenoic acid, methyl ester, Octadecanoic acid, methyl ester, 9,15-Octadecadienoic acid, methyl ester,(Z,Z)-, Oleic Acid, Octadecanoic acid, 3-oxo-, methyl ester, Piperazine, 1,4-bis(2-methoxybenzoyl)-, 8-Octadecenoic acid, methyl ester, 3-Octadecene, (E)-, 3-Eicosene, (E)-, 9-Octadecenoic acid, methyl ester,(E)-, Methyl eicosa-5,8,11,14,17-pentaenoate, Cyclodocosane, ethyl-, and 9-Hexacosene are also identified.

The identified compounds are which contribute the activities like Antioxidant, Antimicrobial, Cancer preventive, Anemiagenic, Antiandrogenic, Therapeutic, Diagnostic, Antitumor agent, antiangiogenic and immunosuppressive, Analgesic and anti-inflammatory, Hypercholesterolemic, Nematicide, Antibacterial, Insectifuge, Dermatitigenic, Antifungal, Pesticide, Lubricant, Flavor,Hemolytic, 5-Alpha reductase inhibitor and Androgenic alopecia (hairloss) activities. Hence the plant *Crinum defixum* Ker-Gawler has a potential source of biologically important drug candidates.

ACKNOWLEDGEMENT

I wish to express my deep sense of gratitude and most sincere thanks to Honourable Resource Person Dr.G.Chandramohan, Principal, Jairams Arts and Science College, Karur-3, Tamilnadu, India for providing support to finish my research work.

REFERENCES

1. Tiwari P, Kumar B, Kaur M, Kaur G, Kaur H, *int. pharm. Scientia*, 2011;1 : 98-106.
2. Ruikar A, Torane R, Tambe A, Puranik V, Deshpande N. *Int. J. Chemtech. Res.* 2009; 1(2)
3. Lahlou M, *Phytother. Res.*, 2004; 18:435-445.
4. Das K, Tiwari RKS, Shrivastava DK, *J. Med. Plant Res.* 2010; 4(2):104-111.
5. Saravanan V., Revathi R., Meera N. Method development and validation for the simultaneous estimation of lycopene and ubidecarenone by RP-HPLC in combined pharmaceutical dosage form. *Journal of Drug Delivery and Therapeutics*, 2016; 6(5):46-51. <https://doi.org/10.22270/jddt.v6i5.1295>
6. Madhava Chetty K, Sivaji K, Tulasi RK, Flowering plants of Chittoor district. 1st ed. Tirupati (india): Students offset Printers; 2008.
7. Kirtikar KR, Basu BD, *Indian Medicinal Plants*, vol. IV (1975) Published by M/S Bishen Singh Mohendra Pal Sing, New Connaught Place, Dehradun, PP. 2473-2474.
8. Hooker JD, *Flora of British India*, Published under the authority of the Secretary of state for India in Council, 1954
9. Nguyen TNT, Titorenkovab TV, Bankovab V, Handjievab NV, Popovb SS. *Crinum L. Amaryllidaceae*. *Fitoterpia*, 2002; 73:183-208.
10. Jeffs PW, Abou-Donia A, Campau D, Staiger D. Structures of 9-*O*-dimethyl-homolycorine and 5 α -hydroxyhomolycorine alkaloids of *crinum defixum*, *C. latifolium* Assignment of aromatic substitution patterns from ^1H -coupled ^{13}C spectra, *J Org Chem.* 1985; 50:1732-1737.

Journal of Drug Delivery & Therapeutics



JDDT