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RESEARCH ARTICLE

GC-MS analysis and phytochemical screening of chloroform extract of *Amaranthus viridis*

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Abstract Plants have biological compounds which are utilized for treating different human ailments and furthermore assume a significant part in relieving**.** *Amaranthus viridis* is utilized as traditional medication in the treatment of fever, torment, asthma, diabetes, loose bowels, urinary problems, liver issues, eye issues and venereal sicknesses. Consequently, it is important to research the phytochemical constituents of the Indian therapeutic plant *Amaranthus viridis*. This study was intended to assess the phytochemical discoveries for the presence of Alkaloids, Coumarins, Steroids, Saponins, Tannins, Flavonoids, Phenols, and Terpenoids. The phytochemical profile of chloroform concentrates of leaves of *Amaranthus viridis* were dissected utilizing GC-MS (Gas Chromatography-Mass Spectrometry) technique.The leaves were dried, powdered, and extracted with chloroform by using Soxhlet apparatus, then subjected to GC-MS analysis by using Clarus GCMS-QP 2010 Ultra Gas chromatography. The unknown range was contrasted and that of the known by utilizing NIST (National Institute of Standards and Technology) information base, which uncovered the presence of various phytochemicals in the extract. The compounds are pharmacologically and naturally significant.

Keywords: *Amaranthus viridis*, phytochemicals, analysis, chloroform extract

Introducation

Plant chemistry or Phytochemistry is a part of science, deals with chemical nature of the plant or plant products. Phytotherapy goes about as a wellspring of treating and working on specific infections by utilizing the useful impacts of restorative plants. Phytochemicals are the bioactive, regular chemical compounds, found in plants. The plant contains a wide assortment of compounds and they are comprehensively grouped into two kinds, primary and secondary constituents or metabolites. Primary constituents include chlorophyll, proteins, sugar and amino acids while secondary metabolites contain terpenoids, Saponins, Tannins, and alkaloids. Because of the presence of these secondary constituent's therapeutic plants show antifungal, antibacterial and against aggravation exercises. Various parts, for example, leaves, bark, seeds, roots, blossoms and cases of plants likewise have different quality and amount of dynamic constituent.

Amaranthus viridis L. (Family Amaranthaceae) is distributed in the hotter regions of the planet. Moreover, the entire plant has pain relieving and against pyretic properties and is utilized for the treatment of torment and fever separately in customary or traditional frameworks of medication (Eluwa 1977). It is not easy to grow, supplement rich and underutilized pseudocereal that can assume a significant part in activities against hunger and lack of healthy sustenance that happen because of low precipitation conditions (Martha and Shimelis 2012). Amaranth has a high resistance to arid conditions and sterile soils where customary cereals can't be developed. As indicated by Monica et al. Amaranth has been promoted as a supernatural occurrence grain, a super grain, and the grain of things to come (Monica *et al.* 2012). *A. viridis* is perhaps of Asian beginning yet presently a cosmopolitan weed in the tropical and subtropical

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areas of the world, likewise pervasive distant to mild areas (for example in Europe, North America, Asia and Australia). In central Africa it is likewise a significant and normal weed and periodically grown in Nigeria, Gabon and DR Congo(Brenan 1981).

Some Significant secondary metabolites recognized as allelochemicals like phenolics, alkaloids, flavonoids, terpenoids, momilactone, hydroxamic acids, Brassinosteroids, Jasmonates, Salicylates, Glucosinolates, sugars and amino acids are reported in some species of Amaranth (Ayeni and Kayode 2014, Dahiya *et al.* 2017).

Identification the different elements of a mixture can be easy or difficult depending on the type of Compund or sample involved. As we know Gas Chromatography - Mass Spectrometry (GC-MS) is the best method to distinguish the bioactive constituents of long chain hydrocarbons, alcohols, acids, esters, alkaloids, steroids, amino acids and nitrogen compounds (Subramanian Ramakrishnan 2011, Muthulakshmi *et al.* 2012, Yamuna devi *et al.* 2011, Gopalakrishnan and Vadivel 2011).There are several techniques to separate chemicals in a mixture or in sample, few of them are LC- MS and GC- MS. In order to identify and account for all substances in a particular sample or mixture, LC-MS and GC-MS can be used to ease and hasten the identification process. GC-MS usually has same application as LC-MS-to identify any foreign material and contamination in a sample.GC-MS is the short form for gas chromatography mass spectrometry. Its main difference from the other identification and separation technique is that it is used for samples that are thermally stable molecules. However, GC-MS has the leverage of being the preferred standard for forensic science identification, since it tests for specific substances and not for a general composition or identification. GC-MS is also the preferred machine to use because it is easier to operate, has fewer maintenance issues, and costs less compared to the LC-MS machine.

Consequently, portrayal of extracts of medicinal plants is fundamental because of its various advantages to science and society. By and by, *Amaranthus* have gotten quite less examination consideration as vegetables than grain amaranths.

Gas Chromatography Mass Spectroscopy is a joined framework which is a truly viable method and the most normally involved strategy for recognizable proof and evaluation reason. The unknown organic compounds in a complicated mixture can be interpretated by coordinating the spectra with reference spectra(Ronald Hites 1997).There are various reports on the GC-MSinvestigation studies on many plants and plant parts. These studies were embraced to learn the presence of effective biomolecules which have helpful exercises (Jayapriya 2015).

In this study the Gas Chromatogram Mass Spectrometric method (GC-MS) was involved for assurance of the compounds in the chloroform extract.The plants produce these compounds to protect themselves yet researches have shown that they have the ability to treat human infections and illness in a compelling manner(Dutta and Ghosh 1947a). Hence, the current study was pointed toward deciding phytochemical constituents with the guide of GC-MS technique and *in vitro* screening of crude chloroform extracts of leaves from commonly grown *Amaranthus viridis* weeds for their phytochemical study. The discoveries of this study give significant information on the bioactive substances of these under used vegetable, and there by enhance their use in food industry.

Materials and methods

Plant material

The fresh plant sample of *Amaranthus viridis* was collected randomly from the fields of Department of Botany and CCS University Campus, Meerut, Uttar Pradesh. Completely matured leaves from the plant were separated and collected in light of the fact that there is maximum metabolism in completely developed leaves as compared to youthful leaves. The leaves were washed tenderly with running tap water for multiple times, air dried for 10 days and kept in the hot air oven at 60° C for 24-48 hrs and ground to fine powder.

Preparation of plant extract through s extraction method

The coarsely crushed powdered samples were extracted utilizing chloroform by soxhlet

extraction method. The extract was further concentrated utilizing revolving evaporator under diminished pressure and put away at 4° C in the fridge. Chloroform extraction of the plan tmaterial was completed by suspending 2 grams of *Amaranthus* powder uniformly packed into a thimble in 250 ml of chloroform. The process of extraction must be proceeded for 24 hours or till the dissolvable in siphon container of extractor become vapid. The extraction was allowed to stand for 72 hours at room temperature. The extract was separated first through muslin fabric, then, at that point, through Whatman filter paper No.1 (125 mm) and dried utilizing a rotating evaporator. This was moved into sterile containers and put away in thefridge until utilized.

Phytochemical analysis

A stock concentration of 20mg/ml (W/ V) of each successive extract obtained using chloroform was prepared. The extract was tested for the presence of active phytochemicals by following standard methods. Different chemical tests are directed to distinguish addressed of various phytochemicals terpenes, alkaloids, flavonoids, steroids, saponins, tannins and phenolic compounds in view of the conventions accessible in the literature.

Flavonoids (alkaline reagent test)

Expansion of 4-5 drops of 5% sodium hydroxideto 1 ml of the test solution came about an expansion in the power of the yellow shading which became dull on addition of a 2-3 of drops of 2 M hydrochloric acid (HCl) which demonstrated the presence of flavonoids.

Coumarins

Take 2ml of extract and add 3ml of 10%NaOH then, at that point, notice for the development of yellow shading which demonstrates the presence of coumarins.

Phenols (Ferric chloridetTtst)

Took 2ml of extract and added few drops of aqueous ferric chloride ($FeCl_3$) solution and noticed for the development of dark blue or dark tone.

Steroids

1ml extract was allowed to dissolve in 10 ml of chloroform and equivalent volume of concentrated sulphuric acid (H_2SO_4) was added from the edges of test tube. The upper layer becomes red and H_2SO_4 layer showed yellow with green fluorescence. This demonstrates the presence of steroid.

Saponins (Foam test)

1 ml extract was blended in with 5ml of double distilled water then, at that point, fomented in graduated chamber for 15 min development of froth shows Saponin.

Alkaloids (Wagner's test)

Take 1ml of plant extract followed by add few drops of Wagner's reagent (I_2+KI) and notice for the development of ruddy earthy coloured precipitation or colouration confirm the presence of alkaloids.

Terpenoids (Salkowski test)

Take 1ml of plant extract and add 1ml of conc. HCl [Hydrochloric Acid]. Development of yellow hasten or colouration shows terpenoids presence in it.

Tannins(Braymer's test)

Take 2ml of extract and treat it with 2ml of 10%alcoholic ferric chloride[$FeCl_3$] solution and notice for the development of blue or greenish shading.

GC-MS analysis

The Clarus GCMS-QP 2010 Ultra was used in the analysis employed a fused silica column, packed with Elite-5MS (5% biphenyl 95% dimethyl-polysiloxane, 30 m × 0.25 mm ID × 250μm df), and the components were separated using Helium as carrier gas at a constant flow of 1 ml/min.

Acquisition parameters

Oven: Initial temp. 70 °C for 5 min, ramp 10 °C /

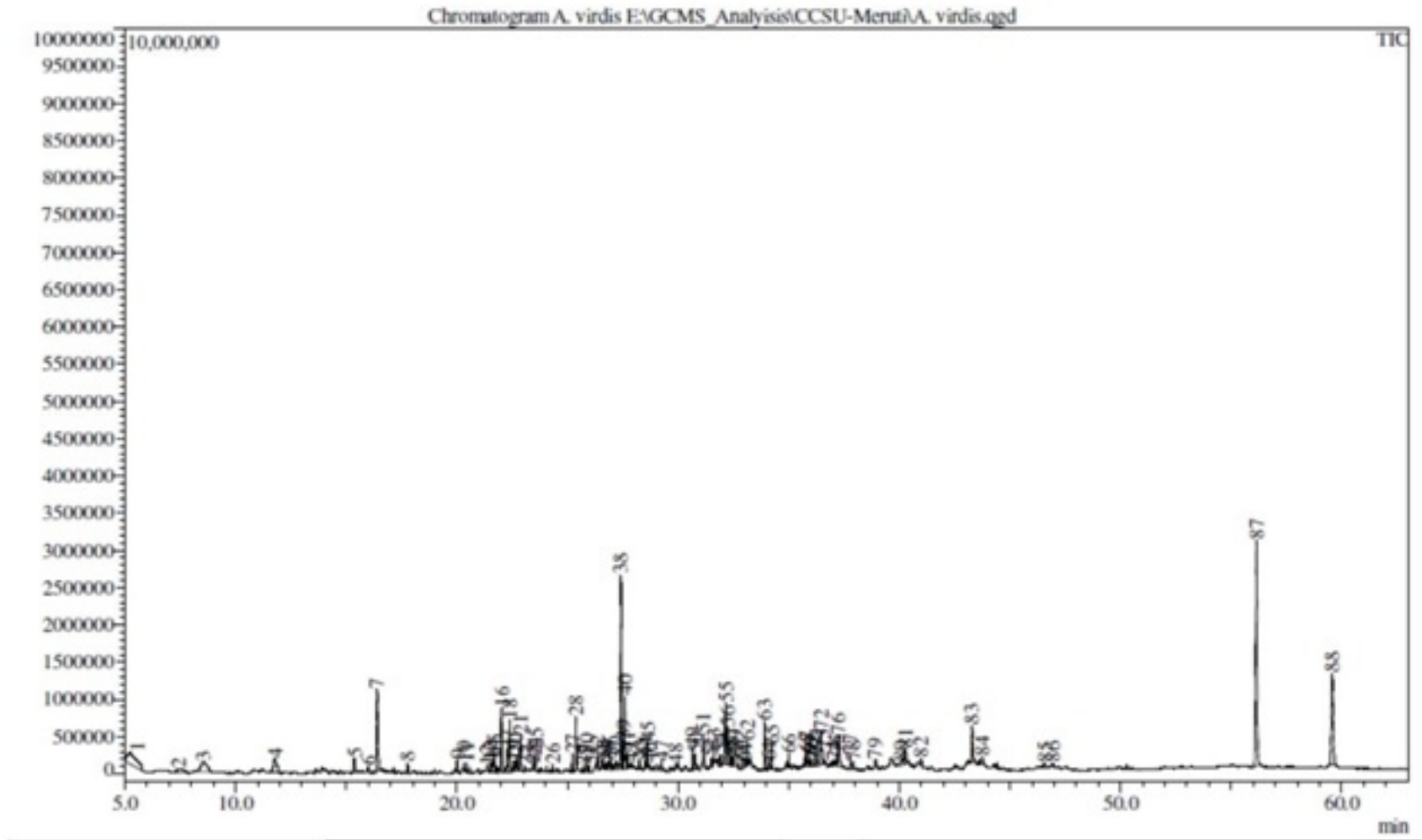

Figure 1 GC-MS chromatogram of chloroform leaves extract of *Amaranthus viridis*

min to 310 °C, holds 5 min,
Total Run Time: 50.00 min.
In auto: 250 °C,
Volume: 1 µl, **Split** = 10:0, Flow
Rate: 3 ml/min.
Carrier Gas: Helium.
Pressure: 66.7 kPa
Column: Elite-5MS (30.0m, 0.25mmID, 250µm df).
Mass Condition (Ei):
Equilibrium Time: 3 min
Interface Temp: 260°C,
IonSource Temp: 200°C
Solvent Cut Time: 4:50 min
Scan Speed: 1666
Start m/z: 40.00
End m/z: 850.00

The parameters utilized and the conditions were as referenced previously.

Identification of chemical constituents

The bioactive compounds acquired from the chloroform extracts of *A. viridis* were perceived in view of the Gas Chromatography retention time. The range of the parts was connected with the information base of known parts range present in the WILEY8 Library and NIST (National Institute Standard and Technology) library (2008) which is having more than 62,000 patterns(Mc Lafferly. 1989- Stein, Gaithersburg. 1990).The mass range of the unkown part was contrasted and spectrum of known component of NIST library. Quantitative judgments were made by relating particular peak regions to TIC regions from the GC-MS.

Results and discussions

Natural medications or herbal drugs establish a significant part in all the traditional frameworks of medicine. Natural medication is a victory of well-known restorative variety. Herbal medicine additionally alluded to as natural medication or phyto medicine, is characterized as the utilization of entire plant or part of plants to treat illness (Kumar 2005). WHO has been advancing traditional methods as a wellspring of less costly, extensive clinical consideration particularly in the agricultural areas. The vast majority of the world's population depends on medicinal plants for their essential well being care (Schuster 2001). Such home grown drugs are effectively accessible, less expensive, tried and true and considered more secure than a portion of the advanced manufactured synthetic drugs.

These plants contain a lot of secondary metabolites that apply a wide scope of biological activities on physiological frameworks. Secondary metabolites of the plants act as phyto-protectants and react to natural changes. The plant constituents from the secondary metabolites provide excellent identification of the drugs (Chaouche *et al*. 2011). Plants play a key role not only as traditional medicines but also as commercial entities.

Pigweed (*Amaranthus viridis*), belonging to the family Amaranthaceae, is commonly known with different names such as Amaranth, Chinese spinach and slender amaranth. It is an annual herb. It is one of the most important weed species in numerous agricultural areas, being the third widespread dicotyledonous weed species in the world (Namdari *et al.* 2012).It grows rapidly at high temperatures and high light intensity, so it can tolerate drought, and compete aggressively with warm-season crops for light, moisture, and nutrient (Horak and Loughin 2000).The plant possesses certain allelopathic potential, both inhibitory and stimulatory.

Present study deals with qualitative and quantitative analysis of leaves extract of *A.viridis*. Table 1. shows the preliminary phytochemical constituents of chloroform extract of *A.viridis* leaves. The phytochemical screening of the crude

Table 1: Preliminary phytochemical screening of leaves of *A.viridis*

S. No.	Phytochemicals	Chloroform Extract
1.	Flavonoids	+
2.	Coumarins	-
3.	Phenols	+
4.	Steroids	-
5.	Saponins	+++
6.	Alkaloids	+
7.	Terpenoids	+
8.	Tannins	++

Note: "+++" indicates very high, "++" indicates high, "+" indicates moderate and "-" indicates nil.

Table 2: Phytocomponents identified in the chloroform leaf extract of *Amaranthus viridis* by GC-MS analysis

Peak Report TIC

Peak#	R.Time	I.Time	F.Time	Area	Area%	Height	Height%	A/H	Mark	Name
1	5.232	5.000	5.850	4470096	4.24	161700	0.62	27.64	MI	ETHANE, 1,1,2,2-TETRACHLORO-
2	7.451	7.175	7.950	1004746	0.95	48030	0.18	20.92	MI	3,5-CYCLOHEPTADIEN-1-ONE
3	8.524	8.183	8.883	2446072	2.32	133979	0.51	18.26	MI	5-Methyl-1-hexyn-3-ol
4	11.776	11.500	12.008	2170190	2.06	197219	0.75	11.00	MI	Propane, 1,1,2,3,3-pentachloro-
5	15.360	15.292	15.475	974671	0.93	186462	0.71	5.23		PROPANE, 1,1,2,3,3-PENTACHLOI
6	16.000	15.983	16.125	-28980	-0.03	22954	0.09	-1.25	MI	Undecane, 4-ethyl-
7	16.398	16.325	16.542	4934640	4.68	1105993	4.22	4.46		Benzaldehyde, 4-propyl-
8	17.772	17.725	17.842	424477	0.40	132029	0.50	3.22		TETRADECANE
9	20.016	19.967	20.075	442147	0.42	159643	0.61	2.77		TETRADECANE
10	20.318	20.275	20.375	243785	0.23	94878	0.36	2.57		HEPTADECANE
11	20.441	20.400	20.500	285498	0.27	111108	0.42	2.57		OCTADECANE
12	21.369	21.333	21.417	154443	0.15	67694	0.26	2.28		EICOSANE, 10-METHYL-
13	21.531	21.483	21.575	461926	0.44	136065	0.52	3.39		Pentadecane, 2,6,10-trimethyl-
14	21.642	21.575	21.683	812141	0.77	170225	0.65	4.77	V	DODECANE, 4,6-DIMETHYL-
15	21.709	21.683	21.783	686278	0.65	236892	0.90	2.90	V	TETRADECANE, 5-METHYL-
16	22.019	21.958	22.108	2636546	2.50	853938	3.26	3.09		1-DODECANOL
17	22.267	22.108	22.317	1375741	1.31	289529	1.11	4.75	V	OCTADECANE
18	22.380	22.317	22.450	2311635	2.19	698157	2.67	3.31	V	OCTADECANE
19	22.569	22.450	22.608	482238	0.46	139144	0.53	3.47	V	OCTADECANE
20	22.697	22.608	22.767	893443	0.85	209432	0.80	4.27	V	PENTADECANE
21	22.869	22.767	22.958	1661549	1.58	479889	1.83	3.46	V	PHENOL, 2,4-BIS(1,1-DIMETHYLI
22	23.102	22.958	23.150	196718	0.19	73401	0.28	2.68	V	1-Dodecanol, 2-hexyl-
23	23.433	23.400	23.475	215472	0.20	71765	0.27	3.00		TETRADECANE, 5-METHYL-
24	23.508	23.475	23.525	427591	0.41	168202	0.64	2.54	V	Hexadecanoic acid, 2-oxo-, methyl es
25	23.557	23.525	23.617	784312	0.74	299122	1.14	2.62	V	TETRADECANE
26	24.316	24.275	24.367	243526	0.23	92017	0.35	2.65		PENTADECANE, 2-METHYL-
27	25.224	25.175	25.275	583819	0.55	232777	0.89	2.51		HEXADECANE
28	25.390	25.275	25.492	2271343	2.16	720102	2.75	3.15		Lauryl acetate
29	25.717	25.675	25.767	201467	0.19	79025	0.30	2.55		Hexadecane, 4-methyl-
30	25.865	25.767	25.917	748474	0.71	219749	0.84	3.41		NONADECANE
31	25.967	25.917	26.008	245964	0.23	64716	0.25	3.80	V	OCTADECANE
32	26.367	26.325	26.417	347323	0.33	139297	0.53	2.49		2,6,10-TRIMETHYLPENTADECAN
33	26.598	26.533	26.650	452754	0.43	119164	0.45	3.80		HENEICOSANE, 11-(1-ETHYLPRO
34	26.683	26.650	26.783	418407	0.40	54720	0.21	7.65		Tetradecane, 4-methyl-
35	26.811	26.783	26.850	255638	0.24	102303	0.39	2.50	V	Eicosane
36	26.937	26.850	26.992	654677	0.62	184542	0.70	3.55	V	OCTADECANE
37	27.220	26.992	27.258	843514	0.80	101672	0.39	8.30		DODECANE, 2,6,10-TRIMETHYL-
38	27.427	27.258	27.475	7624719	7.24	2593828	9.90	2.94	V	2-Propenoic acid, tridecyl ester
39	27.496	27.475	27.550	1054796	1.00	376605	1.44	2.80	V	OCTADECANE
40	27.604	27.550	27.658	2879691	2.73	969421	3.70	2.97	V	Eicosane
41	27.705	27.658	27.758	673621	0.64	221543	0.85	3.04	V	Eicosane
42	27.867	27.758	27.900	312406	0.30	60278	0.23	5.18		OCTADECANE
43	28.256	28.200	28.317	390590	0.37	118697	0.45	3.29		Heneicosane, 11-(1-ethylpropyl)-
44	28.535	28.492	28.567	357185	0.34	122360	0.47	2.92		OCTADECANE
45	28.606	28.567	28.675	981863	0.93	343765	1.31	2.86	V	Eicosane
46	28.724	28.692	28.767	132897	0.13	63784	0.24	2.08		OCTADECANE
47	29.243	29.192	29.325	439523	0.42	123859	0.47	3.55		3-Methyl-4-(phenylthio)-2-prop-2-eny
48	29.876	29.833	29.917	161283	0.15	66474	0.25	2.43		OCTADECANE
49	30.664	30.608	30.708	873077	0.83	287818	1.10	3.03		2-methyltetracosane
50	30.753	30.708	30.850	918200	0.87	205945	0.79	4.46	V	2-methyltetracosane
51	31.140	31.083	31.275	1519475	1.44	436248	1.67	3.48		1,2-BENZENEDICARBOXYLIC AC
52	31.504	31.467	31.542	236441	0.22	102177	0.39	2.31		Eicosane
53	31.593	31.550	31.650	610657	0.58	212854	0.81	2.87		OCTADECANE
54	31.919	31.858	31.975	554150	0.53	157622	0.60	3.52		DOCOSANE
55	32.143	32.050	32.200	3090735	2.93	819700	3.13	3.77		7,9-Di-tert-butyl-1-oxaspiro(4,5)deca-
56	32.247	32.200	32.292	1669452	1.58	505390	1.93	3.30	V	Eicosane
57	32.358	32.292	32.392	1011897	0.96	214958	0.82	4.71	V	Eicosane
58	32.425	32.392	32.467	277878	0.26	106207	0.41	2.62	V	DOCOSANE
59	32.577	32.467	32.683	1480050	1.40	209385	0.80	7.07		2-methyltetracosane
60	32.857	32.808	32.908	366145	0.35	111129	0.42	3.29		DOCOSANE
61	33.017	32.908	33.050	322867	0.31	62700	0.24	5.15	V	OCTADECANE
62	33.131	33.050	33.183	1010356	0.96	330382	1.26	3.06	V	Eicosane
63	33.925	33.858	34.000	1895737	1.80	641551	2.45	2.95		HEXADECANOIC ACID, ETHYL E
64	34.100	34.058	34.175	342195	0.32	94744	0.36	3.61		OCTADECANE
65	34.233	34.175	34.300	1048138	0.99	322434	1.23	3.25	V	7,9-DITERT-BUTYL-1-OXASPIRO[
66	34.993	34.942	35.050	505494	0.48	173400	0.66	2.92		DOCOSANE
67	35.756	35.700	35.792	645690	0.61	196733	0.75	3.28		2-methyltetracosane
68	35.825	35.792	35.892	682422	0.65	169880	0.65	4.02	V	DOCOSANE
69	35.967	35.892	36.008	534782	0.51	126354	0.48	4.23	V	Eicosane
70	36.051	36.008	36.117	325499	0.31	96914	0.37	3.36	V	OCTADECANE
71	36.230	36.158	36.292	911056	0.86	248622	0.95	3.66		2-methyltetracosane
72	36.444	36.292	36.500	2022005	1.92	448983	1.71	4.50	V	OCTADECANE
73	36.533	36.500	36.617	672952	0.64	181850	0.69	3.70	V	METHYL STEARATE
74	37.033	37.008	37.117	220146	0.21	51669	0.20	4.26		Eicosane
75	37.153	37.117	37.192	417460	0.40	147595	0.56	2.83	V	ZZ-8,10-Hexadecadien-1-ol
76	37.259	37.192	37.425	2140705	2.03	418905	1.60	5.11	V	2-methyltetracosane
77	37.785	37.733	37.850	548588	0.52	183981	0.70	2.98		OCTADECANOIC ACID, ETHYL E
78	37.924	37.850	37.992	384887	0.37	106625	0.41	3.61	V	OCTADECANE
79	38.926	38.875	38.983	309141	0.29	99062	0.38	3.12		Eicosane
80	40.050	40.017	40.192	625526	0.59	64996	0.25	9.62		Eicosane
81	40.260	40.192	40.342	1058044	1.00	204782	0.78	5.17	V	Eicosane
82	40.984	40.942	41.075	395843	0.38	96283	0.37	4.11		CELIDONIOL, DEOXY-
83	43.290	43.233	43.383	1616466	1.53	482670	1.84	3.35		Hexadecanoic acid, 2-hydroxy-1-(hyd
84	43.744	43.642	43.817	379274	0.36	94933	0.36	4.00	MI	CELIDONIOL, DEOXY-
85	46.553	46.475	46.692	213518	0.20	56772	0.22	3.76	MI	Octadecanoic acid, 2,3-dihydroxypro
86	46.940	46.867	47.033	207029	0.20	51750	0.20	4.00	MI	TETRACOSANE
87	56.142	56.033	56.300	13372271	12.69	3026910	11.56	4.42		BIS(2-HYDROXY-3,5-DI-TERT-BU
88	59.569	59.450	59.758	7205775	6.84	1221472	4.66	5.90		5,11,17,23-TETRATERT-BUTYLPE
				105364878	100.00	26190533	100.00			

extract revealed the presence of flavonoids, Phenols, Alkaloids, Terpenoids, Tannins and Saponins whereas the Coumarins and steroids were found absent in chloroform extract of *A. viridis*.

GC-MS is the best strategies to recognize the constituents of volatile matter, long chain, branched chain hydrocarbons, alcohols acids, esters, and peak regions, maintenance time (Retention time) and molecular formula are utilized for the affirmation of phytoconstituents. It is the most involved technique for the distinguishing proof of plant phenolic compounds. *A. viridis* leaf extracts are viewed asa fundamental wellspring of valuable bioactive substances. Species of *Amaranthus* are found to contain alkaloids, anthraquinones, flavonoids, saponins, tannins and essential oils(Khanal *et al.* 2015)which make it useful for different natural capacities such as communication, infections, proliferation and self-defence (Chondhary 2017).

In the current study, we have distinguished bioactive compound spresent in the extract part of leaf by GC-MS analysis and summed up in Table 2.GC-MS chromatogram (Fig 1) of the extract of *A. viridis* associated with the family Amaranthaceae showed 88 peaks which show the presence of eighty-eight compounds. The spectra of the compounds were checked and coordinated with the National Institute of Standards and Technology libraries. The compounds recognized are introduced in Table 2. The preliminary screening for phytochemicals indicates the presence of Flavonoids, Phenols, Saponins, Alkaloids, Terpenoids and Tannins in the Chloroform extract of *A. viridis*.

The outcomes from the current study demonstrate that chloroform leaf extract of the *Amaranthus Viridis* examined by GC-MSanalysis contained different sorts of compounds with expected pharmacological activity. The presence of different bioactive compounds legitimizes the utilization of *Amaranthus viridis* for different afflictions by traditional therapists. From GC-MS information, Identification of more compounds in their extract and it recently detailed that these biotic compounds have antibacterial, antifungal, cancer prevention agent and anti-cancer movement yet further investigates ought to be made to segregate and purification of natural phyto-constituents in their concentrate.

Some of the major compounds which identified from GC-MS analysis of chloroform extract of *A. viridis* are Pentachlorobutene, Chloroacetic acid, Octadecane, Tetradecane, Dodecane,2,6,11-trimethy-lenrthyl-2,6,11-Trimethyldodecane, Decane,2,3,5,8- tetramethyl, Hexadecanoic acid, 2- oxo-, methyl ester, tetradecane A13- 04240 , Octadecane A13- 06523 CCRIS 681, Hexadecane, 7,9- dimethyl- 7,9 – Dimethyl hexadecane, Tridecane, 7- hexyl-7-Hexyltridecane, Tricosane, Tridecane, Heptadecane, Lauryl acetate, Acetic Acid, Tetradecyl acetate, Heneicosane, Nonadecane, Eicosane, 2- methyloctacosane, 2, 6, 10-Trimethylpentadecane, Decane, 2, 3, 5, 8-Tetramethyl etc.

Conclusion

The extracts from the various plants are utilized as traditional medicines over ages, and around 80% of the total population relies upon traditional medicines. The current work uncovers the therapeutic uses of the plant Amaranth, which are upheld by biological activities. The plant species *Amaranthus viridis* from the underutilized plant family had a rich measure of significant ingredients that are beneficial and useful for health. Bioactive compounds from chloroform extract of *Amaranthus viridis* were successfully screened using standard procedures. The results of the present study showed the presence of alkaloids, flavonoids, saponins, phenols, terpenoids and tannins. GC-MS analysis reveals octadecane, eisosane, docosane, hexadecenoic acid, ethyle octadecane, tetradecane, lauryl acetate as some of the chemical constituents present in *Amaranthus* plant. More research work is expected in more insights regarding *in vitro* and *in vivo* examinations to lay out what parts of the extract are naturally dynamic as far as movement. The disengagement of parts from this promptly accessible plant resource and its usage as normal specialists could be of high economic value. Henceforth, the identified plant parts utilizing GC-MScan be used as an instrument for the identification proof of defilements. The current spearheading study proposes that the extract of *A. viridis* is an intense remedial agent.

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