GC-MS and Pharmacognostic Study of Acacia Leucophloea leaves

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Original Research Article

Pharmaceutics for enhanced drug delivery

GC-MS and Pharmacognostic Study of *Acacia Leucophloea* leaves

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Abstract: The plant Acacia leucophloea is reported to have great medicinal value in Indian medicine. The present study deals with the pharmacognostical investigation on leaves of *Acacia Leucophloea*.Theplant leaves were dried and extracted in Methanol by using soxhlet apparatus.GC-MS chromatogram analysis of the Methanolic extract of *Acacia Leucophloea* showed 40 peaks indicating the presence of various photochemical constituents. Antimicrobial activity ofmethanolicextracts of *Accacia leucophloea* leaves were determined by Agar disc diffusion assay against test strains of E. coli, S. aureus, P. acnes, S.typhi.Antioxidant present in plant werequantified by DPPH. Methanolicextract of *Acacia Leucophloea* showed minimum efficient inhibition of bacterial growth against all gram positive and gram negative bacterial strain due to the presence of lower concentration bioactive phyto constituents like 3-Heptadecanol, Salicin, (E)-Phytol and Hexadecanoicacidmethylester.

Keywords:Phytochemicalanalysis,GC-MS,Chemical,Composition,Antioxidant, Antimicrobial activity.

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1. INTRODUCTION

*Acacia Leucophloea*belongs to the family *Mimosaceae* having common name HIWAR, it isalso called as *reonja.*Deciduous, middle size tree. Bark with whitish, leaves bipinnate, stitules spiny, pinnae 5-15 pairs, leaflets 12-13 pairs, oblong or linear, 0.3-0.5 cm long, flowers white or yellowish white in globes heads. Pods thin, flat slightly curved, oblong, covered with pale-brown tomentum, 10-12 cm long, 10-20 seeded. The Seeds are smooth, pale brown and the Flower and fruits period August – February[1]. *Vachellialeucophloea* also called *reonja*, is a moderate sized tree found in southern India.The bark extracts of *Vachellia leucophloea* are used in Pakistan Traditional Medicine as an astringent, a bitter, a thermogenic,astyptic, a preventive of infections, an anthelmintic, a vulnery, a demulcent, an expectorant, an antipyretic, an antidote for snake bites and in the treatment of bronchitis, cough, vomiting, wounds, ulcers, diarrhea, dysentery, internal and external hemorrhages, dental caries, stomatitis, and intermittent fevers and skin diseases[2].Its leaves, tender shoots, and pods are readily consumed by goats, sheep and cattle. Bark is used to purify liquor and yields a reddish-brown stain which is used for the preparation of dyes. Moreover, the bark is used against snake bites and skin disease[3]. Bark and leaves are used for treating renal edema, cardiac edema and indigestion. Leaf juice is administered to treat fever and stomach ache and mixed with cow's milk to bleeding piles[4].An extract of stem bark and leaves of the plant is applied twice daily to cure psoriasis[5].*Acacia Leucophloea* bark has a foul smell and its fibers are used to make fish nets and rough rope. The bark yields water soluble gum of fair quality,which is demulcent and used as emulsifying agent[6].Traditionally, parts of this plant are used against diarrhoea, cancer, inflammation, ophthalmia, hemorrhoid, leprosy, bleeding piles, and leucoderma problems. Its young leaves and pods are used as an astringent. The leaves are believed to possess hypotensive, CNS-depressant, antisyphilitic and antimicrobial principles, while the gum possesses demulcentproperties[7]human body has numerous mechanisms to shield biomolecules against reactive oxygen species (ROS) induced damage. However, the instinctive protection may not be adequate for rigorous or continuous oxidative stress. Hence, certain amounts of exogenous antioxidants are frequently required to maintain sufficient antioxidants level to balance the ROS-pressure in the human body. Synthetic antioxidants such as butylated hydroxyl anisole (BHA) and butylated hydroxyl toluene (BHT) although very effective, are not without side-effects and should be replaced with natural antioxidants. Various natural antioxidants like flavonoids, phenols, tannins, and terpenoids, reported from crude herbal extracts. Phytochemical evaluation is one of the important tools for quality assessment.Preliminary phytochemical screening, chemo profiling of material with the help of marker compound analysis using modern analytical techniques.

2. MATERIALS AND METHODS

2.1 Collection of plant material

The fresh leaves of *Acacia Leucophloea* plant were collected from Melghatregion; Dist-Amravati (Maharashtra). The experimental site is located between coordinates 20.91° N, 77.75°E and an altitude of 342 m in the foothills of Central India experiencing the subtropical climate during the winter season in the month of Feb 2016 and the Authentication-*Acacia Leucophloea* plant KFP5965 collection No.2121 was confirmed by botanist Dr. S.K.Tippat, Department of Environment Science, Art, Commerce & Science College Amravati.

2.2 Chemicals and microbial cultures.

All the chemicals and standard antibiotics used in this work were purchased from Sigma Aldrich, Merck and Hi-media, Mumbai India. The reference bacterial strains used in this study were obtained from American Type Culture Collection (ATCC) and Microbial Type Culture Collection (MTCC) Institute of Microbial Technology, Chandigarh, India. They were selected from gram positive and gram negative bacteria to represent a broad spectrum of potential pathogens that pose significant threats in the medical field.

2.3 Preparation of plant leaves extract

The plant leaves were dried over ambient temperature and the dried sample were grinded properly and dried powder sample was extracted in Methanol at 65°C by using soxhlet apparatus and extracts were concentrated by gradually evaporating the respective solvent on a rotary evaporator. The concentrated extract was collected in sterile bottles and kept in a cool and dark place prior to analysis[8].

2.4 Phytochemical analysis (Qualitative analysis)

2.4.1 Test for Alkaloids

0.4 g extract of each plant was mixed with 8 ml of 1%Hydrochloric acid, warmed and filtered. 2 ml of each filtrate was titrated separately with
(a) Mayer's reagent and (b) Dragendorff's reagent (c) Wagner Test, Yellow precipitation for Mayer's reagent, Red precipitation for Dragendorff's reagent and formation of brown / Reddish precipitate for Wagner reagent was observed to indicate the presence of alkaloids[9].

2.4.2 Testof flavonoids:

Two methods were used to determine the presence of flavonoids in the plant sample.

a) Alkaline reagent test: Extract was treated with 10 %sodium hydroxide solution, formation of intense yellow colour indicates presence of Flavonoid[10].
b) NH_4OH test: 3 ml of extract were 10 % NH_4OH solution development of yellow fluorescence indicates positive test[11].

2.4.3 Tannins Test

To extract 1% gelatin solution containing sodium chloride was added. Formation of white precipitation indicates the presence of tannins[12].

2.4.4 Terpenoids(Salkowski test)

5 ml (1 mg/ml) of each extract was mixed in 2 ml of chloroform, and then 3 ml concentrated H_2SO_4 was carefully added to form a layer. A reddish brown coloration of the interface was formed which showed positive results for the presence of terpenoids[13].

2.4.5 Test for glycosides

Legal's Test: - Extracts were treated with sodium Nitroprusside in pyridine and sodium hydroxide. Formation of pink to blood red color indicates the presence of cardiac glycosides[14].

2.4.6 Test for steroids

0.5 ml of each extract was dissolved in 3 ml of chloroform and was filtered. To The filtrate, concentrated sulphuric acid was added by the sides of the test tube, which formed a lower layer. A reddish brown colour ring with a slight greenish fluorescence was taken as the indication for the presence of steroids[15].

2.5 GC-MS Analysis of Acacia Leucophloea

2.5.1 Gas Chromatography

Gas Chromatography of the plant extract was carried out on a Shimadzu (GC) Gas Chromatography model QP2010S equipped with direct injector and split ratio set to 10:1. (DB-5) (5% phenyl polysiloxane, 30m length 250u internal diameter; 0.25um film coating) fused capillary column. Helium was the carrier gas at 1.0 ml min. The oven temperature program was programmed to start at 35°hold for 2 min then temp at 20 ^{0}c per min to 300 ^{0} C and hold for 5 min. Injector and detector temperature were 220 ° c and 230° c respectively. Injection size was 0.02 µl neat.

2.5.2 Gas Chromatography and Mass Spectroscopy

Shimadzu GC-MS bench top double-focusing magnetic sector mass spectrometer operating in electron ionization (EI) mode with TSS-2000[1] software was used for all analyses. Low-resolution mass spectra were acquired at a resolving power of 1000 (20% height definition) and scanning from m/z 25 to m/z 700 at 0.3 seconds per scan with a 0.2 second inter-scan delay. High resolution mass spectra were acquired at a resolving power of 5000 (20% height definition) and scanning the magnet from m/z 65 to m/z 750 at 1 second per scan.

2.5.3 Identification of chemical constituents

Identification of the chemical constituents was done on the basis of retention index (RI) using a mass spectra library search NIST 11& WILEY 8 and by comparing the mass spectral and retention data with literature[16]. The relative amounts of individual components were calculated based on the GC peak area (FID response) without using a correction factor. Table 2

2.5.4 Antimicrobial Activity of Acacia Leucophloealeaves

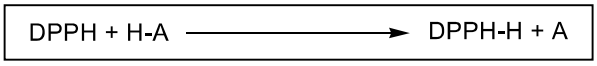
Antimicrobial activitycarried out by methanolicextracts of *AcaciaLeucophloea*leaves were determined by Agar disc diffusion assay and manual of antimicrobial susceptibility[17] used to assay the various antibiotics for bactericidal activity against test strains of *E. coli, K.pneumoniae, S. aureus, P. acnes, S.typhi.*(Table3), (Fig-2).*Escherichia E-coli*(ATCC-14948), *Staphylococcus aureus*(ATCC-33591), *Propionibacterium acnes*(ATCC-1951),*Salmonella typhi*(ATCC-25812),were purchased from Microbial Type Culture Collection (MTCC), Institute of Microbial Technology, Chandigarh, India and used for assessment of antibacterial activity.

2.5.5 Antioxidant activity of Acacia Leucophloea

The radical scavenging activity of the plant extracts against 2,2Diphenyl -1-Picryl hydroxyl radical were determined by UV spectrophotometer cary 60 (Agilent). Antioxidant present in plant usually quantified employing DPPH is used as a quantify antioxidant .DPPH assay is often used to evaluate the ability of antioxidant to scavenge free radicals which are known to be a major factor in biological damage caused by oxidative.

2.5.6 Reaction

Reduction of DPPH from stable free radical (purple).Antioxidant react with DPPH is often used to evaluate the ability of antioxidant to scavenge free radical which is known to be major factor which stable free radical become paired in the presence of H donor and reduce to DPPH-H to yellow color.



Extract was examined by comparing it to the activity of known antioxidants such as ascorbic acid by scavenging activity.

2.5.7 Sample Preparation

The plant *AcaciaLeucophloea*leavesinitially dried at room temperaturethen sample get grind with the help of mixer. Then prepared plant extract of methanol with the help of soxhlet apparatus at 62^{0}C. After extract preparation, the extracts were filtered with the help of Whatman filter paper no.1 and reduce the sample to dry and stored in the refrigerator.

2.5.8 Antioxidant activity (DPPH free radical scavenging activity) of methanolic extract

The free radical scavenging activity of the extracts based on the scavenging activity of the stable 2, 2-diphenyl-1-picrylhydrazyl (DPPH) free radical was determined by this method.The diluted working solutions of the test extracts were prepared in methanol. Ascorbic acid was used as standard in 1000-5000 µg/ml solution. 3.94 mg of DPPH was prepared in 100 ml methanol and 2.96 ml of this solution was mixed with 40 µl of sample solution and standard solution separately. These solution mixtures were kept in the dark for 20 min and optical density was measured at 517 nm using UV-Vis Spectrophotometer (UV-1700 Shimadzu). DPPH solution was used as blank. The optical density was recorded and % inhibition was calculated using the formula given below

$$\% \text{ of DPPH Radical Scavenging activity } \% RSA = \frac{Abs_{control} - Abs_{sample}}{Abs} \times 100$$

Abs control is the absorbance of DPPH radical and methanol. Abs sample is the absorbance of DPPH radical + sample extract was the measure. Absorbance values were corrected for free radical decay using blank solution&IC_{50} values were calculated by using calibration curves verses percentage of inhibitions showsFigure 3&Table 5.

3. RESULTS AND DISCUSSION

Phytochemical evaluation was done to confirm the presence of various chemical constituents present in plant. Phytochemical analysis listed in Table No.1.Due to higher polarity of methanolic extract it revealed presence of maximum phytochemical composition especially for Flavonoids, tannins, coumarins and glycosides.

Table 1.Phytochemical analysis of *Acacia Leucophloea*

S.N	Phytochemical	Tests performed	Methanolic extract
1	Alkaloids	a) Mayer Test	-
		c) Dragendroff's Test	+
		c)Wagner Test	+
2	Flavonoids	a)Ferric Chloride	+
		b)Alkaline reagent test	+
3	Tannins	a)Ferric Chloride Test	+
		b)Gelatin Test	+
4	Terpenoids	Salkowski Test	+
5	Glycosides	Legal test	+
6	Phytosterols	Liebermann Burchard Test	+

Negative sign- Abesent ; Positive sign-+Present These phyto constituents independently responsible for the broad range of medicinal properties.

GC-MS chromatogram analysis of the Methanolic extract of *Acacia Leucophloea*Fig-1 showed 40 peaks which indicating the presence of various phytochemical constituents.The various phytochemicals which contribute to the medicinal activities.On comparison of the mass spectra of the constituents with the NIST library.

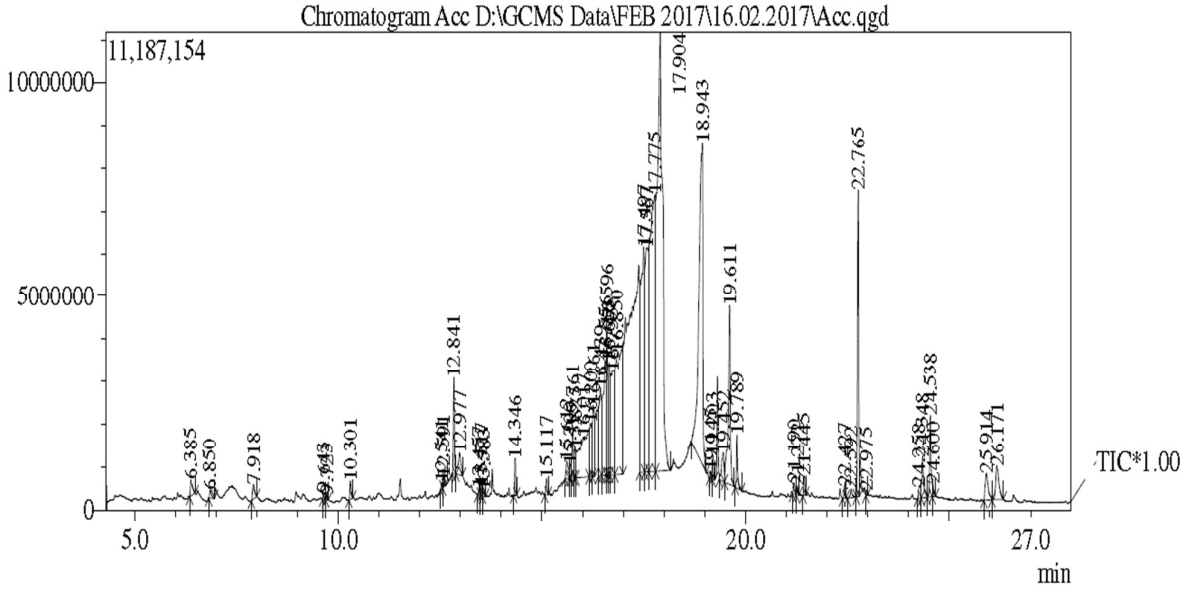


Fig 1. GasChromatogramofMethanolicLeavesextractof*AcaciaLeucophloea*

Table 2. Major Constituents tentatively identified by GC-MS analysis of *Acacia Leucophloea*leaves

S.No.	R.Time	Area	Area%	Height%	Name	Base m/z
1	6.385	1282116	0.28	0.44	5H-1,4-Dioxepin, 2,3-dihydro-2,5-dimethyl-	58.00
2	6.850	543083	0.12	0.21	Ethyl trans-3-methyl-2-oxirane carboxylate	45.00
3	7.918	1231880	0.27	0.40	4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl-	43.00
4	9.643	218254	0.05	0.16	3-Acetyl-2-octanone	43.00
5	9.723	178685	0.04	0.13	TETRADECANE	43.00
6	10.301	992065	0.21	0.50	2-METHOXY-4-VINYLPHENOL	150.05
7	12.541	251259	0.05	0.17	1,4-DIMETHYLPIPERAZINE	43.00
8	12.591	327017	0.07	0.26	OCTADECANE	57.05
9	12.841	3892251	0.84	2.66	PHENOL, 2,4-BIS(1,1-DIMETHYLETHYL)-	191.10
10	12.977	2366231	0.51	0.61	2,3-dihydroxycyclohexanone	57.00
11	13.457	282013	0.06	0.17	DODECANOIC ACID	60.00
12	13.517	455488	0.10	0.27	4-METHYL-2,5-DIMETHOXYBENZALDEHYDE	180.10
13	13.583	421771	0.09	0.14	Fumaric acid, ethyl 2-methylallyl ester	127.05
14	14.346	1466582	0.32	1.01	MEGASTIGMATRIENONE 2	133.10
15	15.117	759000	0.16	0.44	DOCOSANE	57.05
16	15.612	1461288	0.32	0.47	4-((1E)-3-Hydroxy-1-propenyl)-2-methoxyphenol	137.05
17	15.700	837639	0.18	0.38	.beta.-k-Strophanthin	87.05
18	15.761	3425028	0.74	1.43	Tetradecanoic acid	60.00
19	15.825	1941413	0.42	0.80	3-(3-Oxo-tetrahydro-pyran-2-yl)-propionic acid, methyl ester	154.10
20	16.017	15688070	3.39	1.12	(-)-LOLIOLIDE	43.00
21	16.200	5963967	1.29	1.49	Salicin	124.10
22	16.261	5124224	1.11	1.97	3-Heptadecanol	59.05
23	16.439	8212189	1.77	2.44	Isopropyl myristate	43.00
24	16.556	14079519	3.04	3.24	2-METHYL-2-(4H-1,2,4-TRIAZOL-4-YLAMINO)PROPANENITRILE	124.10
25	16.596	8562917	1.85	4.16	Neophytadiene	68.05
26	16.653	7430683	1.60	3.14	2-Pentadecanone, 6,10,14-trimethyl-	43.00
27	16.733	16737972	3.61	2.88	MOME INOSITOL	73.05
28	16.850	33563628	7.25	3.40	(E)-PHYTOL	57.00
29	17.497	35495269	7.66	6.28	Hexadecanoic acid, methyl ester	74.05
30	17.567	31054004	6.71	6.22	Cyclohexanone, 2,6-bis(2-methyl propylidene)-	91.05
31	17.775	59705134	12.89	7.72	3-ETHYL-3-UNDECANOL #	87.05
32	17.904	93269047	20.14	12.22	N,N-BIS(2-HYDROXYETHYL)DODECANAMIDE	73.05
33	18.943	50921175	10.99	8.97	ALPHA.-D-GLUCOPYRANOSIDE, METHYL	60.00
34	19.145	265218	0.06	0.18	METHYL OCTADECA-9,12-DIENOATE	67.05
35	19.203	882413	0.19	0.66	9,12,15-OCTADECATRIENOIC ACID, METHYL ESTER	79.05
36	19.452	2694697	0.58	0.79	UNDECANOIC ACID	73.05
37	19.611	14885684	3.21	4.96	9,12,15-Octadecatrienoic acid, (Z,Z,Z)-	79.05
38	19.789	2569853	0.55	1.48	OCTADECANOIC ACID	43.05
39	21.190	654732	0.14	0.32	9-Octadecenoic acid (Z)-, phenylmethyl ester	91.05
40	21.272	360223	0.08	0.24	5,5-Methylheptadecane	57.05

Table-3. Major Constituents tentatively identified by GC-MS analysis of *Acacia Leucophloea*leaves

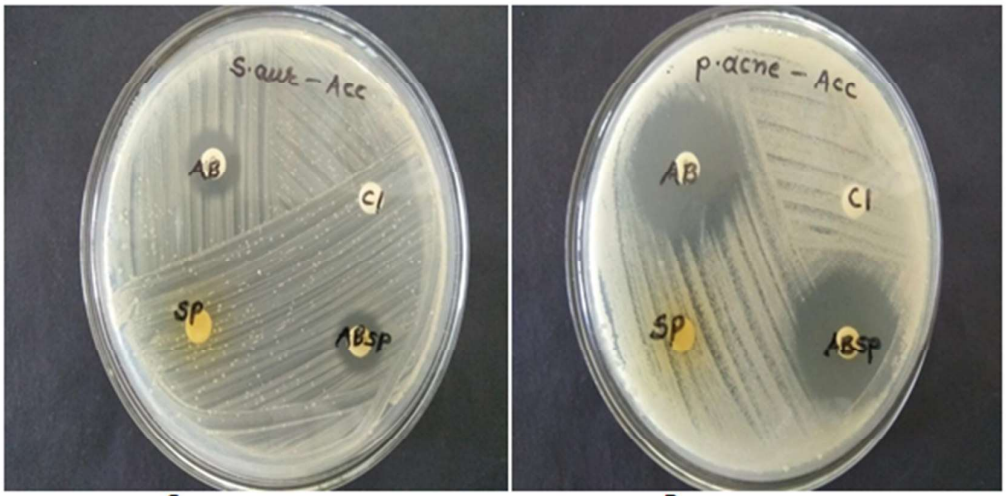
S.N	R.T	Peak Area %	Name of the Compound	Molecular formula	M.W	Nature of Compound	Biological Applications
1	16.017	3.39	(-)-LOLIOLIDE	$C_{11}H_{16}O_3$	196.2	Carotenoids, monoterpene lactone	Antioxidant activity[18]
2	16.20	1.29	Salicin	$C_{13}H_{18}O_7$	286.2	Alc-β-glucoside	Anti-Cancer Activity[19]
3	16.26	1.11	3-Heptadecanol	$C_{17}H_{36}O$	256.4	Alcohol alkoxylates	Antiarthritis,Skin diseases[20]
4	16.43	1.77	Isopropyl myristate	$C_{17}H_{34}O_2$	270.4	Myristate acid,	Antioxidant, skin enhancer and pesticide[21]
5	16.55	3.04	2-METHYL-2-(4H-1,2,4-TRIAZOL-4-YLAMINO)PROPANENITRILE	$C_6H_9N_5$	151.1	Azo group	antimicrobial
6	16.59	1.85	Neophytadiene	$C_{20}H_{38}$	278.5	Enzyme inhibitor	antipyretic, analgesic, and anti-inflammatory, antimicrobial[22]
7	16.65	1.60	2-Pentadecanone, 6,10,14-trimethyl-	$C_{18}H_{36}O$	268.4	Ketonic	Hepatotoxic, Demyelination,Conjunctivitis[23]
8	16.73	3.61	MOME INOSITOL	$C_7H_{14}O_6$	194	Polysaccharide	Antiproliferative[24]
9	16.85	7.25	(E)-PHYTOL	$C_{20}H_{40}O$	296.5	Acrylic Diterpene alcohol	Antimycobaterialagent Antimicrobial, Anti-inflammatory, Anticancer[25]
10	17.49	7.66	Hexadecanoic acid, methyl ester	$C_{17}H_{34}O_2$	270	Palmitic acid	Antioxidant, Hemolytic, Hypocholesterolemic, Flavor,

							Nematicide, Anti-androgenic[23]
11	17.56	6.71	Cyclohexanone, 2,6-bis (2-methyl propylidene)-	$C_{36}H_{44}O_{12}$	668.7	Steroid	xenobiotics
12	17.77	12.89	3-ETHYL-3-UNDECANOL	$C_{13}H_{28}O$	200.3	alcoholic	Flavoring ingredient
13	17.90	20.14	N,N-BIS(2-HYDROXYETHYL)DODECANAMIDE	$C_{16}H_{33}NO_3$	287.4	Fatty acid, cocamide diethanolamine	Cosmetic and emulsifying agent,insecticide[26]
14	18.94	10.99	ALPHA.-D-GLUCOPYRANOSIDE, METHYL	$C_7H_{14}O_6$	194.1	Sugar, glucopyrannoside,methyl	cardioprotective , neuroprotective, antidiabetic and antiosteoporotic Activity AntiinflammatoryAntistress,Anticancer[27]
15	19.61	3.21	9,12,15-Octadecatrienoic acid, (Z,Z,Z)-	$C_{18}H_{30}O_2$	278.4	Linoleic acid Steroid	Antimicrobial, Anticancer, Hepatoprotective, Anti-arthritic, anti-asthama, diuretic[28].

**** Source: Dr.Duke's phytochemical and ethnobotanical databases [Online database].***

In Table 3 GC-MS early study analysis of leaf extract of *Acacia Leucophloea* revealed the presence of major components Loliolide (3.29%); 2 Methy l2 (4H-124 Trizol4Y Lamino) Propanenitrile (3.04%); Mome Inositol (3.61%); (E)Phyto l(7.25%); Hexadecanoic Acid, Methylester (7.66%); Cyclo hexanone, 2,6 bis (2methyl propylidene) (6.71%); 3-Ethyl-3 – Undecanol (12.89%) ; N,N – Bis (2-Hydroxyethyl) Dodecamide (20.14%) and Alpha- D- Glucopyranoside Methyl (10.99%). Due to presence of various phyto components in methanolic extract of *Acacia Leucophloea* plant leaves has a potential application in various pharmacological activity including antioxidant, antibacterial, anti-inflammatory, anticancer, emulsifying agent.

The result of antibacterial screening was carried out against four bacterial strains in Fig.2.The leaf extract of *Acacia Leucophloea* showed good inhibition against gram positive organisms.A*cacia Leucophloea*is listed in Table No.4.The experiment was done five times and the mean values were presented. Positive controls were used in experiments antibiotics (Tetracycline -10 mcg) as a standard. Methanolic extract of *Acacia Leucophloea*shows minimum efficient inhibition bacterial growth against all gram positive and gram negative bacterial strain due to presence of lower concentration bioactive phytoconstituents like **3-**Heptadecanol, Salicin, (E)-Phytol and Hexadecanoicacidmethylester.



S.aureus P.acene

E.coli S.typhi

Fig2: Antibacterial activity of *Acacia Leucophloea*Leaf against Four bacteria, in each image: AB- Antibiotic disk, Cl - Sterile disk (control), Sp- Sample disk, AB+ Sp- Antibiotic + Extract Disk

Table 4:-Antimicrobial activity of *Acacia Leucophloea*leaves

Organisms	Test Samples (Growth inhibition [a]) mm			
	AB	Sp	AB-SpCl	
S.aureus	14±0.69	00	14±0.72	00
P. acne	31±0.51	00	31±0.53	00
E.coli	30±0.68	09±0.56	30±0.68	00
S.typhi	31±0.41	08±0.58	31±0.62	00

[-a]*Values are represented as the mean ±S.D. of experiments.*

The antimicrobial activities of *Acacia Leucophloea*e leaf methanol extract exhibited good inhibition against Organisms. The gram positive inhibition was noted in order of S.aureus, P.acne.Plant contains potential antibacterial components that may be useful for evolution of pharmaceutical for the therapy of ailments and also plant extracts can be used for the treatment of infections caused by the strains of the test bacterial organisms.Methanolic extract of *Acacia Leucophloea* showed minimum efficient inhibition bacterial growth against all gram positive and gram negative bacterial strain due to the presence of bioactive phytoconstituents like 3-Heptadecanol,Neophytadiene,(E)-Phytol and Hexadecanoic acid methyl ester[28].The radical scavenging activity of the *Acacia Leucophloea* leaf extract was tested using stable free radical DPPH (Deep purple colour) as DPPH has the advantage of being unaffected by certain side reaction.Fig-3 Graph-1&Table-5shows the DPPH radical scavenging activity of *Acacia Leucophloea* extract with ascorbic acid as reference where the IC_{50} value for the *Acacia* extract was calculated by using graph pad prism nonlinear curve fit Sigmoidal, 4PL, X is log(concentration) and it was found to be IC_{50}= 61.88 (most efficient) lower than 100.

Table -5. Radical Scavenging Activity of *AcaciaLeucophloea*plantvs Standard

Types of Sample	Concentration ug/ml	% RadicalScavenging activity
*Acacia Leucophloea*Plant Extract (Sample)	1000	24.1485
	2000	37.9771
	3000	60.5028
	4000	63.0400
	5000	80.5485
Ascorbic Acid (Standard)	1000	90.82423
	2000	90.98361
	3000	91.22268
	4000	91.97404
	5000	92.34973

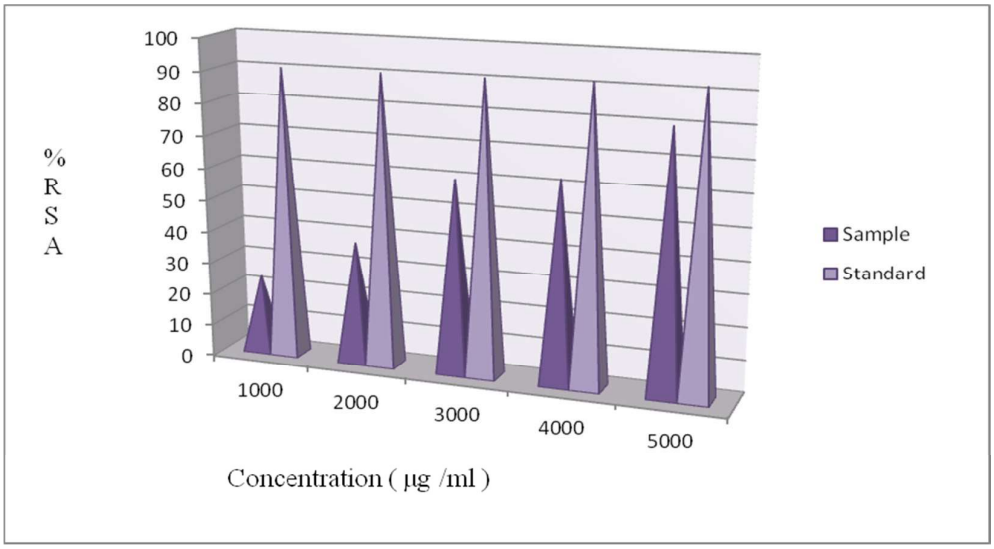


Fig.3 : -Graph-1 DPPH radical scavenging activity of *Acacia Leucophloea*

The presence of higher concentration of some vitamin,fatty acid and constituents like: Loliolide,3-Heptadecanol,Isopropylmyristate,Neophytadiene,(E)Phytol,Hexadecanoic acid,methyl ester in Acacia Leucophloea extract.The lower the IC50 values showed the higher antioxidant activities.

4. CONCLUSION

The presence of various bioactive compounds in the *Acacia Leucophloea*justifies the use of whole plant for various ailments by traditional practitioners. This study determined that Methanolic extract of leaves of *Acacia* plant species showed better antioxidant potential by DPPH radical scavenging method when compared to standard ascorbic acid. But *AcaciaLeucophloea*extract showed minimum active in antimicrobial activity. It offers many opportunities to investigate the various functions and prospects in pharmaceutical studies. It is believed that a detailed information as presented in this review on its phytochemistryand various biological properties of the extracts and the constituents might provide incentive for proper evaluation of the use of the plant in medicine and in Food Science. Further work, however, still needs to be carried to reveal the structure activity relationship of these active constituents. Outcome of the future research in the aforementioned areas will provide convincing support for the future clinical uses of *Acacia Leucophloea*in modern medicine and as Flavoring Ingredients.

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6. CONFLICT OF INTEREST

Conflict of interest declared none.

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