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GC-MS Determination of Bioactive Components with Their Biological Activities of *Olax subscorpioidea* (Olacaceae)

Saidi Odoma[1,2,3], Ajibola Habeebulahi Adekilekun[3,4,5]*, Hope Onuhuean[3], Funso-Babarimisa Funso[2,6], Adekilekun Habeebat Oyewusi[7], Abdulmumeen Amao Hamid[8,9]

[1]Department of Pharmacology and Toxicology, School of Medicine and Pharmacy, College of Medicine and Health Sciences, Huye Campus, University of Rwanda, Rwanda.
[2]Department of Pharmacology; College of Health Sciences, Kogi State University, Anyigba, Nigeria.
[3]Department of Pharmacology and Toxicology, School of Pharmacy, Kampala International University, P. O. Box 71, Bushenyi, Western Campus, Ishaka, Uganda.
[4]Department of Pharmacology, Federal University of Health Sciences, Ila-Orangun, Osun State, Nigeria.
[5]Department of Biochemistry, Micheal Okpara University of Agriculture, Umudike, Abia State, Nigeria.
[6]Pharmacognosy Unit, Department of Pharmacology; College of Health Sciences, Kogi State University, Anyigba, Nigeria.
[7]Department of Medical Biochemistry, Federal University of Health Sciences, Ila-Orangun, Osun State, Nigeria.
[8]Department of Pharmaceutical Chemistry and Pharmacognosy, School of Pharmacy, Kampala International University, P. O. Box 71, Bushenyi, Western Campus, Ishaka, Uganda.
[9]Department of Chemistry, University of Ilorin, P.M.B. 1515, Ilorin, Kwara State, Nigeria.

Corresponding author*
adekilekun.ajibola@kiu.ac.ug

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Abstract

Medicinal plants have been an integral part of healthcare, particularly in Africa, where over 80% of the population relies on traditional herbal medicine. This research focuses on *Olax subscorpioidea*, a plant recognized for its extensive pharmacological activities, including anti-inflammatory, antioxidant, antidiabetic, and analgesic properties. The study aimed to identify the bioactive compounds present in the leaf extract of *O. subscorpioidea* using Gas Chromatography-Mass Spectrometry (GC-MS) analysis. The plant was collected, dried, and extracted with methanol, leading to the identification of 199 compounds, including phenols, terpenoids, flavonoids, and fatty acids, some of which possess significant biological activities. Toxicological studies indicated a safe dosage with no adverse effects observed in mice. This research underscores the potential of *O. subscorpioidea* as a source of novel therapeutic agents, necessitating further isolation and characterization of its bioactive constituents to explore their pharmacological potentials comprehensively.

Keywords: Medicinal plants; Gas Chromatography-Mass Spectrometry (GC-MS); Bioactive compounds; *Olax subscorpioidea*.

INTRODUCTION

Medicinal plants have been used for many years to prevent and treat diseases and remain the primary source of naturally occurring drugs used in many communities worldwide. Traditional herbal medicine is still believed to be the most abundant, affordable, reliable, trusted and well-understood form of health care in Africa, as over 80% of its populations use some form of traditional herbal medicine, and an impressive number of modern drugs have been isolated from natural sources (Awodele et al., 2013; Odoma et al., 2015; Adekilekun et al., 2024). Medicinal plants like *Olax subscorpioidea*, have been used for many pharmacological purposes to intervene any kinds of diseases including acute and chronic pains (Odoma et al., 2016); Antihyperlipidemic (Ahmad et al., 2021); Antiulcer (Ahmad et al., 2021; Adelegan et al., 2024); Antiarthritic, Antiinflammatory and analgesic (Odoma et al., 2015; Odoma et al., 2017; Odoma et al., 2020a; Odoma et al., 2020b; Ahmad et al., 2021; Adelegan et al., 2024); Antioxidant (Adelegan et al., 2023; Adelegan et al., 2024); Antidiabetic (Ahmad et al., 2021) and many more. Each and every part of this plant has also been reported to be used traditionally against wide number of diseases including yellow fever, jaundice, venereal diseases, guinea worm, arthritis, constipation, cough, dermatosis, fever, headaches, jaundice, malaria, rheumatism, syphilis, ulcer) (Odoma et al., 2015; Odoma et al., 2020a; Ahmad et al., 2021). Further to these ethnomedicinal benefits, researches had shown that *Olax subscorpioidea* has been confirmed to possess some pharmacological properties (Figure 1). The toxicological studies of *O. subscorpioidea* have also been reported with oral administration dose up to 5,000 mg/kg in mice without death and physical sign of toxicity (Fields et al., 2006; Odoma et al., 2020a).

The plant *Olax subscorpioidea* Oliv is a shrub or tree that belongs to the family Olacaceae. It is up to 10 m or more in height. The plant is widely distributed in Nigeria, Zaire, Senegal, and other parts of Africa. The plant is a woody shrub with leafy branches, its flowers are whitish, and the fruits are round and bright yellow when ripe. The plant is commonly known in different African languages as Ifon or Ufon in Yoruba; Gwaanon kurmii or Gwaanon raafii in Hausa; Igbulu, Atu-ogili, or Osaja in Igbo; Ukpakon in Edo; Ocheja in Igala; Aziza in Nsukka; and Mtungapwezi in Swahili. The plant *Olax subscorpioidea* in its natural habitat is illustrated in Fig. 1. (Odoma et al., 2014; Ahmed et al., 2021). Botanical classification of *Olax subscorpioidea,* Kingdom: Plantae; Subkingdom: Tracheobionta; Superdivision: Spermatophyta; Division: Magnoliophyta; Class: Magnoliopsida; Subclass: Rosidae; Order: Santalales; Family: Olacaceae; Genus: Olax; Species: subscorpioidea (Odoma et al., 2014; Odoma et al., 2015; Odoma et al., 2014; Odoma et al., 2017). It is generally observed that the bioactive compounds in every plant justify the corresponding effect, therefore the need to identify the bioactive compounds in *Olax subscorpioidea* using the GC-MS analysis.

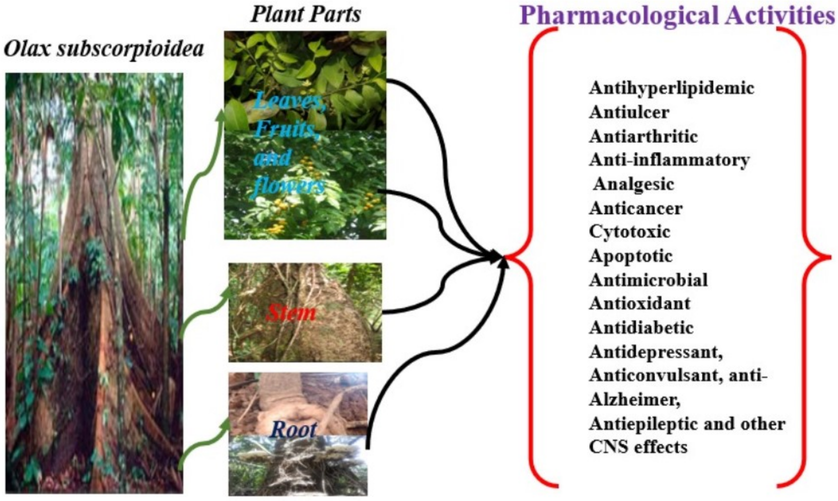

Figure 1. Pharmacological activities of *Olax subscorpioidea* (OLACACEAE).

MATERIALS AND METHODS

Materials

All chemicals and reagents used were of analytical grade.

Plant collection and identification

The leaves of *O. subscorpioidea* were collected from a farm in the premises of College of Health Sciences, Kogi State University, Anyigba, Kogi State, Nigeria, in March 2013 and identified by Dr. Emmanuel I. Aigbokhan, a taxonimist at the Department of Biological Sciences, Faculty of Natural Sciences, Kogi State University, Anyigba, Kogi, Nigeria where a voucher number (KSUH-277-2013-01) was deposited for future references.

Preparation of leaf extract of Olax subscorpioidea (OLACACEAE)

***Olax subscorpioidea* (OLACACEAE)** leaves were washed with distilled water to free them of dust and sand. The cleaned leaves were air dried at room temperature (28 ± 2.00 C) until dry and ground to a powdery form.

Extraction

Extraction by maceration 600g of the dried ground leaf was then extracted separately with 5L of 70-95% methanol for 24 h. Upon complete extraction, the solvents were completely evaporated using a rotary evaporator and the concentrates was dried in a Plus 11 Gallenkamp oven at 45-50 ºC. Extract was refrigerated at 4ºC until needed.

GC-MS Determination of Bioactive Constituents in *Olax subscorpioidea* (OLACACEAE)

GC-MS analysis was carried out on a GC-MS (Model: QP2010 PLUS Shimadzu, Japan) comprising AOC-20i auto sampler and chromatograph interfaced to a mass spectrophotometer (GC-MS). The instrument was equipped with a VF 5 ms fused silica capillary column of 30 m length, 0.25 mm diameter and 0.25 µm film thickness. The temperature employed were; column oven temperature 80°C, injection Temp 250°C at a pressure of 108.0 kPa, with total flow and column flow of 6.20 and 1.58 mL min -1, respectively. The linear velocity was 46.3 cm sec-1, and a purge flow of 3.0 mL min -1. The GC program ion source and interface temperature were 200.00 and 250.00°C respectively with solvent cut time of 2.50 min. The MS program starting time was 3.00 min which ended at 30.00 min. with event time of 0.50 sec, scan speed of 1666 µL sec -1, scan range 40 – 800 u and an injection volume of 1 µL of the plant extract (split ratio 10:1).

Identification of Component

Interpretation of mass spectrum GC-MS was conducted using the database of National Institute Standards and Technology (NIST) having more than 62,000 patterns of the spectrum of the known components stored in the NIST library. The compound were identified by comparison of their retention indices (RI) with those provided in NIST library. Identification was assumed when a good match of RI was achieved (Nugraha & Nandiyanto**,** 2021). The name, molecular weight, and structure of components of test materials were ascertained.

RESULTS AND DISCUSSION

Interpretation of mass spectrum of GC-MS was done using database of National Institute Standard and Technology (NIST). Major components were identified with authentic standards and recorded from computerized libraries. The compound name, retention time, molecular formula, molecular weight, peak area and biological activity of the test materials were ascertained. GC-MS analysis revealed the presence of 199 compounds in *Olax Subscorpioidea* leaf extract. The results of the GC-MS analysis of the leaf extract of *Olax Subscorpioidea* are listed in Figure 2. The list of constituents is given in Table 1 A-H. Major components were identified and characterized to be seen in *Olax Subscorpioidea* leaf extract (Figure 2). The compounds in the leaf extract of *Olax Subscorpioidea* used in this study are, phenols, terpenoids, glycosides, flavonoids, fatty acids, organic hydrocarbons (heterocyclics and Polyols) and others. Some bioactive compounds whose biological activities is yet unknown are also included. About 45% of these bioactive compounds have not been pharmacologically beneficial. The identified major compounds possess some important biological potential for future drug development. However, isolation and characterization of individual phytochemical constituents may proceed to discover the novel drugs and their pharmacological activities. Thus, it is possible that these major compounds identified in the plant from GC-MS are responsible for the anti-inflammatory, antimicrobial, antioxidant, anti-cancers, amongst others.

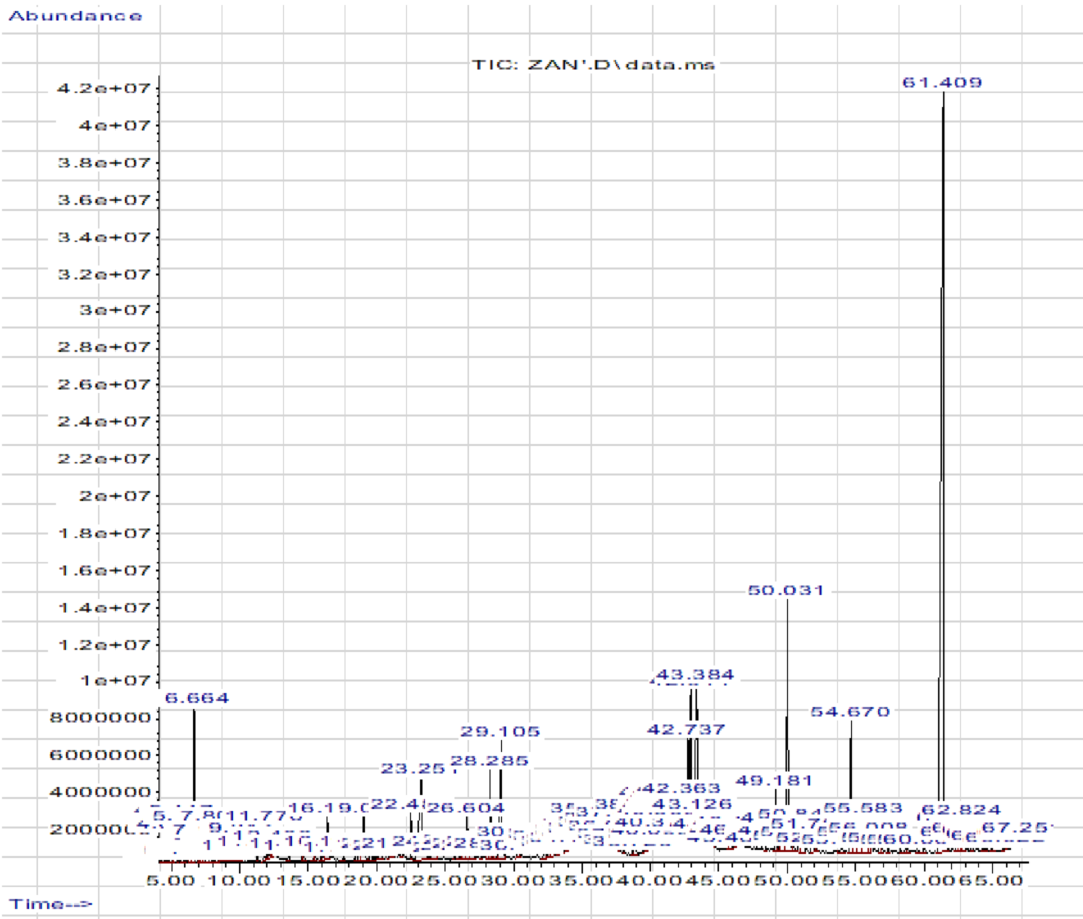

Figure 2. GC-MS of *Olax Subscorpioidea* leaf extract.

Table 1A-1H: GC–MS Analysis of Bioactive Compounds Present in Methanol Leaf Extract *Olax subscorpioidea* (Olacaceae).

A. PHENOLS

S/N	Retention Time	Peak Area %	Compound	Molecular Formula	Molecular Weight (g/mol)	Biological Activity	References
1	9.214	0.09	Dinocap	C18H24N2O6	364.39	Fungicides and Pesticides	Ekinci & Şentürk, 2010
2	26.606	0.03	2-Methoxy-4-vinylphenol	C9H10O2	150.17	Antiinflammatory	Asami et al., 2023
3	29.703	0.10	4-Chloro-3,5-dimethylphenol	C8H9ClO	156.61	Biocides	Song et al., 2009
4	30.305	0.11	3,5-Di-t-butylphenol; 3,5-ditert-butylphenol	C14H22O	206.32	-------	
5	38.813	0.06	Phenol, 3,4,5-trimethoxy-, 1-formate	C10H12O5	212.202	------	
6	38.813	0.06	3,4,5-Trimethoxyphenol	C9H12O4	184.19	Antimicrobial, Anti-invasive cancer agents, Antiplasmodial	Verotta et al., 2001; Nkom et al., 2024
7	43.245	0.38	(E)-4-(3-Hydroxyprop-1-en-1-yl)-2-methoxyphenol (Coniferyl alcohol)	C10H12O3	180.20	Antiinflammatory	Siyana et al., 2024
8	65.754	1.31	2,6-Dimethyl-4-nitrosophenol	C8H9NO2	151.16	------	

B. TERPENOIDS

S/N	Retention Time	Peak Area %	Compound	Molecular Formula	Molecular Weight (g/mol)	Pharmacology Activities	Reference
1	39.191	0.10	4,7,9-Megastigmatrien-3-one	C13H18O	190.28	Anti-inflammatory	Jiao et al., 2024
2	44.219	0.40	2,3-dimethylhex-5-en-3-ol	C8H16O	128.21	------	
3	46.795	0.37	trans-Phytol (2-Hexadecen-1-ol)	C20H40O	296.5	------	
4	46.795	0.37	cis-Pinane	C10H18	138.25	-------	
5	48.205	0.13	Phytol acetate	C22H42O2		Antimalarial, Anti-inflammatory, antioxidant, Antinociceptive.	Saxena et al., 2018; Islam et al., 2018; Naikwadi et al., 2022
6	55.436	1.10	trans-Phytol	C20H40O	296.5	Antiacetylcholinesterase, anxiolytic, cytotoxic, antioxidant, antinociceptive, anti-inflammatory, antimicrobial	Ibrahim et al., 2016; Islam et al., 2018
7	55.436	1.10	delta-Damascone	C13H20O	192.301	Antifungal	de Oliveira et al., 2022
8	55.436	1.10	Squalene	C30H50	410.73	Antioxidant, skin hydration, antiinflammatory, antidiabetic, antitumor	Huang et al., 2009; Widyawati et al., 2023
9	60.432	0.13	2,2-Dimethyl-3-(3,7,16,20-tetramethyl-heneicosa-3,7,11,15,19-pentaenyl)-oxirane	C29H48O		-------	
10	60.432	0.13	Isopulegol	C10H18O	154.25	CNS effects (depressant, anxiolytic-	Silva et al., 2007

						like)	
11	61.516	0.27	4-methylene-2,8,8 trimethyl-2-vinyl-bicyclo	$C_{15}H_{24}$	*204.35*	-----	
12	61.516	0.27	5-alpha-Cholestan-3beta-ol, 2-methylene-	$C_{28}H_{48}O$	400.68	-----	
13.	62.291	0.14	ε-Muurolene	$C_{15}H_{24}$	204.35	Antidiabetics, antioxidant	Siddique et al., 2022
14.	62.291	0.14	(-)-GLOBULOL	$C_{15}H_{26}O$	222.37	Antioxidant, Antibacteria	Zhou et al., 2021; Kokilananthan et al., 2022
15	64.719	0.30	cis-β-Guaiene	$C_{15}H$	204.35	Anti-inflammatory, antioxidant	Ho et al., 2023
16	65.500	0.20	Stigmasterol acetate	$C_{31}H_{50}O_2$	454.7	Antimicrobial, anti-osteoarthritis, anticancer, anti-diabetic, anti-inflammatory, antiparasitic, antioxidant, neuroprotective	Alawode et al., 2021; Dube et al., 2023
17	66.623	0.08	Caparratriene	$C_{15}H_{26}$	206.37	--	
18	66.623	0.08	Squalene	$C_{30}H_{50}$	410.73	Antioxidant, skin hydration, antiinflammatory, antidiabetic properties antitumor activities	Huang et al., 2009; Widyawati et al., 2023

C. GLYCOSIDES

S/N	Retention Time	Peak Area %	Compound	Molecular Formula	Molecular Weight (g/mol)	Pharmacological Activities	References
1	8.611	0.09	METHYL-BETA-D-RIBOPYRANOSE	$C_6H_{12}O_5$	164.16	--	
2	17.326	0.09	Methyl-β-D-galactopyranoside	$C_7H_{14}O_6$	194.18	Antimicrobial	Misbah et al., 2020
3	41.792	0.02	3-Methylmannoside	$C_7H_{14}O_6$	194.18	Antimicrobial	Islam et al., 2024
4	42.007	0.04	alpha.-D-Mannofuranoside, methyl	$C_7H_{14}O_6$	194.18	_	

D. FLAVONOID

S/N	Retention Time	Peak Area %	Compound	Molecular Formula	Molecular Weight (g/mol)	Pharmacological Activities	References
1	17.448	0.08	4H-Pyran-4-one, 2,3-dihydro-3,5-di hydroxy-6-methyl-	$C_6H_8O_4$	144.126	Antioxidant, Antimicrobial, Anti-inflammatory, Antidiabatic, Antidiarrhoeal	Banakar and Jayaraj, 2018

E. FATTY ACIDS

S/N	Retention Time	Peak Area %	Compound	Molecular Formula	Molecular Weight (g/mol)	Pharmacological Activities	References
1	8.611	0.09	Heptanoic acid	$CH_3(CH_2)_5COOH$	130.18	Antimicrobial	Ngene et al., 2024
2	33.166	0.35	Dodecanoic acid	$CH_3(CH_2)_{10}COOH$	200.32	Antimicrobial, cytotoxicity	Bharat et al., 2013
3	36.942	0.07	Dodecanoic acid	$CH_3(CH_2)_{10}COOH$	200.32	Antimicrobial, cytotoxicity	Bharat et al., 2013
4	37.940	0.12	Nonanedioic acid	$C_9H_{16}O_4$	188.22	Antimicrobial, cytotoxicity	Bharat et al., 2013
5	46.995	0.09	Behenic acid	$C_{22}H_{44}O_2$	340.59	Antibacterial	Ravi et al., 2024
6	47.632	0.08	Stearic Acid	$C_{18}H_{36}O_2$	284.5	Antiinflammatory	Fujimoto et al., 2008

7	50.917	3.31	Palmitic acid	$CH_3(CH_2)_{14}COOH$	256.43	Anti-inflammatory, metabolic regulatory and antitumor	Zhu et al., 2021
8	54.907	5.86	Methyl linoleate	C19H34O2	294.47	Antioxidant	Sutanto et al., 2018
9	54.907	5.86	10,13-Octadecadienoic acid methyl ester	C19H34O2	294.47	Antioxidant	Huang & Wang, 2004
10	54.907	5.86	methyl octadeca-8,11-dienoate	C19H34O	294.47	Antioxidant	Setiyanto et al., 2024
11	55.129	16.57	methyl (E)-octadec-11-enoate	C19H36O2	296.49	-------	
12	55.129	16.57	ELAIDIC ACID METHYL ESTER	C19H36O2	296.49	Anticancer	Adebayo et al., 2018
13	55.129	16.57	Methyl oleate	C19H36O2	296.49	Antinociceptive	Cruz-Salomón et al., 2022
14	55.290	0.67	Methyl oleate	C19H36O2	296.49	Antinociceptive	Cruz-Salomón et al., 2022
15	55.290	0.67	methyl (E)-octadec-11-enoate	C19H36O2	296.49	-------	
16	55.290	0.67	Methyl elaidate	C19H36O	296.46	Anticancer	Adebayo et al., 2018
17	55.894	2.43	Methyl stearate	C19H38O2	298.50	Antimicrobial, anti-inflammatory, anti-cancer, and antioxidant	Jokar et al., 2023
18	56.099	0.99	Linoleic Acid	C18H32O2	280.45	Antiplasmodial	Melariri et al., 2012
19	56.099	0.99	Linoelaidic Acid	C18H32O2	280.5	Anticancer	Dutta et al., 2023
20	56.244	2.58	Linoleic Acid	C18H32O2	280.45	Antiplasmodial	Melariri et al., 2012
21	56.315	2.73	Oleic Acid	C17H33.COOH	282.46	blood pressure reducing agent, Anti-inflammatory	Salisu et al., 2019; *Choulis, 2011*
22	56.315	2.73	Elaidic Acid	C18H34O2	282.468	Induced apoptosis	Ma et al., 2017
23	56.315	2.73	Trans-13-octadecenoicacid	C18H34O2	282.46	Anti-inflammatory	Hameed *et al.*, 2017
24	56.508	0.48	Methyl 9-cis,11-trans-octadecadienoate	C19 H34 O2	294	-------	
25	56.508	0.48	Methyl 10-trans,12-cis-octadecadienoate	C19 H34 O2	294	Anti-carcinogenic	Ezhilan et al., 2024
26	56.508	0.48	Methyl linoleate	C19H34O2	294.47	Antifungi (candida)	Prabhu et al, 2023
27	56.942	0.34	Stearic acid	$CH_3(CH_2)_{16}COOH$	284.5	Antiinflammatory	Fujimoto et al., 2008
28	57.051	0.21	Oleic Acid	C17H33.COOH	282.47	blood pressure reducing agent, Anti-inflammatory	Salisu et al., 2019; *Choulis, 2011*
29	57.678	0.16	Methyl linoleate	C19H34O2	294.47	Antifungi (candida)	Prabhu et al, 2023
30	57.678	0.16	methyl octadeca-8,11-dienoate	C19H34O	294.47	____	
31	57.678	0.16	Methyl 9-cis,11-trans-octadecadienoate	C19 H34 O2	294	_____	
32	61.594	0.67	Hexadecanoic acid	C16H32O	*256.42*	Antioxidant, hypocholesterolemic, Antiandrogenic, hemolytic, Alpha reductase inhibitor	Kavitha & Uduman, 2017
33	61.594	0.67	Methyl Eicosanoate	$C_{21}H_{42}O_2$	326.56	-------	
34	61.961	0.42	8,11-Icosadienoic	C21H38O2	322.53	-------	

			acid methyl ester				
35	62.419	0.15	Oleamide	C18H35NO	281.48	anti-inflammatory	Ameamsri et al., 2021
36	66.862	0.27	Methyl 20-methyl-Heneicosanoate	C23H46O2	*354.6*	-------	
37	66.862	0.27	Methyl behenate	CH3(CH2)20COOCH3	354.61	--------	
38	66.862	0.27	2-hexadecyl-octadecanoic acid methyl ester	C20H40O2	522.93	--------	

F. Heterocyclic

S/N	Retention Time	Peak Area %	Compound	Molecular Formula	Molecular Weight (g/mol)	Pharmacological Activities	References
1	5.397	0.027	1-Phenyl-2-thiocyanatoethanone	C9H7NOS	177.22	------	
2	5.701	0.12	2,2-Dimethyloxetane	C5H10O	86.13	------	
3	7.805	0.04	Furfuryl alcohol	C5H6O2	98.10	antibacterial, antiprotozoal, anthelmintic agents	Shakouri-Nikjeh, & Bayrami, 2024
4	14.146	0.08	Tetrahydrofurfuryl chloride	C5H9ClO	120.58	Antimicrobial	Samy et al., 2024
5	14.349	0.67	2-methyl-5-methylsulfanylfuran	C6H8OS	128.19	------	
6	15.570	0.41	2-Imidazolidinethione	C3H6N2S	102.16	------	
7	15.570	0.41	4-Aminomorpholine	C4H10N2O	102.14	analgesics, anti-inflammatory	Kumari & Singh, 2020
8	15.570	0.41	2-(tert-Butylamino)ethanol	C6H15NO	117.19	β_2 adrenoceptor (β_2AR) agonists	Soriano-Ursúa et al, 2009
9	16.185	0.29	1-Methyluracil	C5H6N2O2	126.12	Antioxidant	Holland et al., 2008
10	16.185	0.29	Thymine	C5H6N2O2	126.11	anti-inflammatory	Lam et al., 2023
11	18.871	0.01	2,3-Dihydro-3,5-dihydroxy-6-methyl-4h-pyran-4-one	C6H8O4	144.13	Antioxidant	Sato et al., 2024
12	22.468	0.06	2,3-Dihydrobenzofuran	C8H8O	120.15	Anticancer	Choi et al., 2015
13	22.980	0.20	5-Hydroxymethyl-2-furaldehyde	C6H6O3	126.11	Antioxidant, antiproliferative	Zhao et al., 2013
14	30.207	0.16	2,5-Dimethyl-4-methoxy-3(2H)-furanone	C7H10O3	142.15	------	
15	30.207	0.16	5-Methyl-2-thiouracil	C5H6N2OS	142.2	Bactericidal, fungicidal	Marinova & Tamahkyarova, 2024
16	44.350	0.03	2-Pentadecyl-1,3-dioxane	C19H38O2	298.50	-----	
17	44.405	0.03	2-methyl thiolane thiophene	C5H10S	102.20	anti-inflammatory, anti-arrhythmic, anti-anxiety, anti-fungal, antioxidant, anti-mitotic, anti-microbial, anti-cancer	Shah & Verma, 2018

G. CYCLO-POLYOLS

S/N	Retention Time	Peak Area %	Compound	Molecular Formula	Molecular Weight (g/mol)	Pharmacological Activities	References
1	46.995	0.09	Allo-inositol	C6H12O6	180.16	atherogenic, anti-oxidative, anti-inflammatory, anti-cancer	Siracusa et al., 2022
2	47.294	0.12	scyllo-Inositol	C6H12O6	180.15	Alzheimer’s disease	Tanaka et al., 2015

3	47.294	0.12	neo-Inositol	C6H12O6	180.16	Alzheimer's disease	Tanaka et al., 2015
4	47.632	0.08	1,2,3,4,5-Cyclopentanepentol	C5H10O5	150.13	-------	
5	16.896	0.24	D-Arabinitol, 1-deoxy	C5H12 O4	136.1464	Antioxidant, Antibacterial	Kavaz & REKE, 2023
6	16.896	0.24	1,5-Anhydro-D-mannitol	C6H12O5	164.16	-------	
7	17.326	0.09	2-methoxy-6-methyloxane-3,4,5-triol	C7H14O5	178.18	-------	

H. OTHERS

S/N	Retention Time	Peak Area %	Compound	Molecular Formula	Molecular Weight (g/mol)	Pharmacological Activities	References
1	4.320	0.08	1,1-Dimethylhydrazine	$C_2H_8N_2$	60.0983	------	
2	4.561	0.05	1,1-Dimethoxyhexadecane	C18H38O2	286.5	------	
3	4.561	0.05	1,1-Dimethoxyundecane	C13H28O2	216.36	------	
4	5.397	0.027	α,α-Dichloroacetophenone	$C_8H_6Cl_2O$	189.039	-------	
5	5.701	0.12	N-Isopropyl-1,3-propanediamine	(CH3)2CHNH(CH2)3NH2	116.20	--------	
6	5.701	0.12	4-Aminopentan-1-ol	C5H13NO	103.17	--------	
7	6.614	0.45	Isobutoxytrimethylsilane	C7H18OSi	146.3	--------	
8	6.614	0.45	Chloroacetonitrile	ClCH2CN	75.5	------	
9	7.245	0.02	2-Furaldehyde	C5H4O2	96.08	antibacterial, antifungal, antiviral, anti-inflammatory	Nivrutti, 2024
10	8.466	0.07	Acetamide,N,N'-carbonylbis	C5H8N2O3	144.129	antimicrobial, cancer prevention agent	Chauhan et al., 2020
11	9.112	0.06	3-Methoxy-2,2-bis(methoxymethyl)-1-propanol	C8H18O4	178.23	--------	
12	9.112	0.06	2-[(Acetyloxy)methyl]-4,4-dimethoxybutyl acetate	C11H20O6	248.27	--------	
13	9.112	0.06	methyl 5,5-dimethoxy-3-methyl-2,3-epoxypentanoate	C9H16O5	204.223	-------	
14	9.214	0.09	sec-ButyCrotonate	C8H14O2	142.20	------	
15	9.214	0.09	Ethyl acetohydroxamate	C4H9NO2	103.12	-------	
16	9.860	0.10	2-Hydroxy-2-Cyclopenten-1-One	C5H6O2	98.1	------	
17	11.825	0.04	2,4-Dihydroxy-2,5-dimethyl-3(2H)-furan-3-one	C6H8O4	144.13	-------	
18	11.825	0.04	2,5-Difluoroanisole	C7H6F2O	144.12	------	
19	12.325	0.08	Diglycerol	C6H14O5	166.17	-----	
20	12.325	0.08	Thiolactic acid	CH3CH(SH)COOH	106.14	-------	
21	12.325	0.08	1-Propanol, 3-[(2-hydroxyethyl)thio	C5H12O2S	136.21	--------	
22	12.466	0.24	N1,N1,N3,N3-Tetraethylpropane-1,3-diamine	C11H26N2	186.34	--------	
23	12.466	0.24	N-Isopropyl-N-methyl-1-pentanamine	C9H21N	143.270	-------	
24	12.466	0.24	1-Diethylamino-3-butanone	(C2H5)2NCH2CH2COCH3	143.23	-------	
24	14.146	0.08	D-(-)-Pantolactone	C6H10O3	130.14	------	
25	14.349	0.67	Methyl trans-4-oxo-2-pentenoate	C6H8O3	128.13	-------	
26	17.448	0.08	2-methylhexane-1,2-diol	C7H16O	132.201	-------	

27	17.448	0.08	Thioacetamide	CH_3CSNH_2	75.133	-----	
28	21.042	0.14	(S)-2-(4-Methyl-3-cyclohexenyl)-2-propanol	C10H18O	154.25	------	
29	21.979	0.09	Silane, ethyldimethyl(1-methylethoxy)	C7H18OSi	146.3	-------	
30	26.606	0.03	3′-Methoxyacetophenone	C9H10O2	150.17	----	
31	30.305	0.11	Methyl 4-tert-butylphenylacetate	C13H18O2	206.28	------	
32	60.653	2.81	2-PHENYL-2-PENTENE	C11H14	146.229	------	
33	60.849	0.48	1-Triacontanol	C30H62O	438.83	-----	
34	61.000	6.25	Spiro[5.5]undeca-1,7-diene	C11H16	*148.24*	-------	
35	61.516	0.27	5-Dodecyne	C12H22	166.30	----	
36	61.961	0.42	4-Hexadecen-6-yne, (E)-	C16H28	220.39	-----	
37	62.178	0.27	4,8,12,16-Tetramethylheptadecan-4-olide	C21H40O2	324.5	antibacterial, antioxidant, antitumor,	Gomathi et al., 2021
38	62.178	0.27	delta-Dodecalactone	C12H22O2	198.30	antifungal activity	Yang et al., 2011
39	62.178	0.27	Dihexadecyl phosphate	[CH3(CH2)15O]2P(O)OH	546.85	-------	
40	62.291	0.14	(6E,10E,14E,18E)-2,6,10,15,19,23-hexamethyltetracosa-1,6,10,14,18,22-hexaen-3-ol	C30H50O	426.72	-------	
41	63.843	29.28	2-Phenyl-3-penten-2-one	C11H12O	160.21	------	
42	63.843	29.28	pent-2-en-3-ylbenzene	C11H14	146.23	-------	
43	64.719	0.30	2-Androstenediol	C19H30O	290.4	------	
44	64.719	0.30	(13α)-D-Homo-5α-androstane	C20H34	274.48	-------	
45	66.240	0.08	1,4,5,8-Tetramethylnaphthalene	C14H	184.28	-----	
46	66.240	0.08	1,2,3,4-tetramethylnaphthalene	C14H16	184.28	------	
47	67.281	0.19	2-(3-Carboxypropanoyl)benzoic acid	C11H10O5	222.2	------	
48	67.281	0.19	Di-isooctyl phthalate	C24H38O4	390.56	antimicrobial and antifungal activities	Shafeian et al., 2020

CONCLUSIONS

The correlation among the phytochemical constituents with their biological activities is now being the source of benefit thought of *Olax subscorpioidea* as a plant which is traditionally used for the treatment of many diseases. But till date, there are few or no reports on chromatographic analysis of extract of the plant. Here, the presence of some important compounds in this plant isolated by GC-MS analysis is reported. These phytoconstituents presumed to be responsible for eliciting the traditional activity of this plant, *Olax subscorpioidea*, and its extract is a good biochemical agent that could be added as a chemical basis in therapeutics. This research underscores the potential of *O. subscorpioidea* as a source of novel therapeutic agents, necessitating further isolation and characterization of its bioactive constituents to explore their pharmacological potentials comprehensively.

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