PHARMACOGNOSTIC STUDIES OF *Sancheziaspeciosa*Leonard(Acanthaceae)

ABSTRACT

Backgroung: *Sancheziaspeciosa*Leonard, Acanthaceaeis used as ornamental plant. It used in folklore medicine in the management of pain, anti-microbial and insecticide

Aim: The study evaluatedthe various taxonomic, pharmacognostic and phytochemical standards helpful to ensure the identity, purity, safety and efficacy of the medicinal plant, *S. speciosa*.

Methodology: Parameters determined include microscopy, micromeritics, fluorescence, chemomicroscopy, soluble extractive values, moisture contents and phytochemical analysis.

Results: Epidermal shapes were both polygonal on the adaxial and abaxial surfaces. Stomatal distribution was amphistomatic with anisocytic and diacytic stomata on the adaxialand abaxialsurface respectively. Stomatal index was21.47% on the adaxial surface and15.43% on the abaxial surface. Micromeritics results for the leaf powder were bulk volume of 25.33± 0.408, tapped volume of 19.00± 0.00, bulk density of 0.40± 0.006, tapped density of 0.53± 0.021, Hausner's ratio of 1.34± 0.037, Carr's index of 25.00± 2.550 and angle of repose of 43.07°. The micromeritics indicated a passable flow. The chemomicroscopy indicated presence of lignin, mucilage and starch. Fluorescence properties showed different colours under different ultraviolet lights. The water-soluble, methanol-soluble, ethanol-soluble extractive values were 14.7% $^{w}/_{w}$, 4.3% $^{w}/_{w}$ and 5.0% $^{w}/_{w}$ respectively. Moisture content was 8.5% $^{w}/_{w}$. Total ash, acid-insoluble and water-soluble ash values were 20.0 % $^{w}/_{w}$, 2.0% $^{w}/_{w}$ and 4.2% $^{w}/_{w}$ respectively. GC-MS of methanol extract revealed the total of 39 phytochemicals with over 5 prominent peaks having higher area% which include hexadecanoic acid methyl ester (2.64%), 9,12,15-octadecatrienoic acid methyl ester (4.77%), phytol (9.98%), 9,12,15octadecatrienoic acid (12.97%), Stigmasterol (2.00%) and Squalene (28.16%). Other compounds are glycerin (5.83%), n-hexadecanoic acid (2.85%) and 9 octadecenamide (2.18%). Many of them possess good pharmacological properties. The data generated from the present study would help to authenticate *S. speciosa* and also affirm its folklore use in traditional medicine whichhas potential for further development into drug product.

Keywords: Amphistomatic, GC-MS, micromeritics,pharmacognostic,*Sancheziaspeciosa*, phytochemicals.

INTRODUCTION

*Sancheziaspeciosa*Leonard, Family: Acanthaceae is an evergreen semi-woody shrub, erect, up to 2.5m tall with quadrangular stems of green or yellowish purple colour. The leaves are 0.52cm long,petiole winged at the base, simple, opposite, oblong elliptic brusquely pointed at the apex of 10-25cm of length and 4-8cm of breadth, intense glossy green with white or pale yellow nervations and waved crenate margins. The inflorescences are 20-40cm long erect terminal spikes, with yellow or pink quadrangular rachis, with 1-3cm long internodes and persistent oviate red orange bracts, up to 4cm long, subtending three or more unilateral haemaphroditic flowers. The singular flowers present an about 2.2cm long calyx with five 1.6cm long and 0.5cm broad lobes, tubular yellow or orange corolla, 4-5cm long with five 0.4-0.6cm long twisted lobes[1].

The semi woody evergreen shrub featuring bright green to purple-coloured smooth stems and large dark green leaves usually grow up to 6.5 feet in height though it can sometimes reach 10 feet as well. It rarely produces yellow flowers that are short-lived.
The plant contains alkaloids, glycosides, flavonoids, triterpenoids, carbohydrates, steroids, phenolics compounds, saponins and Tannins [2]. The plant also contains Quercetin 3-0-a-l-rhamnopyranoside, Quercetin 3-0-b-D-galactopyranoside 3**.**b-Sitosterol 3-0-b-D glycopyranoside, 3-methyl-1H-benz[f] indole-4,9-dione[3].The plant has anti-oxidative and anti-inflammatory properties [4]. It also has anti-cancer, antifungal, insecticidal and antibacterial activities[5]. Therefore, this study is aimed at investigating the pharmacognostic and taxonomic parameters to aid in the identification and safe use of this drug.

Classification of *S. speciosa*according to Angiosperm Phylogeny Group (APG) System (2016)[6].

Kingdom	Plantae
Clade	Tracheophytes
Clade	Angiosperms
Clade	Eudicots
Clade	Asterids
Order	Lamiales
Family	Acanthaceae
Genus	*Sanchezia*
Species	*S. speciosa*

Fig. 1: *Sancheziaspeciosa*

Source: Field data, 2022

MATERIALS AND METHOD

Collection, Identification and Preparation of the Plant Material

The plant, *S.speciosa* was collected from Idoro road, Uyo Local Government Area. AkwaIbom state, Nigeria in March, 2022 and identified by Dr Johnny I. Imeh of department of Pharmarcognosy and Natural Medicine, Faculty of Pharmacy, University of Uyo with herbarium identification number**:**UUPH No.1(f) .The fresh plant material was air-dried, pulverized and packed in a dry container, well labelled and used when needed.

Anatomical Studies

Microscopy Evaluation of Leaf

The standard median portion of the well expanded matured leaf was obtained.Microscopical examinations of the Epidermis of both adaxial and abaxial surfaces were made by placing the leaf on a glass slide. The sample was irrigated with water and scraped gently with a sharp razor blade till loose cells from the epidermis were washed away with water and the desired epidermis was reached. The epidermal peels were further cleared with sodium hypochlorite and rinsed gently with water. The epidermal peels were stained with aqueous solution of safranin-O for (five) 5 minutes and stained with 10% glycerol. The stained samples were mounted on a binocular microscope. Photomicrographs were taken from good preparations using the Olympus CX21 binocular microscope fitted with an MD500 Amscope microscope eyepiece camera. Measurements were done at ×10 while ×40 for photomicrographs[7]**.**

Quantitative Microscopy of the Leaf

Quantitative microscopy parameters such as leaf constant studies namely stomatal length and width, guard cell length and width, stomatal number, stomatal index, epidermal cell length and width, epidermal cell number, epidermal cell thickness were carried out using standard procedures.
All measurements were made using a calibrated ocular micrometer and 10 microscopic fields chosen at random were used and data presented as mean ± Standard Error of Mean (SEM).

Stomatal Index Determination

The stomatal index (S.I) was determined according to Metcalfe and Chalk[8,9]using the formula:

The sample was placed under the microscope and the stomatal index was determined using the formula;

$$S.I=\frac{S}{E+S} X100$$

Where S = Number of stomata per unit area
E = Number of epidermal cells in the same area

Micromeritics

The flow property was determined using standard methods[10] which constitutes:

Bulk Density and Tapped Density

The weight of 10 g of dry powdered leaf was weighed into 100 ml measuring cylinder and the volume occupied was noted as the bulk volume (Vb). The cylinder was gently tapped repeatedly to obtain a constant volume noted as the tapped volume (Vt). Bulk density was calculated using the formula below:

$$B\rho = \frac{M}{Vb}$$

$$T\rho = \frac{M}{Vt}$$

Where $B\rho$= Bulk density
M = Mass of powder
Vb= Bulk volume of powder
$T\rho$ = Tapped density
Vt= tapped volume

Interparticulate porosity was also calculated using the formula below;

IP = $\frac{\rho T - \rho B}{\rho T * \rho B}$

Hausner's Ratio and Carr's index

Hausner's ratio a function of interparticle friction was calculated using the formula

$$Hausner's\ ratio = \frac{T\rho}{B\rho}$$

While Carr's Index is measured as

$$Carr's\ index = \frac{T\rho - B\rho}{T\rho} \times 100$$

Where; $T\rho$ = Tapped density
$B\rho$ = Bulk density.

Angle of repose

$$\theta = Tan^{-1}\left(\frac{Heap\ height\ of\ powder}{Radius\ of\ heap\ base}\right)$$

Chemomicroscopic Analysis of Leaf Powder

Powdered leaf was examined for its chemomicroscopic properties namely mucilage, lignin, starch, oils, calcium carbonate and calcium oxalate crystals using standard procedures[11].

Fluorescence Analysis of Leaf Powders

The fluorescent analysis ofdried leaf powder was carried out using standard method[12]**.**

Physico-chemical Evaluation of Leaf Powders

The physicochemical parameters such as moisture content, ash values (total ash, acid-insoluble ash, water-soluble ash), soluble extractive values such as ethanol, methanol and water-soluble extractive values were performed according to the official method prescribed by the WHO guidelines on quality control methods for medicinal plant materials [9,13].

RESULTS

Microscopic Evaluation of Leaf

Table 1: Qualitative and Quantitative micro-morphological characters of *S. speciosa*

Leaf surface	**Abaxial**	**Adaxial**
Stomatal morphology type	Anisocytic and dicytic	Anisocytic and Anomocytic
Stomatal distribution	Amphistomatic	Amphistomatic
Stomatal length(µm)	41.49(60.22 ± 4.56)76.05	29.14(23.43 ± 1.06)18.77
Stomatal width(µm)	28.60(45.52 ± 2.81)	13.60(16.20 ± 0.56)18.91
Stomatal pore length(µm)	11.88(20.17 ± 1.93)29.00	5.81(9.46 ± 0.55)11.44
Stomatal pore width(µm)	4.75(6.86 ± 0.70)10.08	2.37(2.96 ± 0.17)3.67
Stomatal number	64(61.25 ± 0.66)58	56(68.10 ± 2.46)77
Stomatal index	15.43%	21.47%
Length of epidermal layer(µm)	81.25(102.24 ± 5.24)107	23.49(34.23 ± 2.92)55.09
Width of epidermal layer(µm)	33.00(44.25 ± 2.53)57.85	15.50(23.70 ± 1.74)36.09
Thickness(µm)	2.38(5.04 ± 0.52)7.13	1.16(2.12 ± 0.17)2.60

Epidermal cell shape	Polygonal	Polygonal
Epidermal number	327(335.60 ± 2.500)348	241(249 ± 2.09)262

Values are represented as mean of ten (10) replicates ± SEM

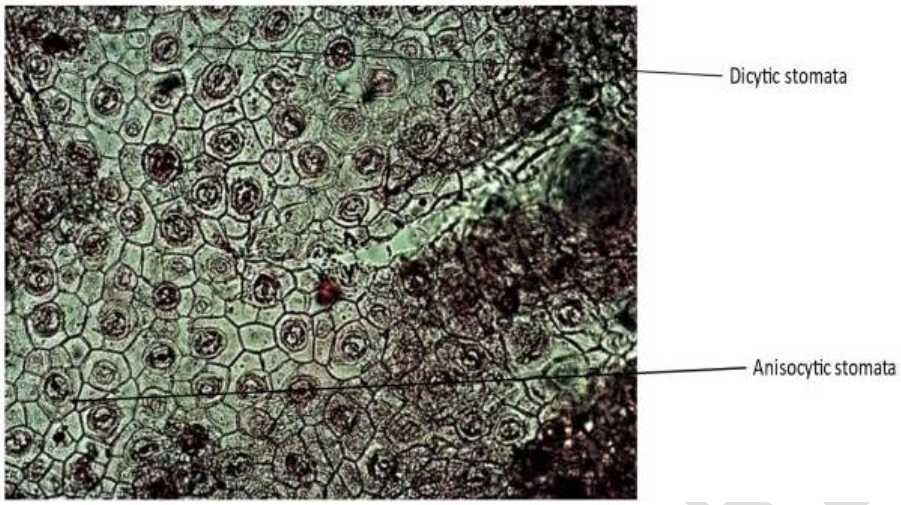


Fig. 2: *S. speciosa*Abaxial surface ×10

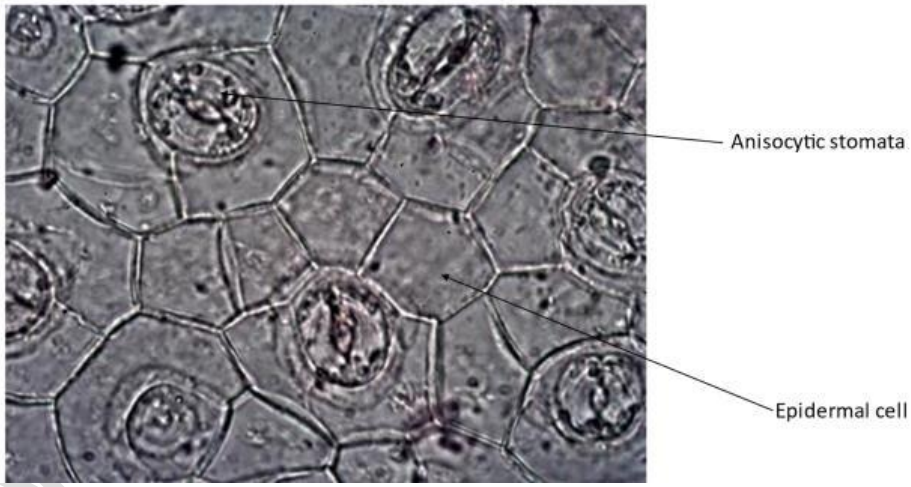


Fig. 3: *S. speciosa*Adaxial surface showing Anisocytic stomata ×40

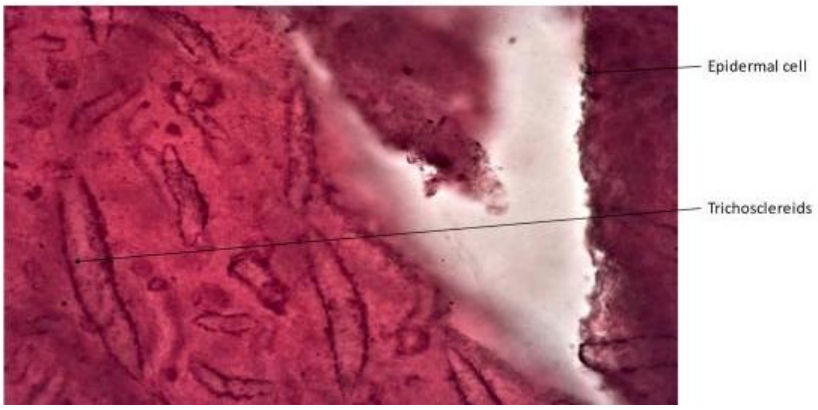


Fig. 4: *S. speciosa*leaf powder Showing Trichosclereids×10

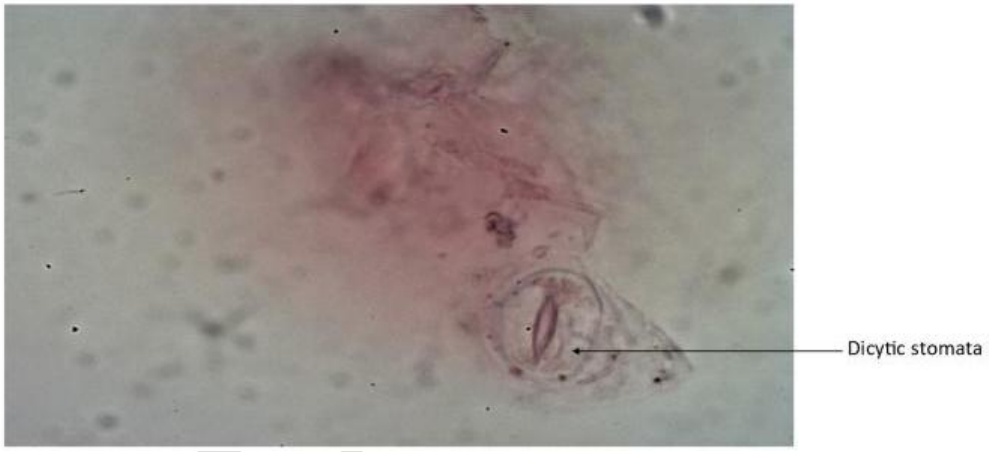


Fig. 5: *S. speciosa*leaf powder showing diacytic stomata ×40

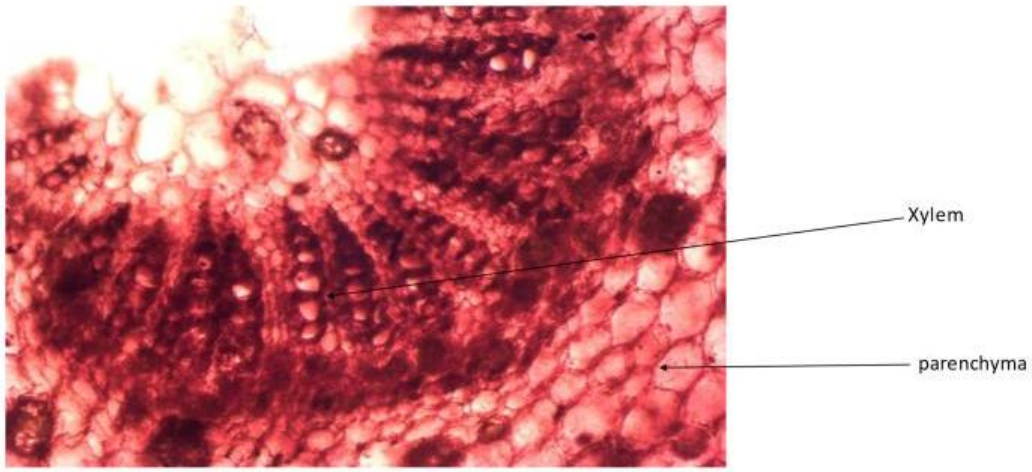


Fig. 6: *S. speciosa*leaf Petiole showing vascular bundles and parenchyma ×10

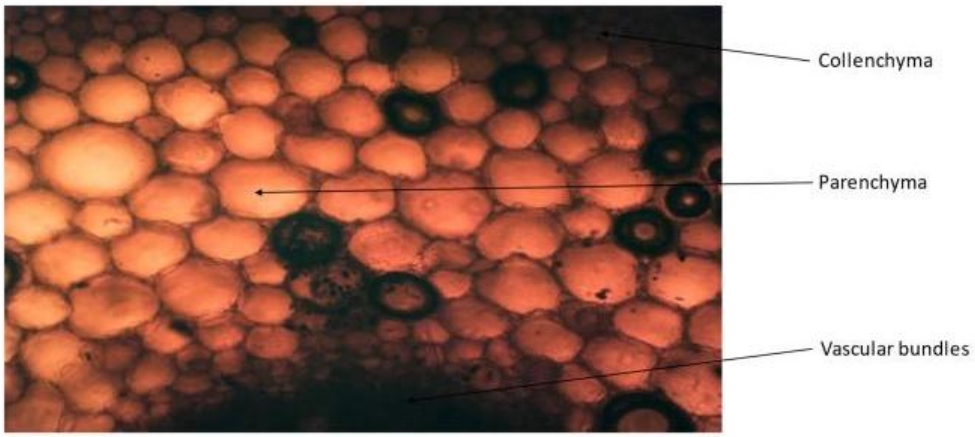


Fig. 7: *S. speciosa*leaf petiole showing Collenchyma, Parenchyma and Vascular bundle ×10

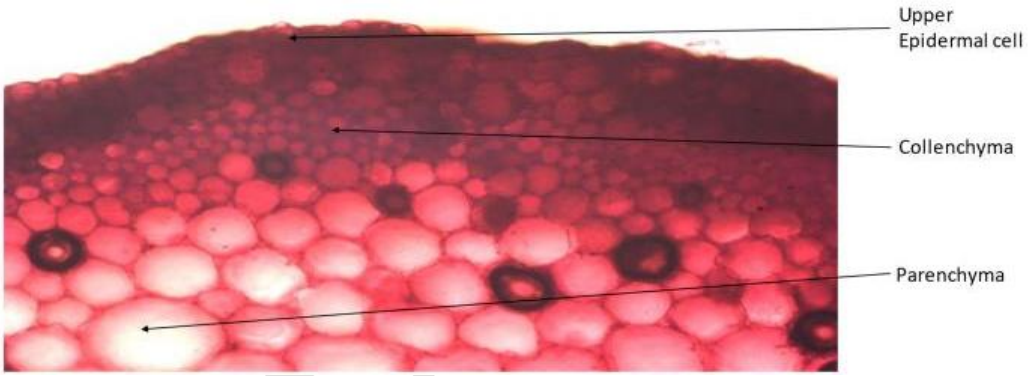


Fig. 8: *S. speciosa*leaf petiole showing upper epidermis and Collenchyma ×10

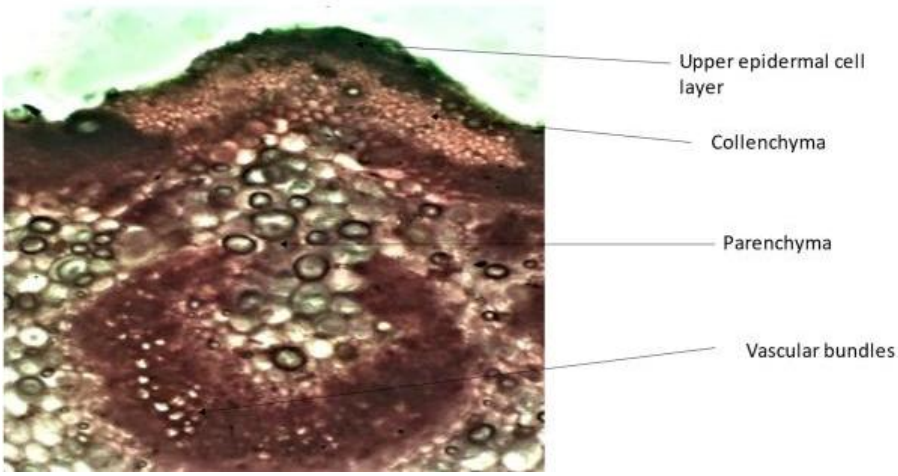


Fig. 9: T.S of Epidermis, Collenchyma, Parenchyma and Vascular bundles ×40

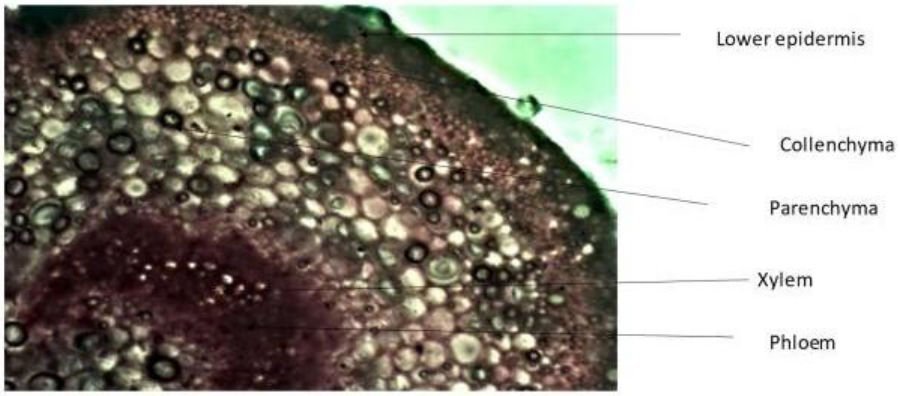


Fig. 10: T.S showing lower epidermis, Phloem and Xylem tissues ×40

Table2: Micromeritic Properties of *S.speciosa*PowderedLeaf

PARAMETERS	RESULTS
Bulk volume (ml)	25.33±0.408
Tapped volume(ml)	19.00±0.00
Bulk density(g/ml)	0.40±0.006
Tapped density (g/ml)	0.53±0.021
Flow rate(g/s)	1.72±0.198
Angle of repose (^{o})	43.07
Hausner's ratio	1.34±0.037
Carr's index (%)	25.00±2.550
Diameter of heap (cm)	6.423±0.046
Height of heap(cm)	2.33±0.147

Values are represented as mean of three (3) replicates ± SEM

Table3: Chemomicroscopy of *S.speciosa*Leaf

Constituents	Observation	Inference
Mucilage	Pink coloration	Mucilage present
Lignin	Red coloration	Lignin present
Starch	Blue-black coloration	Starch is present
Oils	No pink coloration	Oil absent
Calcium oxalate	Calcium oxalate crystals not seen	Calcium oxalate absent

Table 4: Fluorescence analysis of *S. speciosa* leaf powder

Extract	Ordinary light	UV-365nm	UV-253.7nm
Water	Purple	Brown	Maroon
Methanol	Light green	Deep pink	Red
Ethanol	Green	Pink	Light yellow
DCM	Green	Pink	Orange
N-hexane	Brown	Orange	Red
Ethyl Acetate	Light green	Light red	Light red

Table5: Water-soluble Extractive Value, Ethanol-soluble Extractive Value, Methanol-soluble Extractive Value and standard Error of Mean for Leaf Powders of *S. speciosa*.

Parameters	Weight (g)	Percentage (% $^{w}/_{w}$)
Water-soluble extractive value	0.1467 ±0.004	14.7
Ethanol-soluble extractive value	0.05±0.007	5.0
Methanol-Soluble Extractive value	0.0433 ±0.004	4.3

Values are represented as mean of three (3) replicates ± SEM (Standard Error of Mean)

Table 6: Moisture Content, Total Ash Value, Acid-Insoluble Ash Value, Water-Soluble Ash Value and Standard error of Mean for the leaf of *S. speciosa*

Parameters	Weight (g)	Percentage (% $^{w}/_{w}$)
Moisture content	0.17 ±0.002	8.5%
Total ash	0.40 ±0.007	20.0%
Acid-insoluble ash value	0.04 ±0.00	2.0%
Water-soluble ash value	0.0834 ±0.004	4.2%

Values are represented as mean of eight (8) replicates ± SEM for moisture content and total ash.
Values are represented as mean of four (4) replicates ± SEM for acid-insoluble and water-soluble ash values

Table 7. Phytochemical constituents identified from methanol extract of leaf from *S. speciosa* by GC-MS analysis

S/N	Retention time	Compound name	Molecular formula	Molecular weight	Area %
1	8.975	Glycerin	$C_3H_8O_3$	92	5.83
2	13.310	2,6-Difluorobenzoic acid, tridec-2-ynyl ester	$C_{20}H_{26}F_2O_2$	336	0.16
3	13.498	Phenol, 2,4-bis(1,1-dimethylethyl)-	$C_{14}H_{22}O$	206	0.09
4	13.544	Phenol, 2,4,6-tris(1-methylethyl)-	$C_{15}H_{24}O$	220	0.10
5	13.591	Dodecanoic acid, methyl ester	$C_{13}H_{26}O_2$	214	0.20
6	13.702	2(4H)-Benzofuranone, 5,6,7,7a-tetrahydro-4,4,7	$C_{11}H_{16}O_2$	180	0.37
7	14.164	Ethanediamide, n-dodecyl-N'-(2-thiazolyl)-	$C_{17}H_{29}N_3O_2S$	339	1.63
8	14.739	3-Buten-2-ol, 3-methyl-4-(2,6,6-trimethyl-2-cyc	$C_{14}H_{24}O$	208	0.64
9	15.199	3-Buten-2-one, 4-(4-hydroxy-2,2,6-trimethyl-7-oxabic	$C_{13}H_{20}O_3$	244	1.80

10	15.267	3-Buten-2-one, 4-(5-hydroxy-2,6,6-trimethyl-1	$C_{13}H_{20}O_2$	208	0.49
11	15.547	Methyl tetradecanoate	$C_{15}H_{30}O_2$	242	0.30
12	15.985	Acetic acid, 2-(2,2,6-trimethyl-7-oxa-bicyclo[4]	$C_{14}H_{22}O_3$	338	1.95
13	16.178	2-Cyclohexen-1-one, 4-hydroxy-3,5,6-trimethyl-4	$C_{13}H_{18}O_3$	222	0.28
14	16.256	3-Butylindolizidine	$C_{12}H_{23}N$	181	1.20
15	16.703	2-Pentadecanone, 6,10,14-trimethyl-	$C_{18}H_{36}O$	268	1.74
16	17.129	3,7,11,15-Tetramethyl-2-hexadecen-1-ol	$C_{20}H_{40}O$	296	0.36
17	17.345	2,6,10-Dodecatrien-1-ol, 3,7,11-trimethyl-	$C_{15}H_{26}O$	222	0.28
18	17.432	Hexadecanoic acid, methyl ester	$C_{17}H_{34}O_2$	270	2.64
19	17.648	Dibutyl phthalate	$C_{16}H_{22}O_4$	278	1.88
20	17.941	n-Hexadecanoic acid	$C_{16}H_{32}O_2$	256	2.85
21	18.426	Heptadecanoic acid, methyl ester	$C_{18}H_{36}O_2$	284	0.12
22	19.084	11,14-Octadecadienoic acid, methyl ester	$C_{19}H_{34}O_2$	294	2.80
23	19.141	9,12,15-Octadecatrienoic acid, methyl ester, (Z,	$C_{19}H_{32}O_2$	292	4.77
24	19.389	Phytol	$C_{20}H_{40}O$	296	9.98
25	19.715	9,12,15-Octadecatrienoic acid, (Z,Z,Z)-	$C_{18}H_{30}O_2$	278	12.97
26	19.851	Hexadeca-2,6,10,14-tetraen-1-ol, 3,7,11,16-tetra	$C_{20}H_{34}O$	290	2.97
27	19.960	Formamide, N,N-dibutyl-	$C_9H_{19}NO$	157	1.86
28	20.291	Octacosylheptafluorobutyrate	$C_{32}H_{57}F_7O_2$	606	1.74
29	21.169	6-epi-shyobunol	$C_{15}H_{26}O$	222	0.34
30	21.430	Cycloheptanone, 3-butyl-	$C_{11}H_{20}O$	168	1.54
31	21.537	9-Octadecenamide, (Z)-	$C_{18}H_{35}NO$	281	2.18
32	21.840	Phytol, acetate	$C_{22}H_{42}O_2$	338	0.33
33	22.219	Cholestan-3-one, cyclic 1,2-ethanediyl acetal, (5.al	$C_{29}H_{50}O_2$	430	0.39
34	23.030	Bis(2-ethylhexyl) phthalate	$C_{24}H_{38}O_4$	390	0.39
35	24.833	Stigmasterol	$C_{29}H_{48}O$	412	2.00
36	24.925	9,19-Cycloergost-24(28)-en-3-ol, 4,14-dimethy	$C_{32}H_{52}O_2$	468	1.22
37	25.500	Hexadeca-2,6,10,14-tetraen-1-ol, 3,7,11,16-tet	$C_{20}H_{34}O$	290	0.88
38	25.790	Squalene	$C_{30}H_{50}$	410	28.16
39	25.909	1,6,10,14-Hexadecatetraen-3-ol, 3,7,11,15-tetram	$C_{20}H_{34}O$	290	0.54

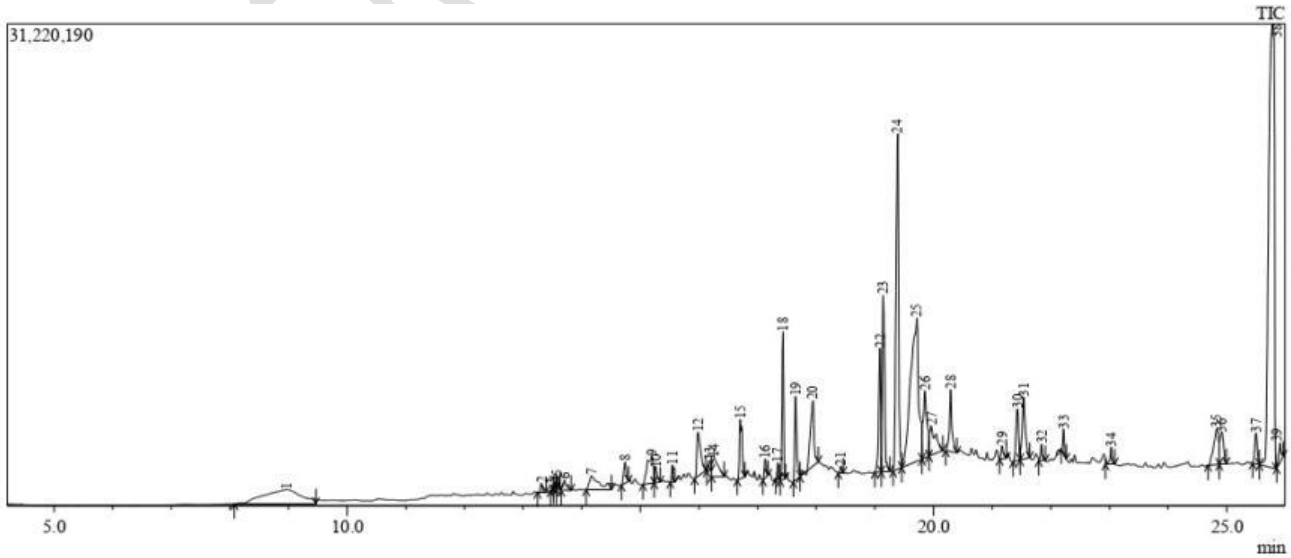
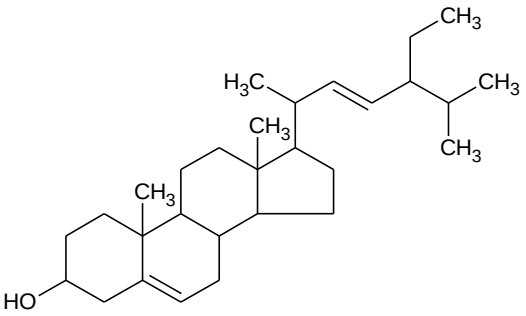
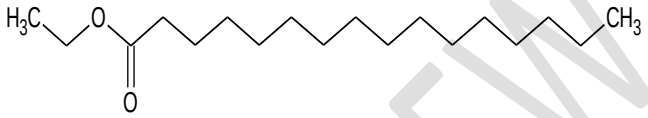


Fig. 11: GC-MS chromatogram of methanol leaf extract of *S. speciosa*



Stigmasterol



Hexadecanoic ethyl ester

Fig. 12: Structures of some abundant phytochemical constituent in the GC-MSanalysis

Discusssion

Commercial supply of crude drugs has been faced with improper identification which has led tothe adulteration of the genuine drug, leading to the reduction in the efficacy of the drug. Taxonomic and pharmacognostic standardization is meant for identification and detection of adulterants which represents quality control measures of crude drugs. According to the World Health Organization, the macroscopic and microscopic description of a medicinal plant is the first step towards establishing the identity and the degree of purity of such material. The qualitative result in the study showed that the epidermal cell shapes were both polygonal on the adaxial and abaxial surfaces (Fig. 2 and 3)[14]. Johnny *et al.* (2022) [14] reported the presence of polygonal epidermal cell shape in *C. millenii*adaxial surface as a diagnostic character for its identification.

Stomatal distribution was amphistomatic withanisocytic stomata on both the adaxial and abaxial surfaces (Fig. 2 and 3).Stomatal indices were21.48% and 15.43% on adaxial and abaxial surfaces respectively (Table 1).Study by Metcalfe and Chalk, (1979) [8] distinguished *Waltheriaindica* from other species using the presence of paracytic and anisocytic stomata which was diagnostic. Essiett*et al*.,(2010)[15] reported that stomatal index and the guard cell provide values that will serve as parameters for comparison among taxa, which can be useful for identification of the studied taxa. Essiett and Etukudo (2012) [16] on their study on three species of *Acalypha* occurring in Nigeria also reported that variation in stomatal index and guard cell areas are useful diagnostic tools.

The meanstomatal length and width ranged between23.43µm - 60.22µm and 16.19µm -20.17µm for the abaxial and adaxial surfaces respectively (Table 1).

For the micromeritic studies of the powder, the bulk and tapped densities of the leaf were (0.19 ± 0.00 and 0.27 ± 0.00), Hausner's ratio and Carr's index for the leaf were (1.34 and 25 %) and angle of repose 43.07^0 (Table 2). While the bulk and tapped densities of the stem were (0.40 ± 0.06and 0.53 ± 0.021g/mL).The angle of repose is related to the free flowability properties of particulate materials in bulk forms[17], the angle of repose of the powder indicated passable flowability according to the

USP standard. In recent uses, the compressibility index and the closely related Hausner's ratio have become simple, fast and popular methods of predicting powder flow characteristics.

The angle of repose is considered to be the most classical technique used for characterizing the flow properties of powders. Angle of repose is a characteristic related to inter-particulate friction or resistance to movement between particles [18,19,20]

Chemomicroscopy revealed the presence of cellulose, mucilage, lignin and starch (Table 3). The ethanol-soluble extractive value, methanol-soluble extractive value and water-soluble extractive value were 5.00%$^{w}/_{w}$, 4.3%$^{w}/_{w}$ and 14.67%$^{w}/_{w}$respectively (Table 5). The water- soluble extractive value indicated the presence of water-soluble matters such as sugars, amino acids and vitamins derived from plants. The ethanol and methanol-soluble extractive values indicate the presence of polar compounds.

The moisture content of 8.7%$^{w}/_{w,}$ obtained was within the African Pharmacopoeial limit of moisture content for vegetable drugs between 8%$^{w}/_{w}$ to 14%^{w}/w [9]. Moreover, high moisture content is uneconomical and in the presence of appropriate temperature could lead to enzymatic activation, hydrolytic reactions and contamination from microbes which may lead to degradation of active constituents. This plant possesses a suitable moisture content hence it can be stored for a reasonable length of time without sample degradation. The total ash, acid-insoluble ash and water-soluble ash values were 19.8 %w/w, 2%$^{w}/_{w}$ and 4.2 $^{w}/_{w}$ % respectively (Table 6). Ash values gives estimation about the quality and purity of crude drugs and also gives information relative to its adulteration or contamination with inorganic matter [21]. The total ash values was high which indicated the presence of impurities, this was above the recommended limit of 14%$^{w}/_{w}$ and the acid-insoluble ash value of 2 $^{w}/_{w}$ % was within the limit of the European Pharmacopoeia,2007 [22] which states that the acid-insoluble ash for crude vegetable drug should not exceed 2% $^{w}/_{w.}$

The Gas Chromatography-Mass Spectroscopy is a vital tool due to its potential to supply suggested qualitative and quantitative information on constituents based on their structural compositions. The GC-MS analysis of the leaves of *Sancheziaspeciosa*showed the presence of thirty nine (39) phytochemical constituents (Table 7 and Fig. 11) for the leafwith over 5 prominent peaks having higher area percentage.

The major components that characterized these prominent peaks include hexadecanoic acid methyl ester (2.64%), 9,12,15-octadecatrienoic acid methyl ester (4.77%), phytol (9.98%), 9,12,15-octadecatrienoic acid (12.97%), Stigmasterol (2.00%) and Squalene (28.16%). Also present are important bioactive compounds such glycerin (5.83%), n-hexadecanoic acid (2.85%) and 9-octadecenamide (2.18%).

Many of these identified constituents are known to possess several pharmacological properties. Among the highlighted phytochemicals, research suggests that squalene plays important role in reducing inflammatory mediators and increase energy production[23]. Squalene is also effective as a cancer inhibitor, antitumor, emollient and antioxidant agent in the skin [24,25]. Phytol shows antitumor activity [26], research has also shown that Phytol is an important compound with anti-inflammatory and metabolic properties [27]. 9,12,15-octadecatrienoic acid has anti-inflammatory,antioxidant properties and Hexadecanoic acid also has antioxidant activity [28]. Stigmasterol has been shown to have anti-cancer activity[29], 9-Octadecanamide has been considered as a potential treatment for mood and sleep disorders [30] and glycerin is used in treating many skin conditions, used in soaps,as a laxative and in enemas[31], it also has antimicrobial

activities[32].Thus *Sancheziaspeciosa*has potential in the development of drugs, however further research is required.

Conclusion

The results from the pharmacognostic studies will help in the proper identification, collection and authentication of *Sancheziaspeciosa*and its development into a Standard herbal drug.The presence of various bioactive constituents confirms the usage of *S. speciosa* for various ailments by traditional practitioners. However, isolation of individual phytochemical constituents may give birth to a novel drug

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