Electronic Supplementary Material (ESI) for RSC Advances.

The supplementary material and Supporting information

Green synthesized Zinc Oxide Nanoparticles, Anti-Alzheimer Potential and Metabolic Profiling of *Sabal blackburniana* grown in Egypt supported by molecular modelling

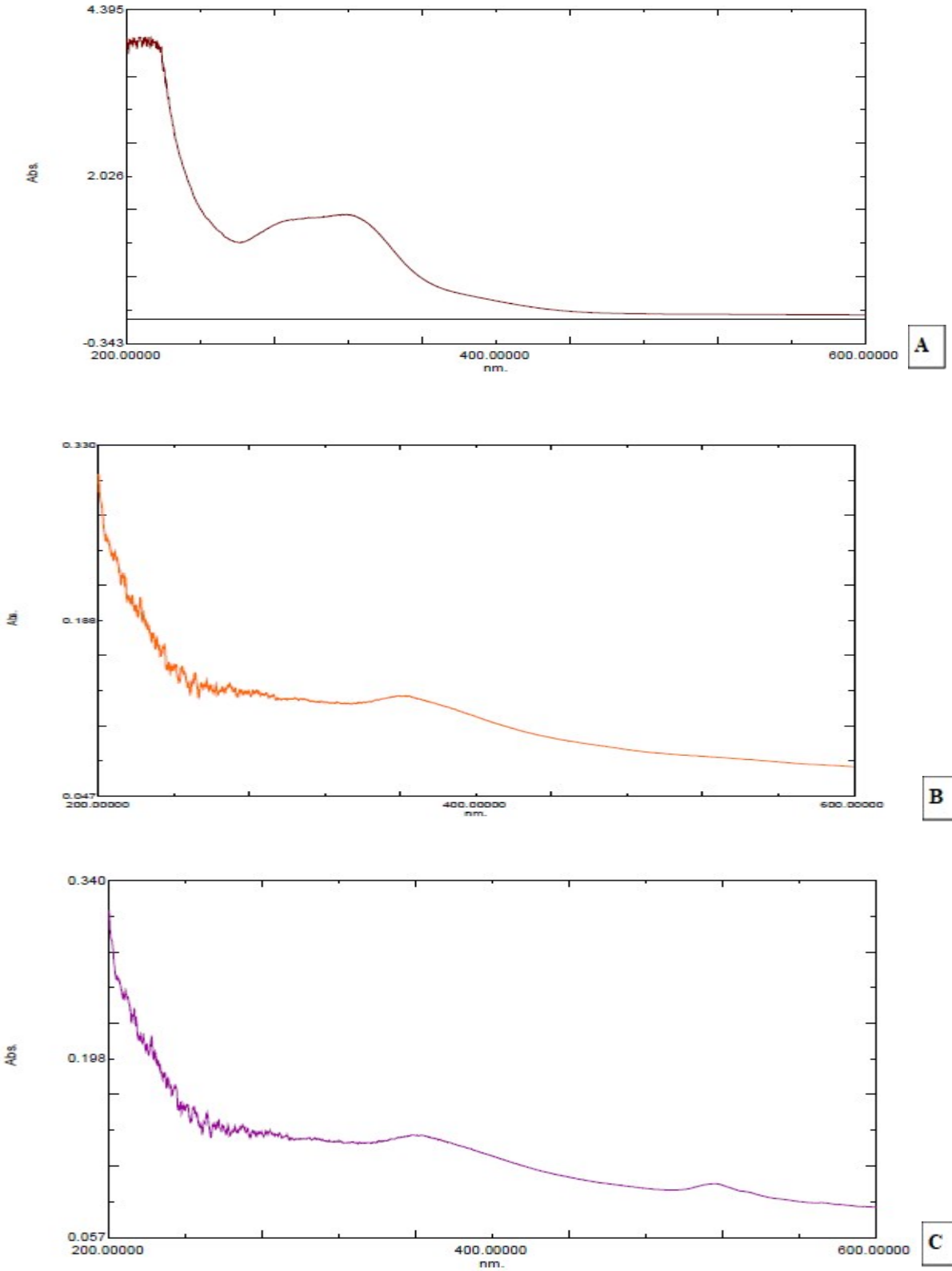
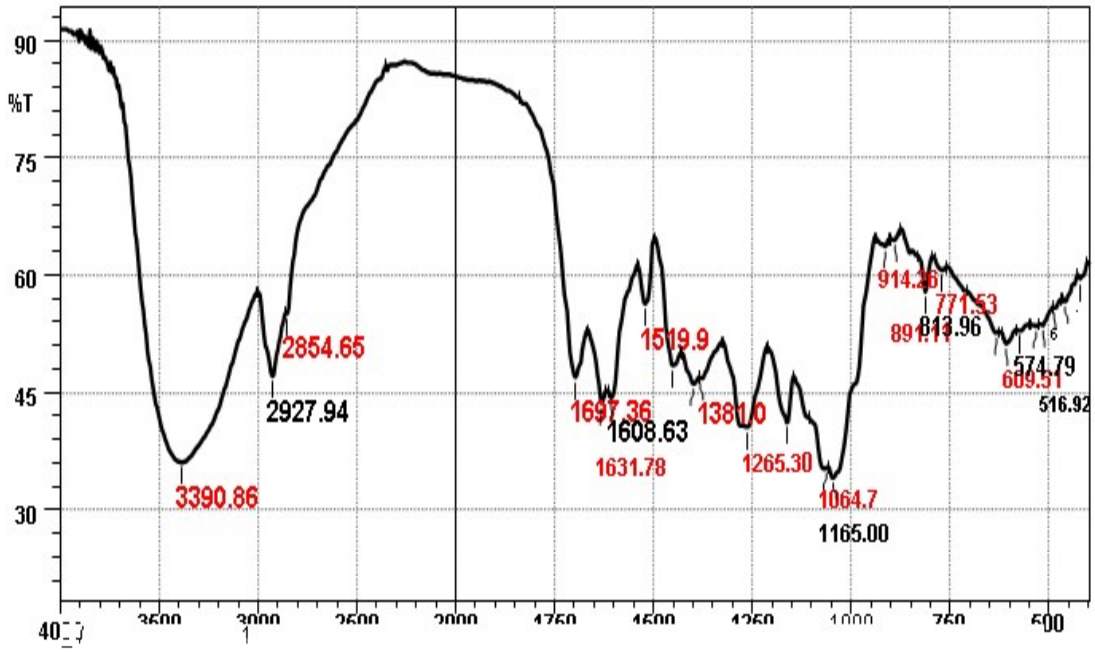


Fig.S1. UV-Visible spectrum of the synthesized Zno NPs using A(Leaves), B(Fruits)and, C (pollen grains) of the selected *Sabal* species.



Wavenumber (cm−1)

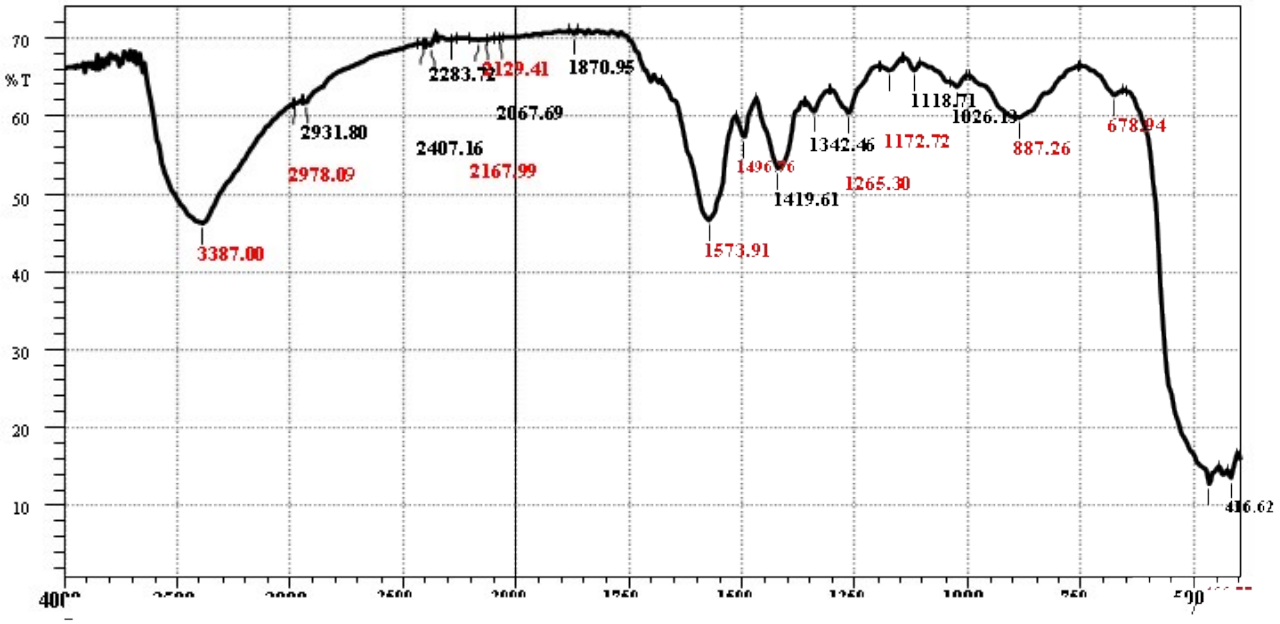
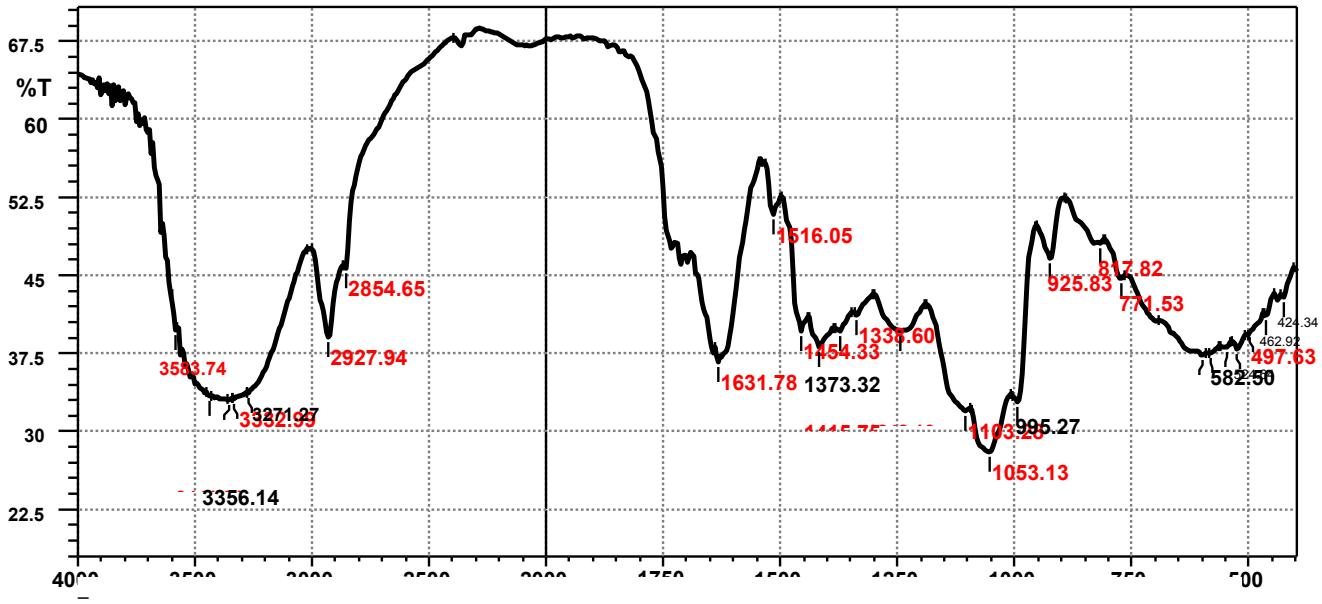
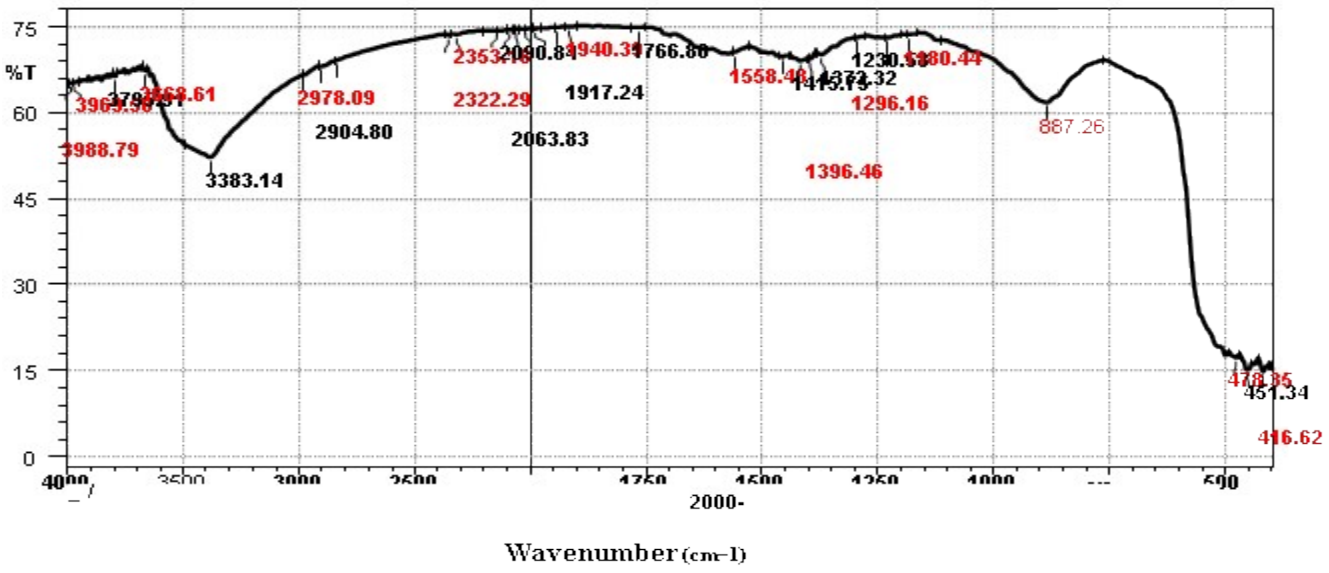


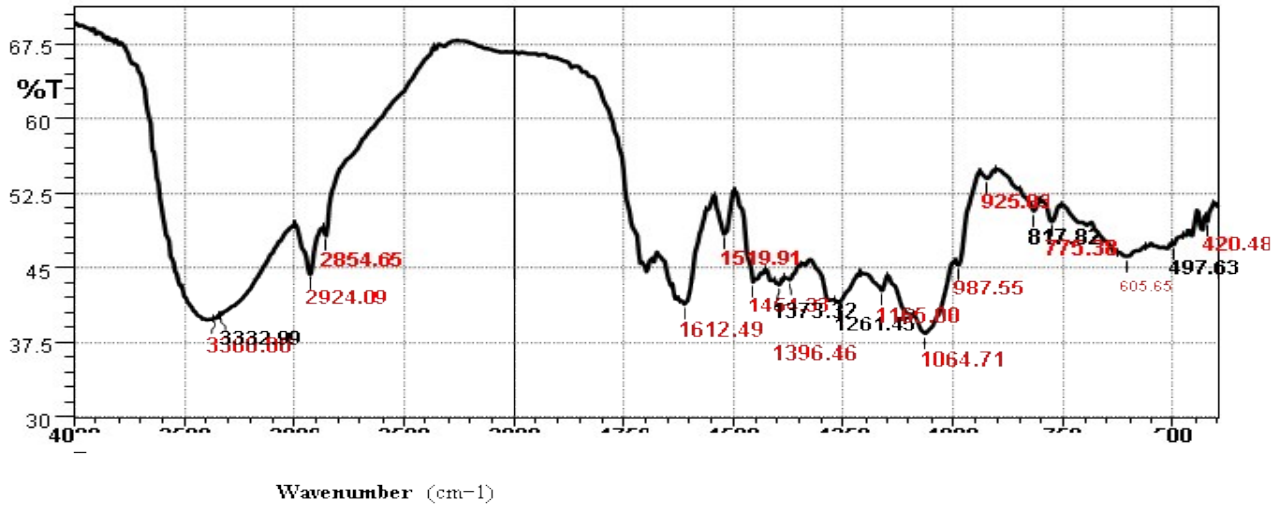
Fig.S2. FTIR spectra of *S. blackburniana* extracts*;* leaves (A), and green synthesized ZnO nanoparticles using leaves (B) .



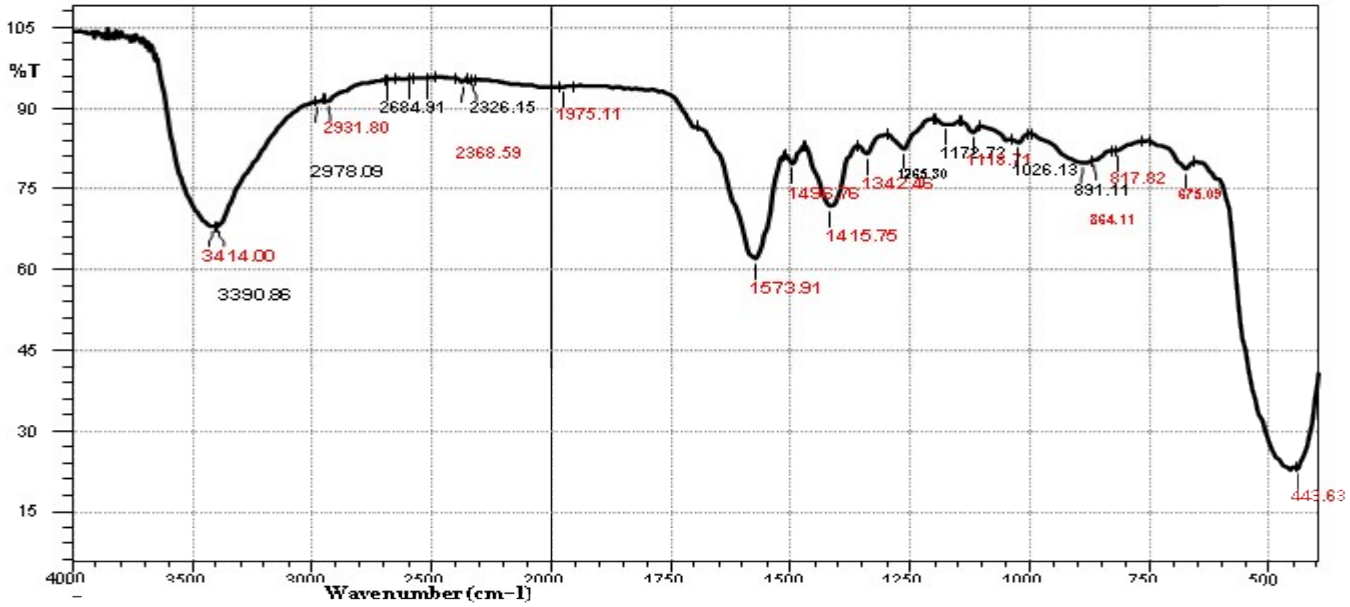


D

Fig.S3 .IR spectra of *S. blackburniana* extracts*;* fruits (C) and green synthesized ZnO nanoparticles using fruits (D).



E



F

Fig.S4. FTIR spectra of *S. blackburniana* extracts*;* pollen grains (E) and green synthesized ZnO nanoparticles using pollen grains (F) .

Table (S1): List of secondary metabolites annotated from the extracts of the selected *Sabal* species.

No	Rt	m/z±	Compound	Molecular Formula	Accurate mass	Chemical class	Source	Reference
1	2.84	149.1278	Cinnamic acid	$C_9H_8O_2$	148.1205	Phenolic acids; Phenyl propanoids	Plam seeds fruits	1
2	2.32	155.1043	Protocatechuic acid	$C_7H_6O_4$	154.097	Phenolic acids	*Phoenix dactylifera*	2
3	2.93	163.0739	Metanicotine	$C_{10}H_{14}N_2$	162.067	Alkaloid	*Duboisia Hopwoodii*	3
4	1.78	165.09	*p*-Coumaric acid	$C_9H_8O_3$	164.083	Phenolic acids	Plam seeds fruits	4
5	4.64	171.1018	Gallic acid	$C_7H_6O_5$	170.0945	Phenolic acids	*Phoenix dactylifera*	5
6	3.93	195.18	Ferulic acid	$C_{10}H_{10}O_4$	194.1727	Phenolic acids	*Phoenix canariensis leaves*	6
7	3.55	271.1194	Genistein	$C_{15}H_{10}O_5$	270.1121	Isoflavone	*Sabal* palm seeds	7
8	5.4	271.3016	Eestrone	$C_{18}H_{22}O_2$	270.2943	Steroid	*Phoenix dactylifera*	8
9	6.85	279.4756	Linoleic acid	$C_{18}H_{32}O_2$	280.4829	Fatty acids	*S. serrulata*	9
10	3.85	283.3031	Oleic acid	$C_{18}H_{34}O_2$	282.2958	Fatty acids	*S. serrulata*	9
11	2.75	287.1167	Luteolin	$C_{15}H_{10}O_6$	286.1094	Flavone	*Plam; leaves seeds, fruits*	10
12	2.3	291.1486	Catechin	$C_{15}H_{14}O_6$	290.14141	Flavanol (hydroxyflavan)	Plam seeds fruits	4
13	3.7	301.1357	Chryseriol	$C_{16}H_{12}O_6$	300.1266	Flavone	Plam leaves fruits	11
14	3.18	305.1692	Taxifolin	$C_{15}H_{12}O_7$	304.1619	Flavonols	Plam leaves	11
15	3.77	331.1500	Tricin	$C_{17}H_{14}O_7$	330.1449	*O*-methylated flavone	*Sabal* palm seeds	1
16	4.74	332.3094	Helasaoussazine	$C_{19}H_{13}N_4O_2$	333.3167	Alkaloid	*P. canariensis* palm	12
17	2.48	337.1639	3-*O*-Caffeoylshikimic acid	$C_{16}H_{16}O_8$	336.1566	Phenolic acids	*Phoenix dactylifera*	13
18	3.18	411.3770	Squalene	$C_{30}H_{50}$	410.3675	Triterpenes	*S. blackburniana*	14
19	4.18	413.3919	Stigmasterol	$C_{30}H_{52}$	412.3846	Sterols	*Sabal* palm seeds	7

20	3.44	413.3925	*Δ*7 –Avenesterol	$C_{29}H_{48}O$	412.3853	Sterols	*P. canariensis* palm	15
21	5.57	415.4092	Diosgenin	$C_{27}H_{42}O_3$	414.4019	Steroidal saponin	*Sabal* palm seeds.	7
22	5.59	415.4083	β-Sitosterol	$C_{29}H_{50}O$	414.4011	Sterol	*S. causiarum*	16
23	6.64	427.3924	Cycloartenol	$C_{30}H_{50}O$	426.3851	Pentacyclic Triterpenoid	*S. serrulata*	17
24	2.78	433.2045	Isovitexin	$C_{21}H_{20}O_{10}$	432.1972	C-glucosyl flavone	*S. blackbuniana*.	18
25	2.54	449.2029	Kaempferol-3-glucoside	$C_{21}H_{20}O_{11}$	448.1957	O-glycosyl flavone.	*S. serrulata*	19
26	2.66	449.2024	Orientin	$C_{21}H_{20}O_{11}$	448.1951	C-glycosyl flavone .	*S. blackbumiana*	18
27	2.50	449.2030	Luteolin 7-glucoside	$C_{21}H_{20}O_{11}$	448.1957	Glycosyloxy flavone	*Phoenix loureirii.*	20
28	2.69	465.2020	Isoquercetin	$C_{21}H_{20}O_{12}$	464.1947	Flavonol	*S. serrulata*	19
29	6.03	469.5029	Sablacaurin B	$C_{32}H_{52}O_2$	468.4954	19- Triterpenoid; nor-3,4-seco-Lanostane-Type	*S blackburniana*	14
30	5.7	459.4498	25-Hydroperoxyycloart-23-ene- 3 ol	$C_{30}H_{50}O_3$	458.4425	Triterpenoid	*Xanthosoma robustum* (Araceae*)*	21
31	5.9	481.4135	Brassinolide	$C_{28}H_{48}O_6$	480.4062	Steroid	*Phoenix dactylifera*	8
32	3.04	493.2376	Tricin 7-*O*- glucoside	$C_{27}H_{30}O_{14}$	492.2303	Flavonoids	*Phoenix Rupicola.*	20
33	6.15	569.521	β- Carotene diepoxide.	$C_{40}H_{56}O_2$	568.5137	Tetraterpene; a oxygenated carotenoid.	*Ipomoea batatas Lam*	22
34	8.72	579.2576	Rhoifolin (Apigenin 7-O-neohesperidoside).	$C_{27}H_{30}O_{14}$	578.2504	*O*-Glycosyl flavone	*S. serrulata*	19
35	3.05	625.2084	Isorhamnetin-3-O-rutinoside	$C_{28}H_{32}O_{16}$	624.2012	Flavonols	Plam leaves	23
36	3.02	747.1913	Shimobashiric acid D.	$C_{38}H_{36}O_{16}$	748.1985483	Neolignan.	*Keiskea japonica*	24
37	6.53	839.1739	Tetra-*O*-Caffeoylquinic acid	$C_{43}H_{36}O_{18}$	840.1812	Polyphenol	*Pluchea symphytifolia*	25
38	3.47	869.6766	Dioscin	$C_{45}H_{72}O_{16}$	868.5971	Steroidal saponin	*Phoenix dactylifera*	23
39	3.02	897.0992	Gallocatechin-(4alpha—8)]2-catechin	$C_{45}H_{38}O_{20}$	898.1065	Condensed tannins; Polyphenol (Flavonoids; flavan-3-ols)	*Hordeum vulgare*	26, 27

40	6.025	999.4723	Bridgeside C1	$C_{49}H_{74}O_{21}$	998.465	Triterpenoid saponins	*Echinopsis macrogona*	**28**
41	3.10	1048.7724	Causiaroside II	$C_{51}H_{83}O_{22}$	1047.7651	Steroidal saponin	*S. causiarum*	**20**

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