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Research Article

Research on External Signs and Chemical Composition of Medicinal Plant Raw Material -Leaves of *Ficus Elastica*

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ABSTRACT

Ficus elastica is a species of the plant in the genus Ficus, from the family Moraceae. *Ficus elastica*, which is the object of our study, has been used for many years in phytodesign, however in terms of medicine, it remains a poorly studied plant. While studying the external signs and chemical composition of medicinal plant raw materials of leaves *Ficus elastica*, chromato-mass spectrometry was used. During the process of studying, some diagnostic signs of *Ficus elastica* were identified. Chromato-mass spectrometry was used to identify 68 compounds. The maximum amount was accounted for *б-D-Glucopyranoside, methyl* (28,99%), *Phytol* (9,90%), 2-Hydroxy-3-methylsuccinic acid (6,93%), Lanosterol (6,13%), Hydroquinone (5,55%), 9,12,15-Octadecatrienoic acid, ethyl ester, (Z,Z,Z)- (4,86%), Lup-20(29)-en-3-one (4,17%), 1,2-Benzenediol (3,33%), Lupeol (2,95%), 16-Allopregnene-3б,9а-diol-20-one 3-O-acetate (2,77%), 9-Octadecenamide, (Z)- (2,67%), 9,12,15-Octadecatrienoic acid, (Z,Z,Z)- (2,05%), ɜ-Sitosterol (1,84%), а-d-Lyxofuranoside, methyl (1,57%), Dasycarpidan-1-methanol, acetate (ester) (1,52%), n-Hexadecanoic acid (1,45%), Hexadecanoic acid, ethyl ester (1,33%), 1,8-Dioxacyclohexadecane-2,10-dione, 5,6:12,13-diepoxy-8,16-dimethyl- (1,15%), *Vitamin E* (0,64%). Identified morphological features of the leaves of *Ficus elastica* can be used in diagnosis of this species and may help to develop indicators of authenticity for promising medicinal leaves. As mentioned earlier, by means of chromato-mass spectrometry were identified 68 compounds, and the relative percentage of identified compounds was determined using a simple normalization method.

Key words: *Ficus elastic,* Chromato-mass spectrometry, б-D-Glucopyranoside, Methyl, Phytol, Vitamin E.

INTRODUCTION

Ficus elastica is a species of the plant in the genus Ficus, family Moraceae. This species, out of all the species included in the genus Ficus, is the most popular among gardeners. *Ficus elastica*, which is the object of our research, has been used for many years in phytodesign,[4,9,12,18,20] its role in urban life and in nature is studied,[13,16,17,19] there are studies on the stress generation in aerial roots of the plant,[1] but in terms of medicine it remains a poorly studied plant.

The *Ficus elastica* is a natural source of rubber. However, nowadays some scientists, for example, Nowiki M. with co-authors and Yukino Inoue with co-authors, have proved that there are alternative sources of natural rubber.[21,29]

In natural conditions *Ficus elastica* reaches a height of about 30 m. The height of the indoor Ficus rarely exceeds 200 centimeters. However, it is not a slow-growing plant, for in 1 year under favorable conditions the bush can add in growth from 0.4 to 0.45 m (Figure 1). Its leaf anatomy and plant's morphology have been studied thoroughly in botany.[2,8,11,14]

Kumar and co-authors have studied methods of alleviation of chromium-induced phytotoxicity in *Ficus elastica*.[15]

A number of scientists carried out a research on the chemical composition of the Ficus extracts, and so, a lot of phenolic compounds[3,27] and alcohols[24] were found. Silver D. J., Cornish K. A. studied composition and content of proteins.[23]

Figure 1A: Appearance of *Ficus elastica* is at home. (at column width)

Anti-inflammatory and antioxidant activity,[6,22] anti-preeclampsia potential,[7] anthelmintic activities,[10] anticoagulant potentials,[3] antimalarial, antitrypanosomal and cytotoxicity activity,[26] antimicrobial activity[25] of *Ficus elastica* were studied in detail. Currently, the search for new bioactive metabolites in *Ficus elastica* continues[5].

Innovative scientific investigations of this plant are constantly conducted.[30]

Ficus elastica is insufficiently characterized as a source of medicinal plant raw materials. Therefore, study of its raw materials for the purpose of standardization is relevant.

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MATERIALS AND METHODS

The component composition of the samples was determined by means of gas chromatography-mass- spectrometry. The research was carried out on the Agilent Technologies equipment, consisting of: 1) a 7890 gas chromatograph (HP-5 column, 50 m × 320 × 1.05 mkm) and 2) a 5975 C mass selective detector with a quadrupole mass analyzer. Temperature chromatography program was: at 40 °C-isotherm 2 min; then programmable heating up to 250 °C at the speed of 5 °C/min; at 250 °C-isotherm 15 min; then heating up to 320 °C at the speed of 25 °C / min; at 320 °C-isotherm 5 min. Injector separates the flow 1:50. The injector's temperature is 250 °C. Interface temperature is 280 °C. Eluent gas was helium; flow rate was 1 ml/min. Chromatogram of samples was conducted by the total ion current. Conditions for mass-spectrometric analysis were: the energy of ionizing electrons is 70 eV; registration of mass spectra of positive ions is in the range (m/z) from 20 to 450 at the speed of 2.5 scans/sec. Software used - ChemStation E 02.00. The component composition identification (qualitative analysis) was completed with the help of the library of NIST-05 full mass-spectra and corresponding values of chromatographic linear retention indices. Relative content (%) of the mixture components (quantitative analysis) was calculated from the ratio of the areas of chromatographic peaks (by simple normalization).

RESULTS AND DISCUSSION

External signs

Whole raw materials. *Ficus elastica* is characterized by a whole, rarely broken, simple, elliptical shape with a pointed tip, approximately 15 cm long and 10 cm wide leaves. There is a petiole 3 cm length. Leaf venation is pinnate, and the edge of the leaf is smooth. The leaf is not pubescent. The upper side of the leaf plate is dark green, whereas the lower side is green. Its smell is faint. The taste is bitter. Specific features: leaf is leathery and juicy (Figure 2A).

Ground raw materials. Pieces of leaves pass through a sieve with holes 7 mm in diameter. The color of the leaf pieces is green. The smell is faint. The taste is bitter (Figure 2B).

Qualitative reaction

A few drops of NaOH and $NH_4Fe(SO_4)_2{\cdot}12H_2O$ were placed on the lower part of the leaf (Figure 3A). During the reaction, after a few minutes, at the site of NaOH application the leaf turned brown and, afterwards, a $NH_4Fe(SO_4)_2{\cdot}12H_2O$ application to the same site did not lead to any visible reaction (Figure 3B).

The alcohol extraction from the leaves of *Ficus elastica* (Figure 4) was analyzed by chromatography-mass-spectrometry. As a result, 68 compounds were identified (Table 1).

The compounds found in the sample can be divided into three groups:

Major compounds, whose content exceeds 3%: 1,2-Benzenediol; Hydroquinone; 6-D-Glucopyranoside, methyl; 2-Hydroxy-3-methylsuccinic acid; Phytol; 9,12,15-Octadecatrienoic acid, ethyl ester, (Z,Z,Z)-; Lup-20(29)-en-3-one; Lanosterol.

Minor compounds whose content is less than 1%: 3-Carbamyl-(14H) (E)-nor-eburnamenine (3a,15a); Ethaneperoxoic acid, 1-cyano-1,4-diphenylpentyl ester; Pentanamide, 2-(dimethylamino)-N-[7-(hydroxyphenylmethyl)-3-(1-methylethyl)-5,8-dioxo-2-oxa-6,9-diazabicyclo[10.2.2]hexadeca-12,14,15-trien-4-yl]-3-methyl-; 1,2-Ethanediol, monoacetate; 2(3H)-Furanone, 5-ethoxydihydro-; 3-Penten-2-one,3-ethyl-4-methyl-;Phenol,2-methoxy-;Cyclopentanol; 9,10-Anthracenedione, 1,8-diethoxy-; Pterin-6-carboxylic acid; 2(3H)-Furanone, 5-acetyldihydro-; Imidazole, 2-[[(6-carboxy) propionyl]amino]-; 4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-

Figure 2A: Fresh leave of *F. Elastica*. (at column width)

Figure 2B: Ground raw materials of *F. Elastica*. (at column width)

Figure 3A: The reaction with NaOH and $NH_4Fe(SO_4)_2{\cdot}12H_2O$. (at column width)

Figure 3B: After the reaction with NaOH and $NH_4Fe(SO_4)_2 \cdot 12H_2O$. (at column width)

Figure 4A: Alcohol extraction of *F. Elastica*. (at column width)

6-methyl-; 2-Chloroethyl benzoate; Benzofuran, 2,3-dihydro-; Dammar-22-en-3-ol, 20,24-epoxy-24-methyl-, acetate, (36,24S)-; 1-Aminocyclopentane hydroxamic acid; 4,7-Methanoisobenzofuran-1(3H)-one, 3a,4,7,7a-tetrahydro-3-hydroxy-; Cyclopentanone, 2-(2-octenyl)-; 2-Methoxy-4-vinylphenol; 2-Methyl-6-(1-propenyl) piperidine, [2R-[2a, 6a(E)]-; d-Glucitol, 6-desoxy-6-thio-n-octyl-2,5-anhydro-; 1,2,3-Benzenetriol; Vanillin; 1-Dodecanol; D-Allose; 4-Aminoresorcinol; Propan-2-one, 1-(4-isopropoxy-3-methoxyphenyl)-; 4-Butyl-indan-5-ol; Megastigmatrienone; 4-((1E)-3-Hydroxy-1-propenyl)-2-methoxyphenol; Galacto-heptulose; Acetic acid, 2-(2,2,6-trimethyl-7-oxa-bicyclo[4.1.0]hept-1-yl)-propenyl ester; 2-Pentadecanone, 6,10,14-trimethyl-; 7H-Furo[3,2-g][1]benzopyran-7-one; 1-Tetradecanol; 4,4,6a,6b,8a,11,11,14b-Octamethyl-1,4,4a,5,6,6a,6b,7,8,8a,9,10,11,12,12a,14,14a,14b-octadecahydro-2H-picen-3-one; 12-Oleanen-3-yl acetate, (3a)-; Androstane-11,17-dione, 3-[(trimethylsilyl)oxy]-, 17-[O-(phenylmethyl)oxime], (3a,5a)-; D:B-Friedo-B':A'-neogammacer-5-en-3-ol, (36)-; Vitamin E; Hexadecanoic acid, 2-hydroxy-1-(hydroxymethyl)ethyl ester; Phenol, 2,4-bis(1-methyl-1-phenylethyl)-; 1,2-Benzenedicarboxylic acid, mono(2-ethylhexyl) ester; 9,12-Octadecadienoic acid (Z,Z)-, 2-hydroxy-1-(hydroxymethyl)ethyl ester; 9,12,15-Octadecatrienoic acid, ethyl ester, (Z,Z,Z)-; 9-Octadecenamide, (Z)-; Spirost-8-en-11-one, 3-hydroxy-, (36,5a,146,206,226,25R)-; Carbamic acid, N-[10,11-dihydro-5-(2-methylamino-1-oxoethyl)-3-5H-dibenzo[b,f]azepinyl]-, ethyl ester.

Compounds whose content ranges from 1% to 3% are: a-d-Lyxofuranoside, methyl; n-Hexadecanoic acid; Hexadecanoic acid, ethyl ester; 1,8-Dioxacyclohexadecane-2,10-dione, 5,6:12,13-diepoxy-8,16-dimethyl-; 9,12,15-Octadecatrienoic acid, (Z,Z,Z)-; Dasycarpidan-1-methanol, acetate (ester); 9-Octadecenamide, (Z)-; ɜ-Sitosterol; Lupeol; 16-Allopregnene-36,9a-diol-20-one 3-O-acetate.

In the total sample saponins were detected in quantity of 20%, consisting of: Lanosterol (31%) and Lup-20(29)-en-3-one (21%). The content of Dammar-22-en-3-ol, 20,24-epoxy-24-methyl-, acetate, (36,24S)-, Androstane-11,17-dione, 3-[(trimethylsilyl) oxy], 17-[O-(phenylmethyl)oxime],(3a,5a)-, Spirost-8-en-11-one, 3-hydroxy-, (36, 5a, 146, 206, 226, 25R) does not exceed 1 %. Saponins are assumed to be participating in lowering cholesterol, stimulation of luteinizing hormone release, leading to abortifacient properties, immunomodulatory potential, cytostatic and cytotoxic effects, etc.[28]

It was found that the total content of phenols was 10%. The maximum content of phenols was accounted for Hydroquinone (55%), 1, 2-Benzenediol (33%). Minor components are Phenol, 2,4-bis(1-methyl-1-phenylethyl)-(1%), 4-((1E)-3-Hydroxy-1-propenyl)-2-methoxyphenol(1%), 4-Butyl-indan-5-ol(1%), Vanillin(1%), Phenol, 2-methoxy-(1%), 1,2,3-Benzenetriol(1%), Propan-2-one, 1-(4-isopropoxy-3-methoxyphenyl)-(1%). Hydroquinone is a pharmacologically active compound with disinfectant, antimicrobial, and diuretic properties.

It was found that the total carbohydrate content is 31%. A large number of sugars, apparently, indicates the content of glycosides. The maximum amount identified is applied to 6-D-Glucopyranoside, methyl (93%). The minimum amount detected turns out to be d-Glucitol, 6-desoxy-6-thio-n-octyl-2,5-anhydro - (1%).

The composition of Ficus elastica contains 19% organic acids and esters. Most of all: 2-Hydroxy-3-methylsuccinic acid (36%), 9, 12, 15-Octadecatrienoic acid, ethyl ester, (Z,Z, Z)-(26%). Minor components are Ethaneperoxoic acid, 1-cyano-1,4-diphenylpentyl ester (1%), Pterin-6-carboxylic acid (1%), Imidazole, 2-[[(6-carboxy) propionyl]amino]-(1%), Acetic acid, 2-(2,2,6-trimethyl-7-oxa-bicyclo[4.1.0]hept-1-yl)-propenyl ester (1%), 1,2-Benzenedicarboxylic acid, mono(2-ethylhexyl) ester (1%), 9,12-Octadecadienoic acid (Z,Z)-, 2-hydroxy-1-(hydroxymethyl)ethyl ester (1%), Carbamic acid, N-[10,11-dihydro-5-(2-methylamino-1-oxoethyl)-3-5H-dibenzo[b,f] azepinyl]-, ethyl ester (1%).

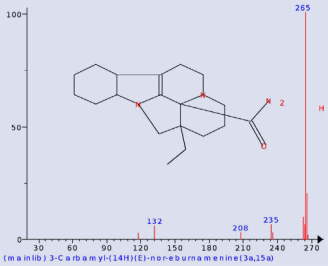
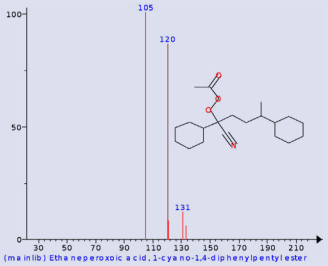
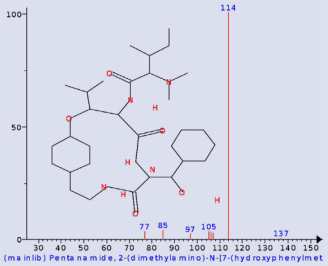
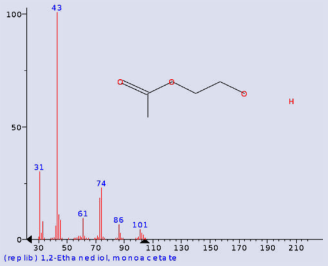
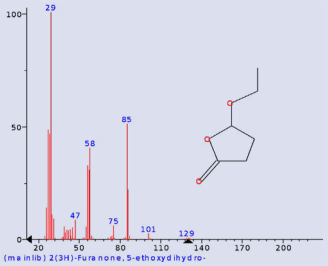
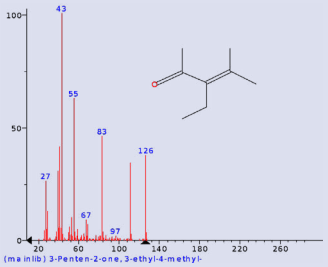
Ficus elastica contains 11% alcohol. The maximum content of alcohol is accounted for Phytol (87%). The minimum content of alcohol is accounted for 4, 7-Methanoisobenzofuran-1(3H)-one, 3a, 4, 7, 7a-tetrahydro-3-hydroxy-(1%), 1-Tetradecanol (1%), 1, 2-Ethanediol, monoacetate (1%), 4H-Pyran-4-one, 2, 3-dihydro-3, 5-dihydroxy-6-methyl-(1%).

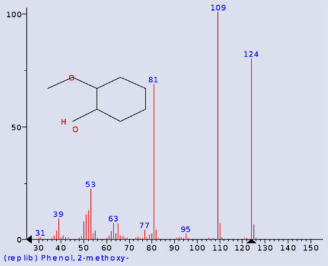
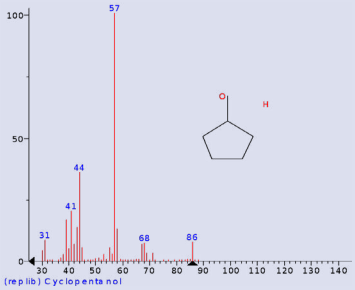
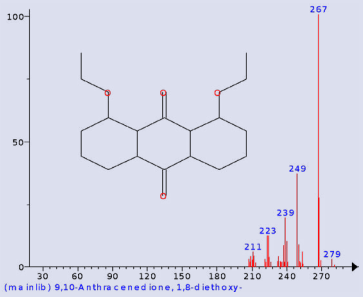
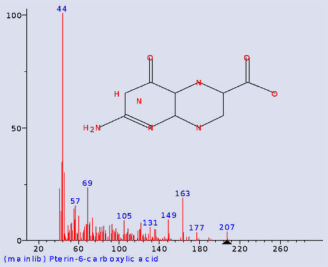
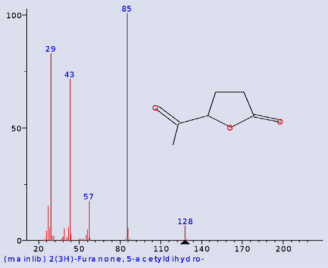
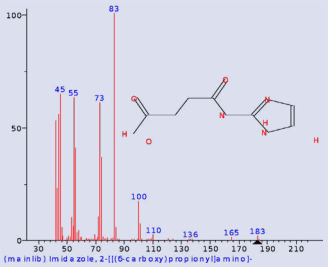
CONCLUSION

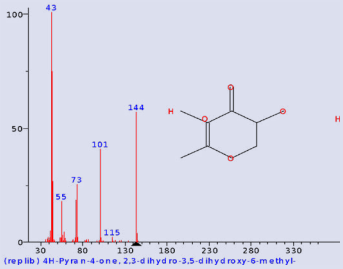
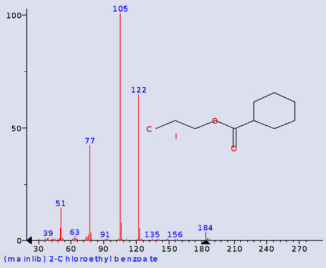
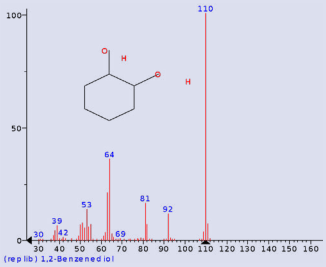
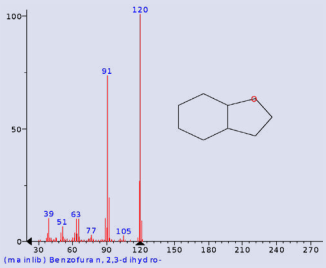
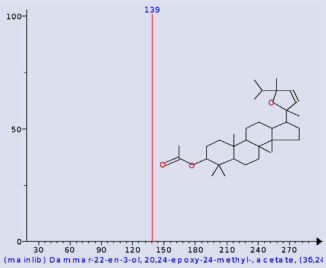
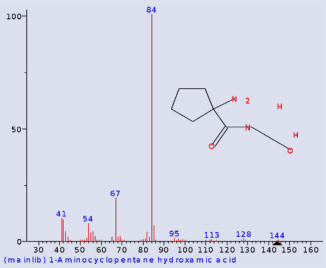
The identified morphological features of the leaves of *Ficus elastica* could be used for identification this species and develop indicators of authenticity for promising medicinal raw materials of leaves.

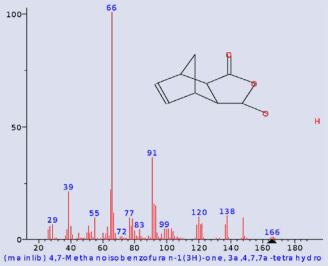
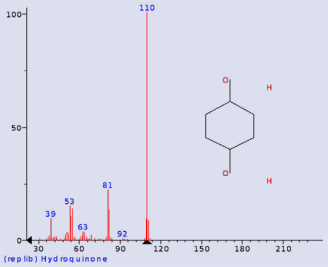
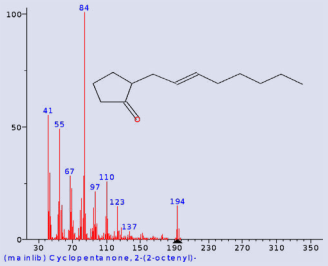
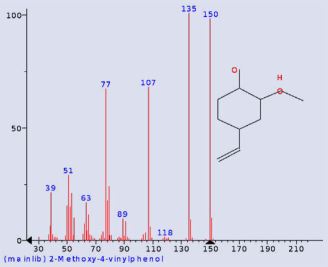
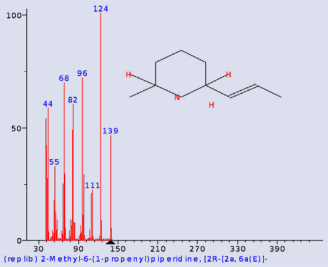
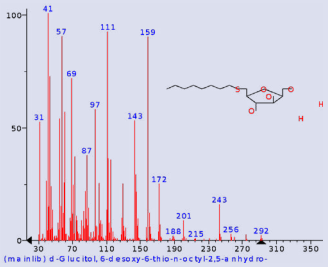
68 compounds were identified by chromatography-mass spectrometry. The maximum content was registrated for: 6-D-Glucopyranoside, methyl (28,99%), Phytol (9,90%), 2-Hydroxy-3-methylsuccinic acid (6,93%), Lanosterol (6,13%), Hydroquinone (5,55%), 9,12,15-Octadecatrienoic acid, ethyl ester, (Z,Z,Z)- (4,86%), Lup-20(29)-en-3-one (4,17%), 1,2-Benzenediol (3,33%), Lupeol (2,95%), 16-Allopregnene-36,9a-diol-20-one 3-O-acetate (2,77%), 9-Octadecenamide, (Z)- (2,67%),

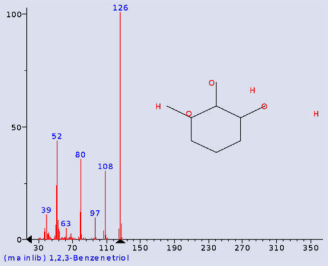
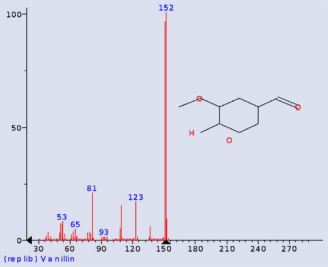
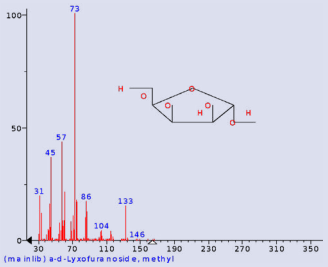
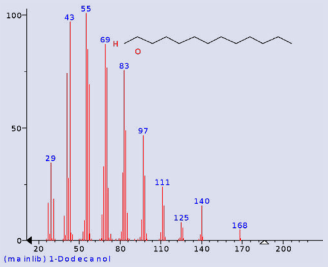
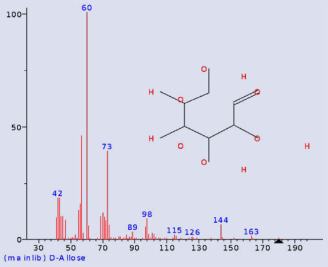
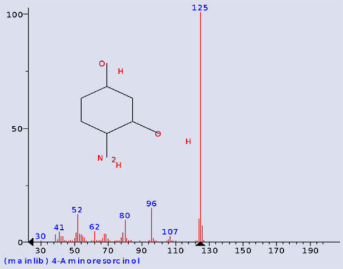
Table 1: The compounds were identified in alcohol extraction from the *Ficus elastica*.

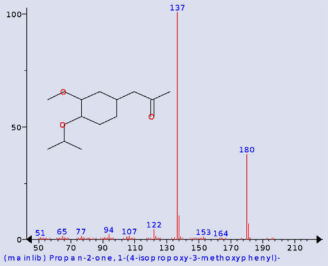
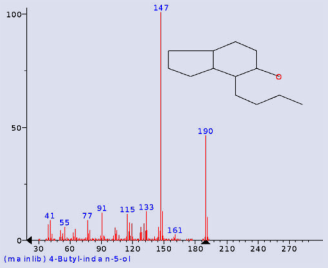
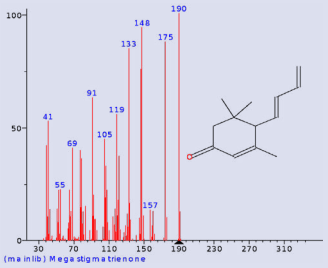
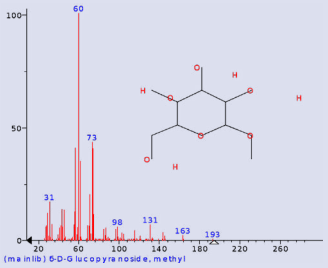
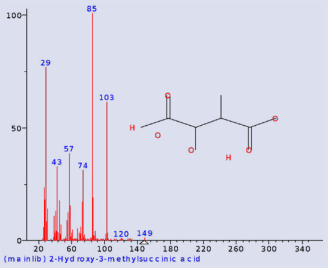
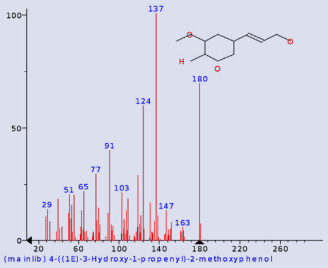
№	Name	Ret Time	Mass spectrum	Area	%
1	3-Carbamyl-(14H)(E)-nor-eburnamenine(3a,15a)	7.284		111282	0,1058
2	Ethaneperoxoic acid, 1-cyano-1,4-diphenylpentyl ester	7.647		130297	0,1239
3	Pentanamide, 2-(dimethylamino)-N-[7-(hydroxyphenylmethyl)-3-(1-methylethyl)-5,8-dioxo-2-oxa-6,9-diazabicyclo[10.2.2] hexadeca-12,14,15-trien-4-yl]-3-methyl-	7.820		214294	0,2037
4	1,2-Ethanediol, monoacetate	8.075		81098	0,0771
5	2(3H)-Furanone, 5-ethoxydihydro-	8.361		103824	0,0987
6	3-Penten-2-one, 3-ethyl-4-methyl-	8.432		139434	0,1325

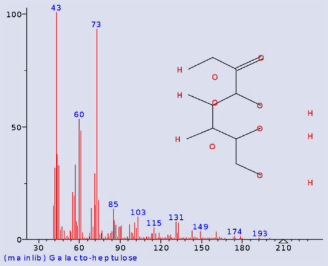
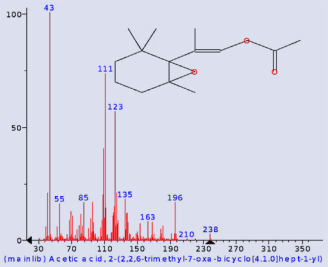
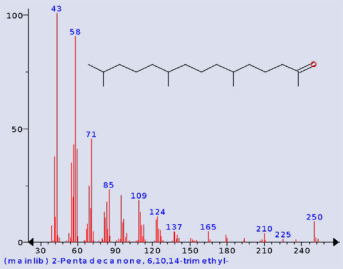
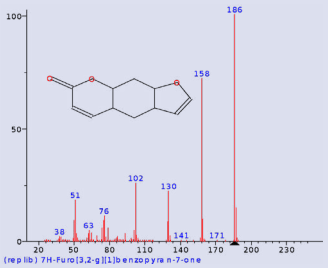
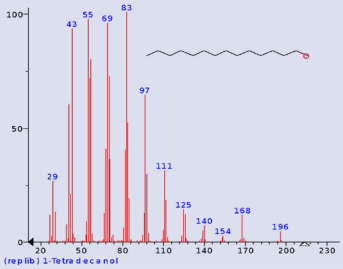
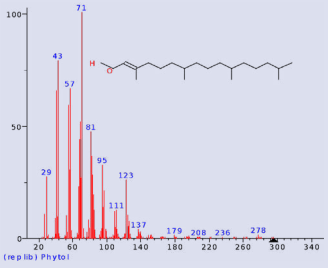
7	Phenol, 2-methoxy-	8.735		89593	0,0851
8	Cyclopentanol	8.813		245399	0,2333
9	9,10-Anthracenedione, 1,8-diethoxy-	8.997		36905	0,0351
10	Pterin-6-carboxylic acid	9.110		97725	0,0929
11	2(3H)-Furanone, 5-acetyldihydro-	9.324		39675	0,0377
12	Imidazole, 2-[[(6-carboxy)propionyl]amino]-	9.490		112916	0,1073

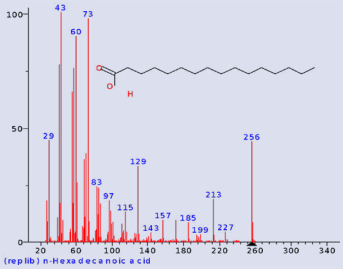
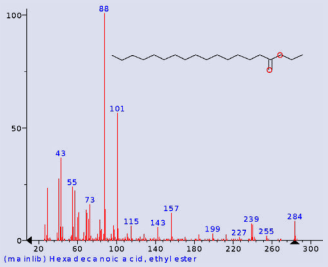
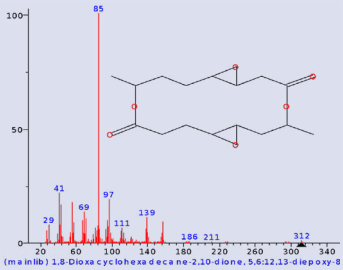
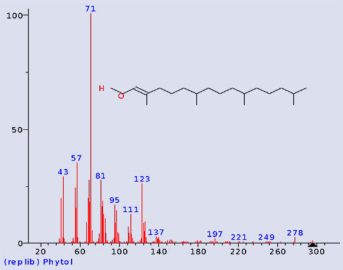
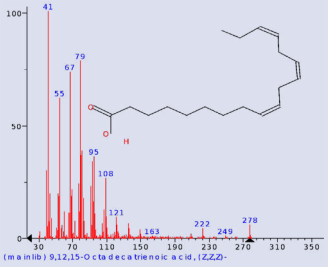
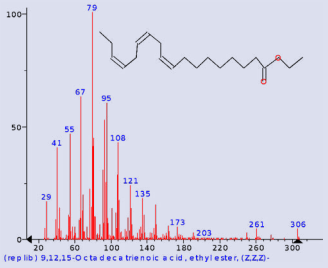
13	4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl-	9.568		170388	0,1620
14	2-Chloroethyl benzoate	9.758		160886	0,1529
15	1,2-Benzenediol	10.323		3500909	3,3281
16	Benzofuran, 2,3-dihydro-	10.632		73788	0,0701
17	Dammar-22-en-3-ol, 20,24-epoxy-24-methyl-, acetate, (3ϐ,24S)-	10.864		98834	0,0939
18	1-Aminocyclopentane hydroxamic acid	11.007		106881	0,1016

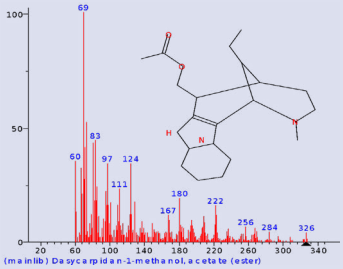
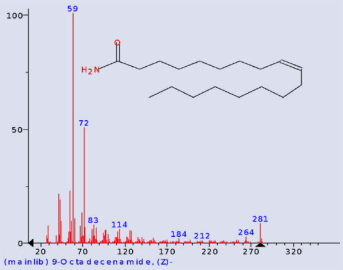
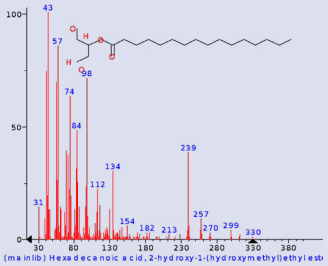
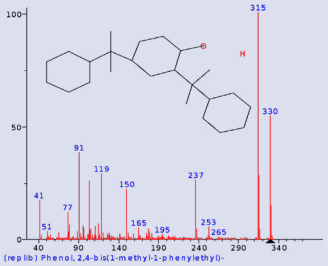
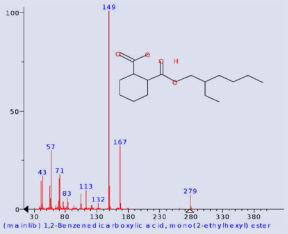
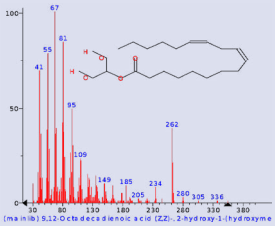
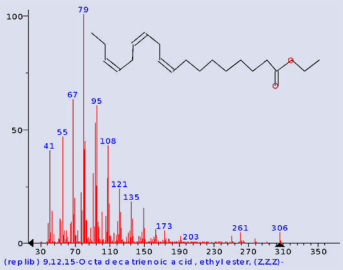
19	4,7-Methanoisobenzofuran-1(3H)-one, 3a,4,7,7a-tetrahydro-3-hydroxy-	11.233		144660	0,1375
20	Hydroquinone	11.375		5841122	5,5529
21	Cyclopentanone, 2-(2-octenyl)-	11.797		282239	0,2683
22	2-Methoxy-4-vinylphenol	12.083		408390	0,3882
23	2-Methyl-6-(1-propenyl)piperidine, [2R-[2a, 6a(E)]-	12.368		262174	0,2492
24	d-Glucitol, 6-desoxy-6-thio-n-octyl-2,5-anhydro-	12.719		71226	0,0677

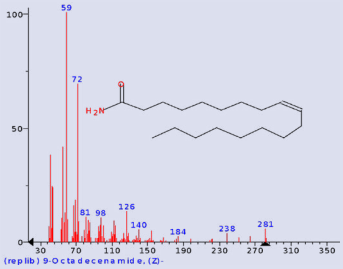
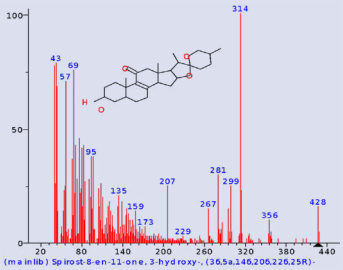
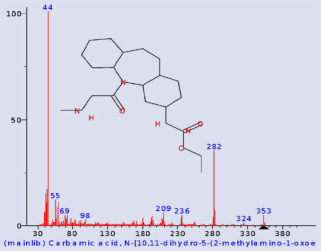
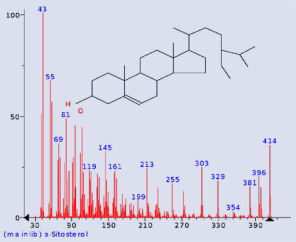
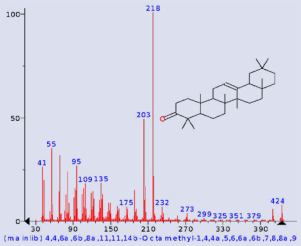
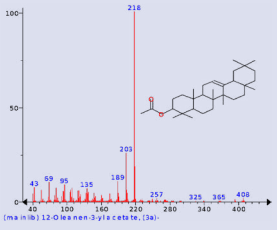
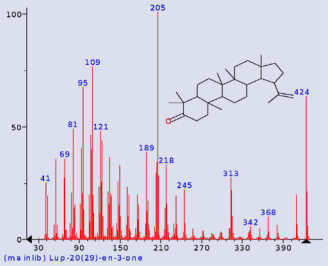
25	1,2,3-Benzenetriol	12.814		145200	0,1380
26	Vanillin	13.177		70282	0,0668
27	a-d-Lyxofuranoside, methyl	13.480		1652334	1,5708
28	1-Dodecanol	13.926		592229	0,5630
29	D-Allose	14.009		199414	0,1896
30	4-Aminoresorcinol	14.122		245443	0,2333

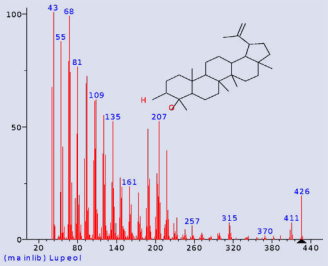
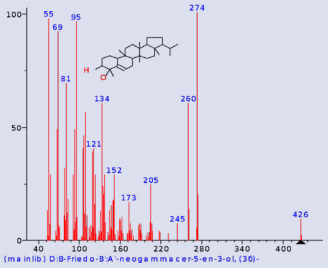
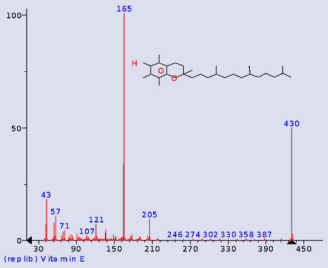
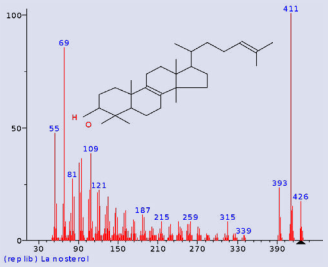
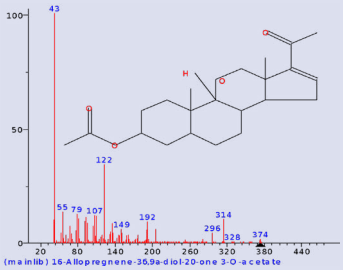
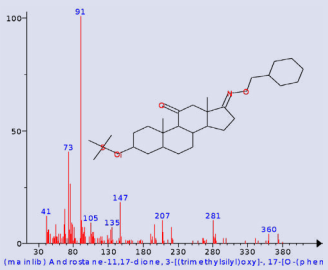
31	Propan-2-one, 1-(4-isopropoxy-3-methoxyphenyl)-	14.538		121007	0,1150
32	4-Butyl-indan-5-ol	14.931		49547	0,0471
33	Megastigmatrienone	15.086		85664	0,0814
34	6-D-Glucopyranoside, methyl	15.520		30494418	28,9896
35	2-Hydroxy-3-methylsuccinic acid	15.728		7284584	6,9251
36	4-((1E)-3-Hydroxy-1-propenyl)-2-methoxyphenol	16.406		62383	0,0593

37	Galacto-heptulose	16.608		551361	0,5241
38	Acetic acid, 2-(2,2,6-trimethyl-7-oxa-bicyclo[4.1.0]hept-1-yl)-propenyl ester	16.709		181290	0,1723
39	2-Pentadecanone, 6,10,14-trimethyl-	17.149		322317	0,3064
40	7H-Furo[3,2-g][1]benzopyran-7-one	17.208		181496	0,1725
41	1-Tetradecanol	17.393		102788	0,0977
42	Phytol	17.708		1366965	1,2995

43	n-Hexadecanoic acid	17.934		1525011	1,4497
44	Hexadecanoic acid, ethyl ester	18.166		1402745	1,3335
45	1,8-Dioxacyclohexadecane-2,10-dione, 5,6:12,13-diepoxy-8,16-dimethyl-	18.802		1213261	1,1534
46	Phytol	18.968		9050887	8,6042
47	9,12,15-Octadecatrienoic acid, (Z,Z,Z)-	19.123		2159757	2,0532
48	9,12,15-Octadecatrienoic acid, ethyl ester, (Z,Z,Z)-	19.313		5115706	4,8632

49	Dasycarpidan-1-methanol, acetate (ester)	19.860		1601281	1,5223
50	9-Octadecenamide, (Z)-	20.461		2809559	2,6709
51	Hexadecanoic acid, 2-hydroxy-1-(hydroxymethyl)ethyl ester	21.281		992172	0,9432
52	Phenol, 2,4-bis(1-methyl-1-phenylethyl)-	21.477		73233	0,0696
53	1,2-Benzenedicarboxylic acid, mono(2-ethylhexyl) ester	21.567		164485	0,1564
54	9,12-Octadecadienoic acid (Z,Z)-, 2-hydroxy-1-(hydroxymethyl)ethyl ester	22.548		107049	0,1018
55	9,12,15-Octadecatrienoic acid, ethyl ester, (Z,Z,Z)-	22.625		644041	0,6122

56	9-Octadecenamide, (Z)-	23.297		503011	0,4782
57	Spirost-8-en-11-one, 3-hydroxy-, (36,5a,146,206,226,25R)-	24.141		39302	0,0374
58	Carbamic acid, N-[10,11-dihydro-5-(2-methylamino-1-oxoethyl)-3-5H-dibenzo[b,f]azepinyl]-, ethyl ester	27.239		46447	0,0441
59	ɜ-Sitosterol	32.174		1930893	1,8356
60	4,4,6a,6b,8a,11,11,14b-Octamethyl-1,4,4a,5,6,6a,6b,7,8,8a,9,10,11,12,12a,14,14a,14b-octadecahydro-2H-picen-3-one	32.519		645803	0,6139
61	12-Oleanen-3-yl acetate, (3a)-	33.120		485616	0,4616
62	Lup-20(29)-en-3-one	33.726		4387946	4,1714

63	Lupeol	34.368		3106721	2,9534
64	D:B-Friedo-B':A'-neogammacer-5-en-3-ol, (36)-	34.689		761097	0,7235
65	Vitamin E	35.617		672950	0,6397
66	Lanosterol	36.657		6447608	6,1294
67	16-Allopregnene-36,9a-diol-20-one 3-O-acetate	37.668		2918766	2,7747
68	Androstane-11,17-dione, 3-[(trimethylsilyl)oxy]-, 17-[O-(phenylmethyl)oxime], (3a,5a)-	38.554		152932	0,1465

9,12,15-Octadecatrienoic acid, (Z,Z,Z)- (2,05%), ɜ-Sitosterol (1,84%), a-d-Lyxofuranoside, methyl (1,57%), Dasycarpidan-1-methanol, acetate (ester) (1,52%), n-Hexadecanoic acid (1,45%), Hexadecanoic acid, ethyl ester (1,33%), 1,8-Dioxacyclohexadecane-2,10-dione, 5,6:12,13-diepoxy-8,16-dimethyl- (1,15%).

The relative percentage of identified compounds was determined using a simple normalization method.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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