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'The Gc Ms Analysis of Ethyl Acetate Extract of One Herbal Plant, '*Abrusprecatorius*linn.

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Abstract

The present study deals with the GC MS pattern of the ethyl acetate leaf extract of one plant, *Abrusprecatoriuos*LINN. The plant, although known to be poisonous, has many ethno-pharmacological roles. This plant was collected from nearby hills of Chengalpattu, Tamilnadu. The ethyl acetate extract of the leaves of the plant was subjected to GC MS study following standard protocols. I was observed that some very important molecules such as 7-Octadecyne, 2-methyl-, Myo-Inositol, 4-C-methyl-, 3-Chloropropionic acid, tridec-2-ynyl ester, Squalene, dl-.alpha.-Tocopherol, Stigmasterol, Ursodeoxycholic acid, cis-13,16-Docasadienoic acid, which have medicinal roles supporting this plants role as a medicine in ethnopharmacology. Further work in this regard is going on.

Key words

GC MS, Ethyl acetate, 7-Octadecyne, 2-methyl-, Myo-Inositol, 4-C-methyl-, 3-Chloropropionic acid, tridec-2-ynyl ester, Squalene, dl-.alpha. Tocopherol, Stigmasterol, Ursodeoxycholic acid, cis-13,16-Docasadienoic acid

INTRODUCTION

The plant *Abrusprecatorius*LINN although known to be poisonous, has many ethno-pharmacological roles as a traditional medicine. It is used totreat wounds caused by animal bite. The powder of dry seeds istaken for worm infestation and also as oral contraceptives. The plant contains one lectin, Abrin, which is highly toxic. This is however used as medicine for tuberculosis, bronchitis, whooping cough, asthma in South Africa, In Tanzanian traditional medicine it is used to treat epilepsy. The nephron-protective effect of the aqueous extracts of the aerial parts of this plant was reported by (Njugi, 2018).

There are some reports available on the medicinal role of *Abrusprecatorius*LINN.Bhakta and Das, 2020; Malik and Onkar, 2019; Attal*et al*, 2010 have reviewed the various medicinal uses of *Abrusprecatorius*. Bhatia *et al,* 2013 have evaluated the medicinal role of this plant.Dhalani*et al*, 2018 and Boggula*et al*, 2017 have studied the medicinal role of the seeds of this plant. Gnanavel*et al*, 2013; Palvai*et al*, 2014 and Alayande*et al*, 2017 have worked on the phytochemical, cytotoxic and antioxidant activity of the leaves of this plant. This report is in continuation of our work to establish the efficacy of the herbal plants, Ayurvedic and Sidhha medicines. (Priyadarshini*et al,* 2017; Jayakumari*et al*, 2017; Rao*et al,* 2018; Vijayalakshmi and Rao, 2019; Yuvaraj*et al*, 2019; Mutteve*et al,* 2019, Rao*et al*, 2019; Mutteve*et al,* 2020; Vijayalakshmi and Rao, 2020; Janaki*et al*, 2021).

MATERIALS AND METHODS

The plant **'***Abrusprecatorius*LINN'was collected from the nearby hills at Chengalpattu, Tamil Nadu. The plant was identified by a qualified botanist at Chennai. The ethyl acetate extract of the shade dried leaves were collected after 48 h of soaking. The extract was evaporated and the dried powder was used for GC-MS analysis by standard procedures.

GC-MS Procedure

Instrument: GC (Agilent: GC: (G3440A) 7890A. MS/MS: 7000 Triple Quad GCMS) was equipped with MS detector.

Sample Preparation

About 100 ml sample was dissolved in 1 ml of suitable solvents. The solution was stirred vigorously using vortex stirrer for 10 s. The clear extract was determined using GC for analysis.

GC-MS Protocol

Column DB5 MS (30 mm × 0.25 mm ID ×0.25 µm, composed of 5% phenyl 95% methylpolysiloxane), electron impact mode at 70 eV; helium (99.999%) was used as carrier gas at a constant flow of 1 ml/min injector temperature 280°C; auxilary temperature: 290°C ion-source temperature 280°C.

The oven temperature was programmed from 50°C (isothermal for 1.0 min), with an increase of 40°C/min, to 170°C C (isothermal for 4.0 min), then 10°C/min to 310°C (isothermal for 10 min) fragments from 45 to 450 Da. Total GC running time is 32.02 min. The compounds are identified by GC-MS Library (NIST and WILEY).

RESULTS AND DISCUSSION

The results of the GC-MS analysis of the whole plant ethyl acetate extract, along with the possible medicinal role of each molecule of**'***Abrusprecatorius*LINNextract are tabulated in Table 1. Figure 1 represents the GC-MS profile of ethyl acetate extract of the whole plant of **'***Abrusprecatorius*LINN. The identification of metabolites was accomplished by comparison of retention time and fragmentation pattern with mass spectra in the NIST spectral library stored in the computer software (version 1.10 beta, Shimadzu) of the GC-MS along with the possible pharmaceutical roles of each bio molecule as per Dr. Duke's Phytochemical and ethnobotanical data base (National Agriculture Library, USA) and others as shown in Table 1. From Table 1 it is clear that the molecules as shown in the GC MS profile such as 7-Octadecyne, 2-methyl-, Myo-Inositol, 4-C-methyl-, 3-Chloropropionic acid, tridec-2-ynyl ester, Squalene, dl-.alpha.-Tocopherol, Stigmasterol, Ursodeoxycholic acid, cis-13,16-Docasadienoic acid, which have medicinal roles supporting this plants role as a medicine in ethno-pharmacology.

CONCLUSION

From the above results it is clear that *Abruspracatoriuos* does have a lot of medicinal potential and further research on this plant will be very useful to medical science.

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Figure 1. Shows the GC MS profile graph of ethyl acetate extract of*Abrusprecatoriuos*

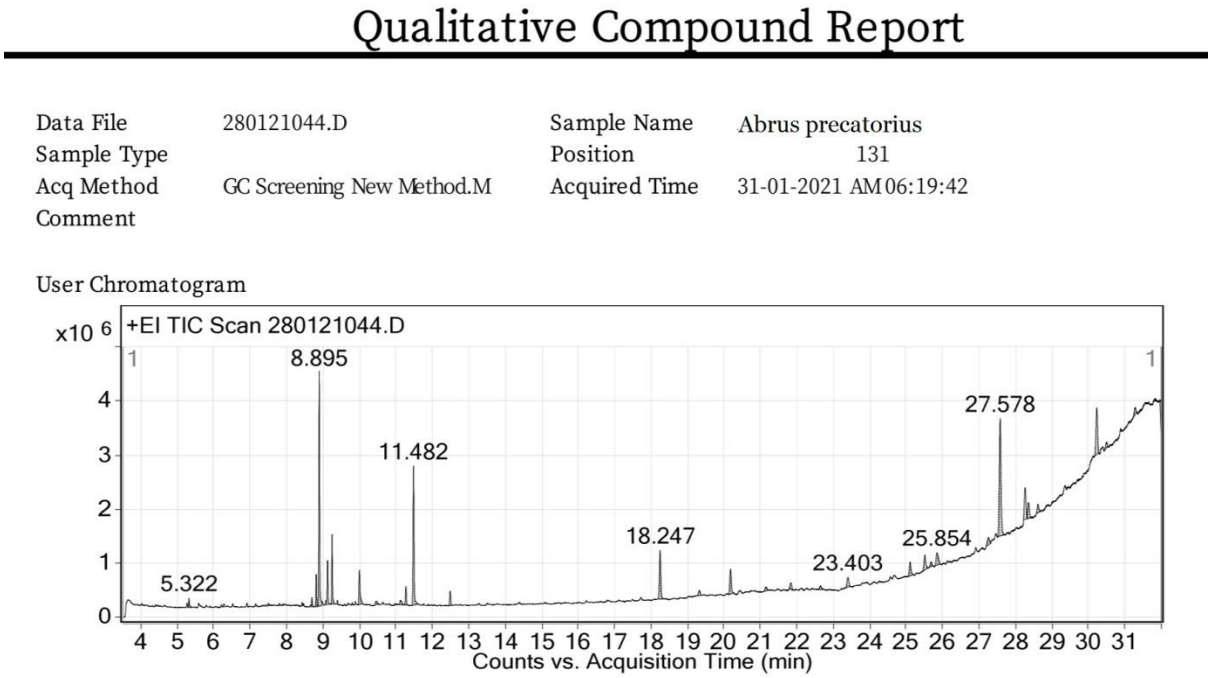

Table1. Indicates the retentions time, types of possible compound, molecular formula, molecular mass,
percentage peak area and the possible medicinal roles of each compound as shown in the GC MS profile of
Abrusprecatorious

Ret. Time	Compound	Mol. Formula	Mol. Mass	% Peak area	Possible Medicinal Role
8.81	Cyclohexanone, 3-(4-hydroxybutyl)-2-methyl-	C11H20O2	184.1	2.17	Not Known
8.90	1-Hexadecyne	C16H30	222.2	15.43	Not Known
9.12	9-Octadecyne	C18H34	250.3	2.98	Not Known
9.25	7-Octadecyne, 2-methyl-	C19H36	264.3	4.54	Catechol o methyl Transferase inhibitor, methyl donar, methyl guanidine inhibitor
10.00	Myo-Inositol, 4-C-methyl-	C7H14O6	194.1	3.51	Myo-neuro stimulant, myocardiotonic,myolytic, myo relaxant, Catechol-O-Methyl-Transfearse inhibitor, Methyl donor, Methyl guanidine inhibitor
11.27	3-Chloropropionic acid, tridec-2-ynyl ester	C16H27ClO2	286.2	1.53	Acidifier, Arachidonic acid Inhibitor, Increases Aromatic Amino acid decarboxylase

					activity, Inhibits production of uric acid, Urine acidifier
11.48	Cyclohexanol, 5-methyl-2-(1-methylethyl)-, (1.alpha.,2.beta.,5.alpha.)-(.+/-.)-	C10H20O	156.2	11.97	Not known
12.49	3,7,11,15-Tetramethyl-2-hexadecen-1-ol	C20H40O	296.3	1.36	Oligosaccharide provider
18.25	2-((Octan-2-yloxy)carbonyl)benzoic acid	C16H22O4	278.2	6.11	Acidifier, Arachidonic acid Inhibitor, Increases Aromatic Amino acid decarboxylase activity, Inhibits production of uric acid, Urine acidifier
20.18	Squalene	C30H50	410.4	3.31	Monooxygenase inhibitor, biochemical precursor of steroid synthesis, natural moisturizer, used in cosmetics
23.40	cis-1-Chloro-9-octadecene	C18H35Cl	286.2	1.45	Not known
25.11	Ethanol, 2-(9-octadecenyloxy)-, (Z)-	C20H40O2	312.3	1.98	Not known
25.51	4,5,6,7-Tetrahydro-benzo[c]thiophene-1-carboxylic acid allylamide	C12H15NOS	221.1	2.21	Not known
25.69	dl-.alpha.-Tocopherol	C29H50O2	430.4	0.66	Tocopherol synergist, 5 alpha reductase inhibitor, Alpha agonist, Alpha amylase inhibitor, Alpha glucosidase inhibitor, HIF-1 alpha inhibitor, Ikappa B-alpha phosphorylation inhibitor, Increase alpha mannosidase activity, Interleukin 1-alpha inhibitor, Testosterone-5-Alpha-Reductase-Inhibitor, TNF- alpha inhibitor
25.85	13-Heptadecyn-1-ol	C17H32O	252.2	2.38	Oligosaccharide provider
27.58	Stigmasterol	C29H48O	412.4	17.78	Precursor of progesterone , acts as intermediate in the biosynthesis of androgens and estrogens, anti-osteoarthritic, antihypercholesterolemic, cytotoxic, antitumor, hypoglycemic, antimutagenic, antioxidant, anti-inflammatory, analgesic
28.26	Ursodeoxycholic acid	C24H40O4	392.3	5.78	Acidifier, Arachidonic acid Inhibitor, Increases Aromatic Amino acid decarboxylase activity, Inhibits production of uric acid, Urine acidifier

28.36	cis-13,16-Docasadienoic acid	C22H40O2	336.3	2.26	Acidifier, Arachidonic acid Inhibitor, Increases Aromatic Amino acid decarboxylase activity, Inhibits production of uric acid, Urine acidifier
28.62	Phytonadione	C31H46O2	450.4	1.10	Not known