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Phytochemical Analysis Of *Abrus Precatorius* & Leaf Extract & Its Application

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ABSTRACT:

Leaf of Abrus Precatorius has been used in different part of this world. Lung disorders, cancer, HIV/AIDS,Malaria,Alzheimer's disease, and many other diseases are cured by this plant. Seeds of this plant are highly toxic in nature though leaves are sweet in taste. So this study is designed to explore the contents present in the leaf extract of presence of abrusosides. Compound in Methanolic extract are separated by column chromatography. Identification of phytochemicals for extract is carried out by various chemical test. The test shows the presence of Alkaloids, Flavonoids, Amino Acids, Steroids, Carbohydrates, Glycosides, and Cardiac Glycosides. Further identification Is carried out with the help of LCMS and GCMS chromatography.

KEYWORDS: Thin layer Chromatography – TLC, Column chromatography - CC Liquid Chromatography Mass Spectrum – LCMS, Gas Chromatography Mass Spectrum - GCMS, Abrusoside, Methanol.

INTRODUCTION :

Phytochemicals are plant-derived compounds[1]. Plants are referred to as "Phyto" in Greek. As a result, the compounds generated by plants as a result of their main or secondary metabolism[2,3]. They usually have bioactivity in the plant system and help the plant develop or defend itself against predators, pathogens, or rivals[2].

Because proof of their significant health impacts has yet to be shown, phytochemicals are often considered as research compounds rather than essential nutrients[4,5]. Abrus Precatorius is also known as crab's eye because of the white dot present on the outer layer of the seed[6]. Indian liquorice is another name for it[7].

COMMON NAMES

Gujarati/Hindi : Chanothi
English Name: Rosary Pea
Indian Name: Ratti, Gunj, Chirmati, Gumchi
Sanskrit Name: Gunj, Ratti, Goonja[8]

CLASSIFICATION

Kingdom : Plantae
Division : Magnoliaphyta
Class : Magnoliopsida
Order : Fabales
Family : Fabaceae
Subfamily : Faboideae
Tribe : Abrea
Genus : Abrus
Species : Abrus Precatorius linn.
Part used: Leaf [9]

Rosary pea is a beloved medicinal plant countless pharmaceutical use are credited to this plant in Abrus Precatorius leaves, stem, roots, sweet tasting as a result of glycyrrhizin. Which is around 8-10% is in leaf. Coughs have been cured by glycyrrhizin. Kids are attracted by its flashing colored grains and in a small number of countries they play with the grains and use them in a school in their creation and to calculation rosary pea's seeds are also used to make necklaces and other ornaments which are worn by both kids and adults. Once upon a time seeds are used in the hospitalization of scratches, sores, and wounds, caused by dogs, cats and mice. Leaves of this plant are frequently chewed or absorbed to achieve it is sweet taste Abrus Precatorius's leaves also baked with food as a sweeteners and in some countries it is consider as a vegetable. Tetanus and Rabies are also cured by this plant. Ricin and Abrin are toxic which are present in seeds Among the most frequent poisons is ricin and abrin. In nature, all seeds and leafage are poisonous[10]. In rodents, abrin has an LD_{50} of just 0.56µ\gkg, while kingsbury specifies a toxic dosage in humans as 0.00015 percent body weight, or around 0.1 mg for a 150 pound adult[11]. Abrusoside and glycyrrhizin are the major compound which are present in leaves and because the presence of abrusoside and glycyrrhizin leaves are sweet in taste. Alkaloids, triterpenes, flavanoids, glycosides, carbohydrates, steroids, proteins, are also present in leaves of Abrus Precatorius. Abrusoside and glycyrrhizin are more sweet in taste than sucrose. They are lesser in caloric value[6].

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Rosary pea is also used as a replacement of liquorice In coughs and cold. Pure leaves is chewed for coughs and flu warm water extract of dried leaves and roots are also used in medication of eye defect. In some countries leaves squash with oil are used as treatment for anti-inflammatory[12].

Rosary pea is a slim continual climber that curls around trees bush and fence rosary pea has no biological structure of attachment. It has slim limb with with oval creased stem with a plane surface brown bark. Abrus Precatorius is a savage plant. that grows best in the moderately dry regions at low altitude[13].

Leaves of rosary pea are commonly also used as a medicine of malaria and snake bite[10].

Rosary pea is also known as a Abrus Precatorius in which abrus word stands for beautiful or graceful. which is used to express presence of the seeds[14].

Rosary pea's leaves have triterpene glycosides. There are total 5 types of abrusosides. Abrusosides A, B, C, D, E. Abrusosides are nonpoisonous compound. "abrusoside A,B,C,D, are found to be 30, 100, 50, 75 times sweeter than sucrose." Abrusoside E is sweeter compound than abrusoside A-D. Abrusoside E is 150 times sweeter than sucrose, but the Monomethyl Ester has been proven to be more firmly sweet. pure abrusoside A-D from this plant. Mostly, the leaves are used to sweeten meals, beverages, and remedies[15].

The herb is also supposed to increase hair development and is utilized in Ayurveda. It's occasionally seen in Indian hair care products[16].

Some extremely effective dietary supplements, as well as many useful commercial items, that become medication after being processed to pure compounds and whose bioactive ingredients are largely Secondary metabolites in plants can be used to make medication. After being processed to pure substance.

The biological profile is improved by further modification of the active chemicals, and a great amount of these chemicals have been licensed or are in clinical trials for many diseases such as lung disorders, HIV/AIDS, Alzheimer's disease, Cancer, Malaria, and more diseases. Herbs in their natural state are marketed as medications in numerous places of the globe, and as a result, numerous traditional medicines around the world play an important role. Traditional remedies from all across the world help to enhance people's lives.

Herbs in their natural state are utilized as pharmaceuticals in various parts of the world, and as a result, numerous traditional medicines around the globe play an important role. When herbal therapies are used alongside many other traditional remedies in America, Traditional Chinese Medicine (TCM), Korean Chinese Medicine, Japanese Chinese Medicine (kampo), Ayurvedic Medicine (India) and Jamu (Indonesia), Phytotherapy, and homoeopathy are commonly named In America, herbal therapies are used in conjunction with a variety of other traditional treatments. Integrative medicine originated from the blending of complementary medicine, especially the aforementioned traditional and folk treatments used all over the world, with modern treatment (Western medicine). These medications are sourced from all around the world and aid in their distribution in a variety of countries. Flavonoids have been found in over 8000 different kinds thus far. In recent years, complementary medicine has grown in popularity. Flavonoids are important in medicinal plant elements that have been employed throughout the world's traditional medicine. Abrus precatorius Linn belongs to the fabaceae family and is widespread throughout India, from the Himalayan area to southern India Its seeds are surprisingly consistent in weight, weighing only a tenth of a gramme.

Goldsmiths utilize its seeds to weigh gold and silver, as they did in the past. From ancient times, the herb has been employed in Hindu medicine, as well as Chinese and other ancient societies. These plants aid in the well-being of the human body. Plants were used as medicine in ancient India, and a large number of plants were grown to meet the demand[17].

METHODS AND CHEMICALS:

Methanol: The Methanolic extract of the plant has a stronger activity than the aqueous extract as polyphenols are found. As a result of the greater levels of cell wall and seed breakdown alcohols, which release polyphenols that would otherwise be destroyed in an aqueous extract. However, methanol releases polyphenols, which are destroyed in an aqueous extract.in contrast to water methanol is more microbicidal. Methanol also makes it easier to remove intracellular components from plant sources. Methanol, ethanol, and alcohol are polar solvents that can speed up the extraction process. The adding water to methanol will speed up an extraction process. Methanol has a higher polarity**.**

Acetone: Acetone is water miscible and dissolves a wide range of hydrophilic and lipophilic chemicals from plants.. It's non-toxic and non-flammable, and it's utilized to extract antibacterial properties. To eliminate tannins and other phenolic compounds, acetone is utilized. They're also employed in the isolation for saponin.

Chloroform: Terpenoids lactones are produced from barks using chloroform extraction. Tannins and Terpenoids are handled with even fewer polar compounds.

Ether: Coumarins and essential fats are extracted using this method, among other things[18].

Collection of plant material

The leaves rosary was collected from Waghodia village in Vadodara district, Gujarat in the month of December. The plant was identified by Dr. Mittal Thakkar. Parul University, Vadodara.

Solvent used

Pure methanol solvent used for extraction of leaves of Abrus Precatorius. Normal atmospheric pressure were applied for leaves extract.

Preparation of leaves extract

The fresh leaves from this plant collected and washed the leaves from distilled water and dried it for 15 to 20 minutes. The air dried leaves was extracted with 300 ml methanol and then filtered with whatman no.1 filter paper and the residue was removed. This extract of methanol was subjected to perform different test.

Thin layer chromatography

Methanol has a high polarity, so it is utilized as a solvent in plant extraction. It was carried out at standard atmospheric pressure. To eliminate soil particles and other dust, the fresh plant material of Abrus Precatorius leaves was gathered and washed with distilled water. Methanol was used to extract the leaves of Abrus Precatorius. Whatman no. 1 filter paper was used to filter the extract. TLC can be used to demonstrate how a pure combination of chemicals might react. Before and after performing column chromatography, the partition is optimized utilizing TLC. Silica gel is utilized as a stationary phase in Thin Layer Chromatography. Because The more polar components of silica and alumina may both be polar adsorbents are held more strongly upon that stationary phase and are thus evaded from the column last. Most materials should be handled with silica because it is somewhat acidic; it retains basic compounds more readily. The solution to somehow be separated is in a liquid phase which is in a suitable solvent dissolved and pushed up the plate via capillary action. polarity has been used to isolate the solution of the component. In order to separate various compounds, methanol was utilized as a mobile phase. Methanol is a polar protic solvent. When methanol was employed as the mobile phase, the best separation was obtain.

Qualitative Analysis of Primary Metabolites:

Test for Carbohydrates

Benedict's test: 1 ml of the filtrate is added to 1 ml of Benedict's reagent In a boiling water bath, this combination was cooked for around 2-5 minutes..

Test for Proteins

About 0.5 percent concentrated HNO_3 was added to a mixture of 2-3 ml extract and 2 ml water.

Test for Amino Acids

4 milliliters of extract 3–5 droplets of nitric acid were applied along the tube's walls.

Test for Fatty Acids

One milliliter of extract was combined with five milliliters of ether. The extracts were left to evaporate before being dried on filter paper.

Test for Fixed Fats and Oils:

A tiny amount the extract had been collected and pressed between two filter sheets as a spot test.

Gums and Mucilage

2ml pure ethanol was added to 1ml extract distilled water while swirling constantly.

Qualitative Analysis Of Secondary Metabolites:

Test for Anthraquinones

5 mL of extract was mixed with a few mL of concentrated H_2SO_4 and 1 mL of diluted ammonia.

Test for Quinnones

alcoholic KOH is added to the sample of extract.

Test for Alkaloids

Wagner's test: a few drops of Wagner's reagent were added to around 1 -2 ml of extract.

Test for Glycosides

2 mL extract was combined with 0.4 to 1 mL glacial acetic acid containing traces of ferric chloride and 0.5 mL concentrated H_2SO_4

Test for Cardiac Glycosides (Keller-Killani test)

5-6 ml of 2 mL glacial acetic acid was added to the solvent extract and There was a drop of Ferric Chloride solution added After that, 1 mL of concentrated H_2SO_4 was added to it.

Test for Phenols

Gelatin test: Extract (5 mL) 2 mL of a 1% gelatin solution with 10% NaCl is added.

Test for Polyphenols

3ml of 0.1 percent gelatin a solution was included to 5ml of methanolic extract.

Test for Tannins

A few drops of neutral 5 percent ferric chloride solution were added to 5ml of extract.

Test for Flavonoids

The extract aqueous solution containing 10% ammonia solution is applied and boiled.

Test for Phlobatannins

Boiling aqueous extract with diluted HCl.

Test for Steroids

2 ml extract, added with 2 ml chloroform, and 2 ml of concentrated sulfuric acid.

Test for Xanthoproteins

Three ml of extract are obtained, and a few drops of HNO_3 and ammonia are added to it.

Test for Chalcones

To 0.5 to 1 mL of extract, 2 mL ammonium hydroxides is added**.**

Test for Terpenoids (Salkowski test)

3 mL extract was extracted, and 1 mL chloroform and 1.5 mL concentrated H_2SO_4 were added to the test tube's walls.

Test for Coumarins

extract (3 mL) Three millilitres of aqueous NaOH are added.

Column Chromatography

The use of a stationary phase is the basic assumption of column chromatography to separate the components of a mixture by adsorbing solutes from a solution. The both sides and liquids are separated and purified by one of the most useful methods. Column chromatography is a one type of technique used to isolate different chemical compounds from mixtures. It is a method for separating substances based on differential adsorption of compounds to the adsorbent, which allows them to be separated into fractions by moving along the column at various rates.. This manner is extensively relevant because it can use with a wide range.

Column preparation:

There are two phases in column chromatography.

a) Stationary phase:

In column chromatography, the stationary phase, also known as the adsorbent, is a solid. For column chromatography, the most common stationary phase is a silica gel.

There are many different stationary phase items accessible, such as cellulose powder, alumina, and so on. Fine powders or micro porous gels are utilized as the stationary phase.

b) Mobile phase

In chromatography, choosing the right solvent is crucial. The mobile phase, also known as the eluent, is a solvent that moves the compounds across the column. It is chosen based on its polarity in order to achieve successful compound separation. Solvent selection necessitates a balance of solvent and compound polarities for most separations. For optimal separation the polarity of solvents should be gradually increased.

Throughout the separation process, a single solvent or a mixture of solvents is utilized. A succession of in ascending order is utilized in difficult separations. small, systematic changes in solvent polarity elute The chemicals one or two at a time, which is excellent. A significant rise in polarity may cause all of the components to elute at the same time causing insufficient separation. The careful use of mixed solvents allows for small polarity shifts as an example the initial solvents may be pure Dichloromethanol.

Column Packing

A solid adsorbent is packed inside a cylindrical glass column to create a column. The size of the container will be determined by the amount of substance to be isolated. The stationary phase is held in place by a cotton or glass wool filter at the tube's base. A column is typically prepared using one of two methods the dry approach or the wet method. The column is filled with dry stationary phase powder first, then with mobile phase in the dry technique. which is pumped through the column until it is entirely wet, and then never allowed to dry. The wet approach entails mixing the stationary phase, i.e. silica gel, eluent, and putting it into the column with care. The silica gel should have a flat top. Then a slurry of the component extract, eluent, and silica gel is poured on top of the silica gel layer, which is then protected by a cotton plug or sand. The eluent is progressively fed in the column for advantage of the material and polarity. The silica gel holds specific part in varying degrees and separates them during elution. Due to polarity discrepancies, their running speeds vary with the eluent. At the end of the column, they elute one by one. Throughout the operation, the eluent is accumulate in various fragments. These fragments are gathered and concentrated before being crystallized. Component composition may be monitored via TLC, UV, and fluorescence. To load the column, a moist method is employed. The methanol extract was concentrated, and a slurry was produced with silica gel (60-120 mesh) and dichloromethanol and methanol as the eluent. The bottom of the column was packed with cotton to prepare it. The slurry of the stationary phase silica gel was made using dichloromethanol. The silica gel slurry was added first, followed by the extract slurry, which was then packed with cotton at the top. The first solvent employed was pure dichloromethanol, followed by a combination of 90% dichloromethanol and 10% methanol. The polarity transition is completed by successive combinations comprising 20%, 30%, and 40% methanol until the polarity transition is completed by 100% methanol. The fractions from the column were collected and subsequently distilled. TLC for components was performed after the concentrated samples were

collected in the test tube. The samples were concentrated once more in the water bath before being crystallized using solvents. The melting point of the pure chemicals obtained in the lab was determined.

Thin Layer Chromatography

When a mixture of chemicals is purified, a TLC can demonstrate how they will behave. Prior to and after performing column chromatography, the separation is confirmed using TLC.

Biological activity

Procedure Of Antimicrobial Activity

Fill a sterile Petridis halfway with nutritional agar media and let aside for 5 minutes to solidify. Spread a nutrient agar media plate with a 0.1 ml E.coli culture under laminar air flow. Place a nutrient agar plate on a filter paper containing antibiotic penicillin. Incubate the plate for 24 hours at 37 degrees Celsius. The result is over-interpreted because of the incubation time.

Procedure Of Antifungal Activity

Fill a sterile Petridis with nutritional agar media and let aside for 5 minutes to solidify. Spread a nutrient agar media plate with 0.1 ml candida albicans culture under laminar air flow. Take a filter paper of fluconazole antibiotic and place it on a nutrient agar plate.

Gas Chromatography Mass Spectrum Analysis

Gas chromatography is used to examine gaseous products. There is a gas phase and a liquid phase in this process. The liquid phase is mobile, whereas the gas phase is stationary. These chemicals are in the mobile phase and are carried by a carrier gas, which is commonly helium, hydrogen, or argon. Higher percentage of the chemical will lead to faster migration in the liquid phase. Higher percentage of the chemical will lead to faster migration in the liquid phase. It's commonly utilized in phytochemical analysis, both qualitative and quantitative.

Liquid Chromatography Mass Spectrum Analysis

The methanolic extracted from Abrus Precatorius were used to LC-MS Analysis. 1 ml sample
In Which Scan Range Was 0 To 1000 m\z
Tube Lens 80
Capillary Voltage - 10
Flow -15 Arb Sheath Gas
Auxilan Gas Flow 5 Arb
Sweep Gas Flow - 0
Dilution : Methanol Approx.
Polarity - Positive And Negative
Thermo Ion Trap

RESULTS AND DISCUSSION:

Table 1. Result of Phytochemical Test Performed By Leaf Extract

Test	Observation	Results
Carbohydrates	Green/Yellow Precipitate Observed	Present
Protein	Yellow Color Observed	Present
Amino Acid	Yellow Color Observed	Present
Fatty Acids	Filterpaper Was Not Transprenent	Absent
Fixed Fats And Oils	No Appearance Of Spot Between 2 Filter Paper	Absent
Gumsand Mucilage	No White Or Cloudly Ppts	Absent
Anthraquinones	No Rose Pink Color	Abesnt
Quinines	No Blue	Absent
Alkaloids	Reddish Brown Ppts Observed	Present
Glycoside	Blue Color Observed	Present
Cardiac Glycosides	Brown Ring And Green Ring Observed	Present
Phenols	Formation Of Precipitate	Present
Polyphenols	Formation Of Precipitate	Present
Tannins	Formation Of Green Colour	Present
Flavonoids	Formation Of Fluoresence Green Color	Present
Phlobatannis	No Formation Of Reddish Colour	Absent
Steroids	No Red Colour Obsedrve	Absent
Xanthoprtins	Formaton Of Reddish Brown Precipitate	Absent
Chalcones	Appearance Of Red Colour	Absent
Terpenoids	Reddish Brown Color Observed	Present
Coumarins	No Yellow Color Observed	Absent

Figure 6 : Phytochemical Test Analysis

Column Chromatography:

By gravity, the mobile phase travels down the Silica Gel column, leaving beyond zones of color the chromatogram. Theoretically, column chromatography is comparable to Thin Layer Chromatography. The dissimilar elements in the sample mix travel through the column at dissimilar rates required to changes in their behavior in the middle of the mobile liquid phase and the stationary phase. There are total 8 fractions collected by this method.

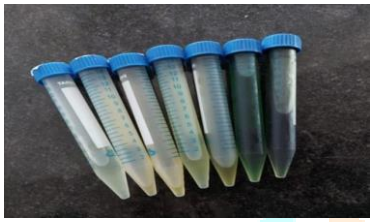

Figure 7 : Fractions Collected By Column Chromatography

There are different fractions are observed on TLC plates in chamber at long wave length Which confirms that plant extract was successfully separated by column chromatography.

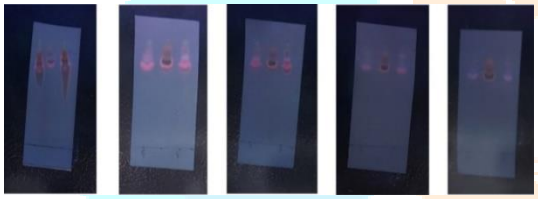

Figure 8 : Fractions Collected By Column Chromatography

Antimicrobial activity

The methanolic extract of rosary pea leaves taken from Waghodia, Vadodara, was examined as part of our ongoing investigation for antibacterial substances. Abrus precatorius was evaluated for antibacterial activity using an E. coli culture, and it was shown to be effective against the drug penicillin. The inhibitory zone size of E. coli is 18 mm, therefore interpret the result.

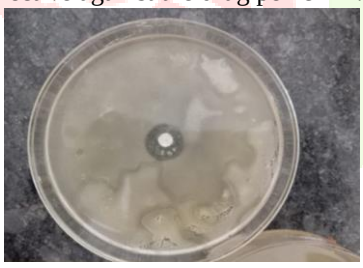

Figure 9 : Antimicrobial Activity

Antifungal activity

Abrus precatorius tested for antifungal activity with a culture of Candida albicans, it was observed that produce a effective an antibiotic of Fluconazole. Interpreted result of the inhibition zone size of antifungal activity of candida is 10 mm.

Figure 10 : Antifungal Activity

GCMS:

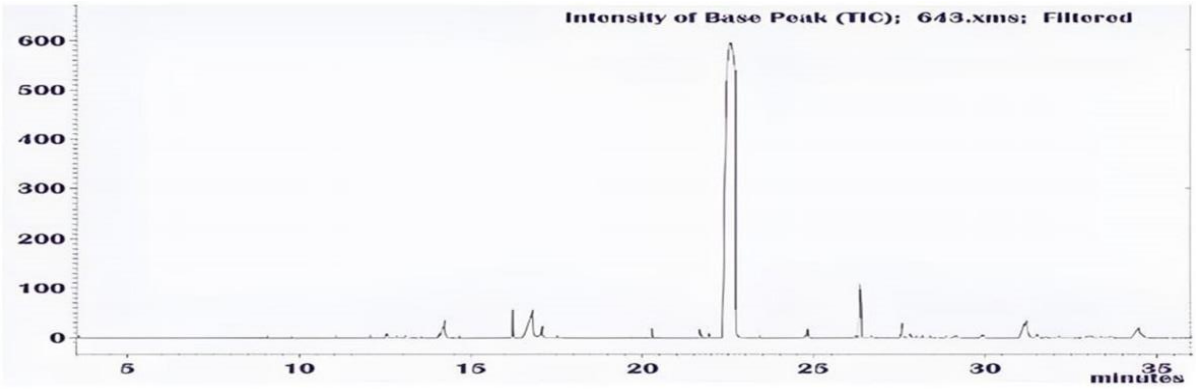

Figure 11: GCMS Analysis Of Extracts

Table 2. Different Compounds Founds From GCMS

Sr. No.	Compound Name	RT(min)	Area (%)
1	3- Pyridinol	9.188	1.60
2	4H-Pyran-4-one,2,3,-diyddro-3,5-dihydroxy-6- methyl	9.816	2.07
3	Benzofuran	11.106	3.82
4	Isosorbide	12.227	6.26
5	2-methoxy-4-vinaylphenol	12.665	6.81
6	Methylparaben	14.616	2.46
7	D-allose	15.110	10.98
8	Octanal,2-(phenylmethylene)	18.194	1.02
9	Hexadecanoic acid, Methyl ester	19.943	4.67
10	n-Hexadecanoic acid	20.302	8.25
11	Dibutyl phthalate	20.381	1.92
12	Abrusoside B	30.201	1.63
13	Abrusoside D	31.844	4.25
14	Abrusoside E	34.405	2.81

LCMS:

As the peak varies, it implies that the distinct triterpinglycosides from leaves have varied chemical constitutions as illustrated in figure**.**

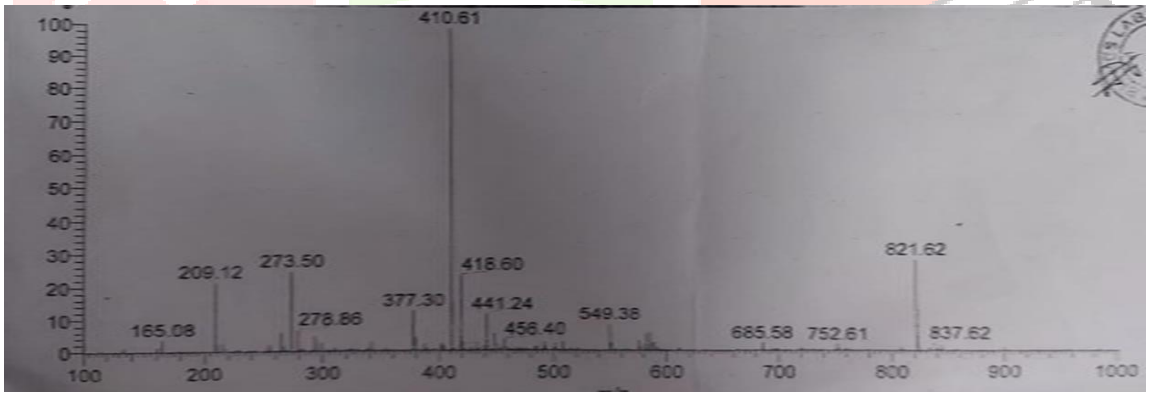

Figure 12: LCMS Graph For Positive Polarity

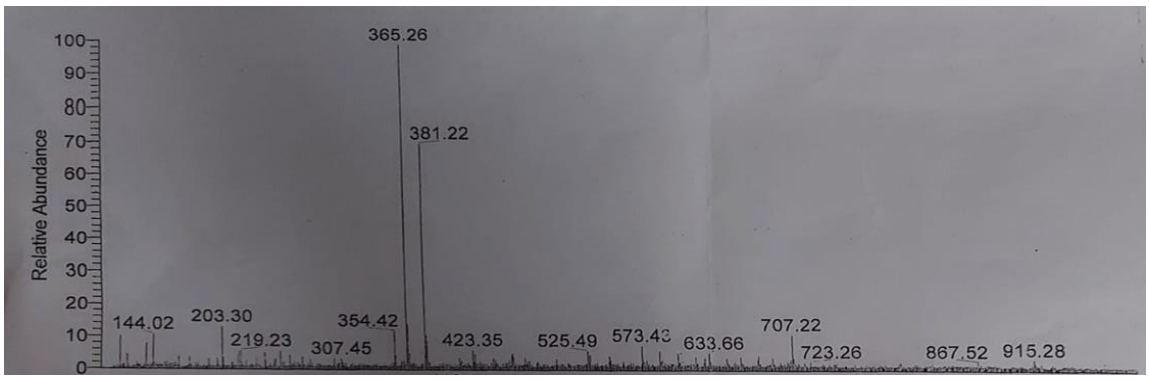

Figure 13 LCMS Graph For Negative Polarity

Abrusoside A-E And Glycyrrhizin

Triterpene glycosides which are sweet in taste Abrusoside a-e as well as Glycyrrhizin are present in the methanolic extract of leaves Which is confirmed by LC-MS

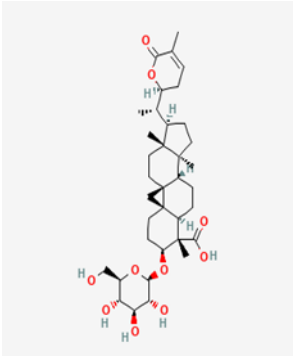

Figure 1. abrusoside A

Molecular Weight – 648.8

Molecular Formula – $C_{36}H_{54}O_{10}$

IUPAC Name

(1S,3R,6S,7S,8R,11S,12S,15R,16R)-7,12,16–Trimethyl–15-[(1S)–1-[(2S)–5-Methyl–6–Oxo–2,3–Dihydropyran-2–yl]Ethyl]–6-[(2R,3R,4S,5S,6R)-3,4,5–Trihydroxy-6-(Hydroxymethyl)Oxan-2-yl] Oxypentacyclo [9.7.0.01,3.03,8.012 ,16]Octadecane-7-Carboxylic Acid.

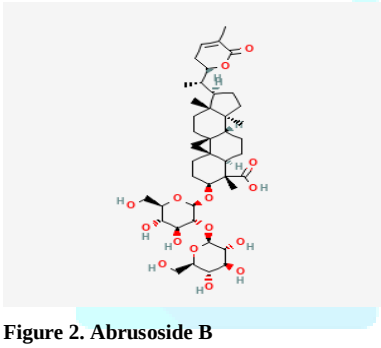

Figure 2. Abrusoside B

Molecular Weight – 837

Molecular Formula - $C_{43}H_{64}O_{16}$

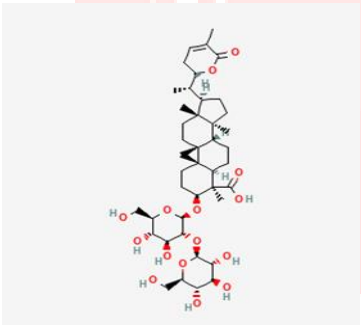

Figure 3. Abrusoside C

Molecular Weight - 808.9

Molecular Formula - $C_{42}H_{64}O_{15}$

IUPAC Name

(1S, 3R, 6S, 7S, 8R, 11S, 12S, 15R, 16R) - 6 -[(2R, 3R, 4S,5S,6R)-4,5 - Dihydroxy-6-(Hydroxy Methyl) - 3 - [(2S, 3R, 4S, 5S, 6R) - 3, 4, 5 - Trihydroxy-6-(Hydroxy Methyl) Oxan - 2 - yl] Oxyoxan - 2 - yl] Oxy - 7, 12, 16 - Trimethyl - 15 - [(1S) -1 - [(2S) - 5 - Methyl - 6 - Oxo - 2, 3 - Dihydropyran - 2 - yl] Ethyl] Pentacyclo [9.7.0.01,3.03,8.012,16] Octadecane – 7 -Carboxylic Acid

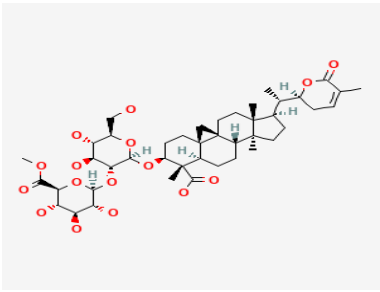

Figure 4. Abrusoside D

Molecular Weight – 822.9

Molecular Formula- $C_{42}H_{62}O_{16}$

IUPAC Name

(1S,3R,6S,7R,8R,11S,12S,15R,16R)-6-[(2R,3R,4S,5S,6R)-4,5-Dihydroxy-6-(Hydroxymethyl)-3-[(2S,3R,4S,5S,6R)-3,4,5-Trihydroxy-6-(Hydroxymethyl)Oxan-2-yl1]Oxyoxan-2-yl]Oxy-7,12,16-Trimethyl-15-[(1S)-1-[(2S)-5-Methyl-6-Oxo-2,3-Dihydropyran-2-yl]Ethyl]Pentacyclo[9.7.0.01,3.03,8.012,16] octadecane-7– Carboxylic Acid

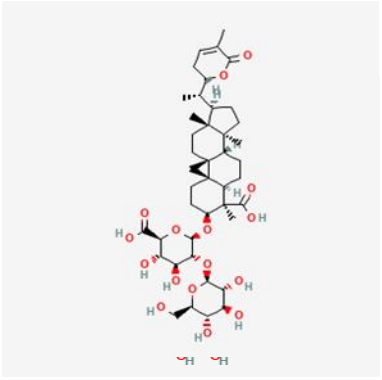

Figure 5. Abrusoside E

Molecular Weight - 823
Molecular Formula - $C_{42}H_{62}O_{16}$
IUPAC Name
(2S,3S,4S,5R,6R)-6-[[(1S,3R,6S,7R,8R,11S,12S,15R,16R)-7–Carboxy-7,12,16-Trimethyl–15-[(1S)–1-[(2S)–5–Methyl–6–Oxo-2,3–Dihydropyran–2–yl]Ethyl]–6– Pentacyclo[9.7.0.01,3.03,8.012,16]Octadecanyl]Oxy]-3,4-Dihydroxy-5-[(2S,3R,4S,s5S,6R)-3,4,5–Trihydroxy–6-(Hydroxymethyl)Oxan–2-yl]Oxyoxane-2- Carboxylic Acid

Figure 6. Glycyrrhizin

Molecular Weight - 822.94
Molecular Formula - $C_{42}H_{62}O_{16}$
IUPAC Name
6-[6–Carboxy–2-[(11-Carboxy-4,4,6a,6b,8a,11,14b –Heptamethyl–14–Oxo-2,3,4a,5,6,7,8,9,10,12,12a,14a-Dodecahydro-1H–Picen–3–yl)oxy] -4,5- Dihydroxyoxan-3-yl]Oxy-3,4,5-Trihydroxyoxane-2-Carboxylic acid

CONCLUSION:

Plants are a rich source of phytochemicals, which are used to make drugs and medicines. Antibacterial, antifungal, anti-cancerous, antioxidant, anti-inflammatory, and antidiabetic effects are all present in these phytochemicals. Which are in methanolic extract of leaves there are triterpene glycosides Abrusosodie A-E and Glycyrrhizin. They are sweeter than sugar so it can be consumed by diabetic patient. In the plate, the inhibition zone can be seen. The results show that the antibiotic ampicillin is effective on *E.coli* culture and that the producing zone size is 18 mm. In the plate, the inhibition zone can be seen. The antibiotic *Fluconazol*e can be inferred based on the results. It is an effective *Candida Albicans* culture that produces a clearing zone and is 10 mm in diameter.

CONFLICT OF INTEREST:

Regarding this inquiry, there are no conflicts of interest for the writers.

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