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A comparative study of the different parts of *Acacia arabica* (Desi Babool) *& Prosopis julifera* (Vilayati Babool)

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Abstract
Natural products are products from various natural sources, plants, microbes and animals. They can be an entire organism (e.g. a plant, an animal or a micro-organism), a part of an organism (e.g. leaves or flowers of a plant, an isolated animal organ). The present study was aimed at pharmacognostical study. Plants *Acacia Arabica* and *Prosopis julifera* were studied for pharmacognostical characteristic, namely, morphology, microscopy, physicochemical, parameters which can be of utilized in identification and Authentication of plants. Successive, extractive and phytochemical screening revealed the present of tannin alkaloids, steroids and terpenoids in various extracts however most of the medicinally potential phytoconstituents where present in alcoholic and aqueous extracts, result shows that the leaf of *Acacia arabica* had maximum moisture content followed by stem bark, and twig, while *Prosopis julifera* twig had maximum moisture content followed by bark and twig. *Acacia arabica* has more percentage of Ash content followed by stem bark and twig. But in *Prosopis julifera* twig contain maximum percentage followed by stem bark and twig. Leaf of *Acacia arabica* has maximum percentage of Ash content. In-vitro DPPH free radical scavenging activity of the methanolic extract of all the parts of *Acacia Arabica and Prosopis julifera.* were compared with Ascorbic acid and quercitin (standard used) was observed which showed that extract of Arabica leaf shows higher activity followed by bark, and twigs. At a concentration of 0.1 mg/ml the scavenging activity of the leaf reached 62.34%, while at the same concentration bark and twig have 52.3% and 52.35% activity, Prosopis leaf have minimum 40.88% activity and twig and bark have 49.4% and 50%activity.we have done the comparative pharmacognostical study between *Acacia arabica* and *Prosopis julifera* and conclude that *Acacia arabica* plays more significant role and has more scientific value.

Keywords: *Acacia arabica* (Desi Babool), *Prosopis julifera* (Vilayati Babool)

1. Introduction
1.1 The origin, scope and practice of Pharmacognosy
The history of herbal medicines is as old as human civilization. The documents, many of which are of great antiquity, revealed that plants were used medicinally in China, India, Egypt and Greece long before the beginning of the Christian era. One of the most famous surviving remnants is *Papyrus Ebers*, a scroll some 60 feet long and a foot wide, dating back to the sixteenth century before Christ. (Kokate, *et al*, 2008) Indians also, worked meticulously to examine and classify the herbs which they came across, into groups called Gunas. Charaka made fifty groups of ten herbs each of which, according to him, would suffice an ordinary physician's need. Similarly, Sushrutha arranged 760 herbs in 7 distinct sets based on some of their common properties. A large portion of the Indian population even today depends on the Indian System of Medicine – Ayurveda, 'An ancient science of life'. The well-known treaties in Ayurveda are Charaka Samhita and Sushrutha Samhita. The first pharmacist, Galen, was known to have had a number of pain relieving materials, including opium in his apothecary. (Agrawal and Paridhavi 2007).

2. Materials and Method
2.1 Botanical study
2.1.1 Materials, Instruments and Chemicals: Plant materials, glass slide, grinding mixer, hot air oven, silica crucible, ash less filter paper (Whatman no.44), petridish, stoppered conical flask, rotory flask shaker alcohol (95%), chloroform water, chloral hydrate solution, water.

2.1.2 Collection of plant: The plant materials were collected from the Rae Bareilly and Lucknow

2.1.3 Authentication of plant: The materials were authenticated at National Botanical Research Institute (NBRI), Lucknow, India. Sample specimens have been identified as *Prosopis julifera* (SW.) DC. Accession no. for the specimen is 98156, and *Acacia arabica* (Lam.) Willd., accession no. 98157 of the family Fabaceae to the National Herbarium of NBRI, Lucknow, India.

2.1.4.1 Macroscopical Study: It included determination of size, shape, surface characteristics, texture and fracture characteristics.

2.1.4.2 Microscopical Study: (Khatoon Sayyada and Mehrotra Shanta)

(a) Stem Bark: Materials of bark were broken into pieces of about 1-2 cm long and 0.5-1 cm wide and boiled in a test tube for 1-3 minutes, to make it soft. Soft pieces were then cut into T.S. forms. Cut sections were dehydrated with a successive series of ethanol (i.e.30, 50, 70 and 80 per cent v/v) before staining with saffranine solution (1% solution of saffranine in 50% alcohol w/v). The sections were mounted on glass slides in 50% (v/v) glycerine and covered with cover slip. All samples were examined under the microscope and photographs were taken.

(b) Leaf: The leaf was cut into small squares of 1-2 cm and treated with concentrated aqueous chloral hydrate to make the leaf colorless. As the leaves were thick and was taking time to be cleared.The section cutting of leaf were done by cutting the leaf into small pieces and keeping it in between the potatoes to get the fine section and staining the section with saffranine solution (1% solution of saffranine in 50% alcohol w/v). The sections were mounted on glass slides in 50% (v/v) glycerine and covered with cover slip. All samples were examined under the microscope and photographs were taken.

(c) Twig: The fine section of twig was directly cut with the help of sharp blade and the sections were stained with saffranine solution (1% solution of saffranine in 50% alcohol w/v). The sections were mounted on glass slides in 50% (v/v) glycerin and covered with cover slip. All samples were examined under the microscope and photographs were taken.

(d) Histochemical analysis: It deals with localization of chemical compounds within the cells by means of specific colors of the compounds. The sections of stem bark, leaf, twig were treated with various stains such as ferric chloride solution (10%), sudan-III, conc. HCl, conc. H_2SO_4, pinch of phloroglucinol + conc. HCl and saturated solution of sudan IV in 70% alcohol and the compounds present in the cells were identified with the help of microscope through the colors, which are specific to the compounds when stained with specific dyes.

2.1.5 Powder study

2.1.5.1 Microscopy: The powders of stem bark, leaf, and twig were examined for its microscopic characters. The powders were passed through sieve no. 60 and treated with chloral hydrate to remove colouring matter and viewed under microscope at the 10X eye piece and 40X objective for stone cells, calcium oxalate crystals and other characters.

2.1.5.2 Fluorescence analysis: (Kokate C. K.1991, and Khandelwal K. R. 2001),

The powder was subjected to fluorescence analysis for the detection of the presence of compounds, which are fluorescent in nature. Many substances when suitably illuminated, emit light of different wavelengths or colour from that what falls on them. Fluorescence of powders of stem bark, leaf, flower and twig were observed in day light and in UV light (254 nm & 366 nm). The powdered drugs were treated with different solvents in the glass slides. The solvents used were 1N HCl (aqueous), 1N HNO_3 (aqueous), 1N H_2SO_4 (aqueous), CH_3COOH, 1N NaOH (aqueous), Aq. NaOH, Meth. NaOH, I_2, 1N KOH, Aq. KOH, Meth. KOH, alcohol as such, acidic alcohol and basic alcohol.

2.1.5.3 Organoleptic study: It included determination of color, odor and taste.

2.2 Physiochemical standardization: (According to Ayurvedic pharmacopoeia of India)

2.2.1 Determination of Moisture Content (Loss on Drying)

An excess of water in medicinal plant materials will encourage microbial growth, the presence of fungi or insects, and deterioration following hydrolysis. Limits for water content should therefore be set for every given plant material. This is especially important for materials that absorb moisture easily or deteriorate quickly in the presence of water.

2.2.2 Determination of total cash value: The residue remaining after incineration is the ash content of the drug, which simply represents inorganic salts, naturally occurring in drug or adhering to it or deliberately added to it as a form of adulteration. Many a time, the crude drugs are admixed with various mineral substances like sand, soil, calcium oxalate, chalk powder or other drugs with different inorganic contents. For determination of total ash, the powdered drug is incinerated so as to burn out all organic matter. Ash value is a criterion to judge the identity or purity of crude drugs. Total ash usually consists of carbonates, phosphates, silicates and silica.

2.2.3 Determination of total acid insoluble ash value: (Ayurvedic Pharmacopoeia of India 1989) Acid- insoluble ash which is a part total ash insoluble in diluted hydrochloric acid is also recommended for natural drugs. Adhearing dirt and sand may be determined by acid-insoluble ash contain.

2.2.4 Determination of extractive values: Extractive value is a measure of the content of the drug extracted by solvents. Extractive value can be water soluble and alcohol soluble.

2.2.5 Determination of total sugars: (Montgomery R. 1957), Estimation of total Sugar in plant material was carried out according to (Mont Gomery, 1957) [Spectrophotometric method]

Table 1: Preparation of calibration curve for sugar content. (Std. used D-Glucose)

S. no.	Amount from stock (ml)	80% phenol solution (ml)	Conc. sulphuric acid (ml)	Dist. Water (ml)Up to	Conc. (mg/ml)	Abso. At 490 nm
1	0.1	0.1	5	10	0.001	0.218
2	0.2	0.1	5	10	0.002	0.238
3	0.3	0.1	5	10	0.003	0.281
4	0.4	0.1	5	10	0.004	0.322
5	0.5	0.1	5	10	0.005	0.345
6	Blank	0.1	5	10		

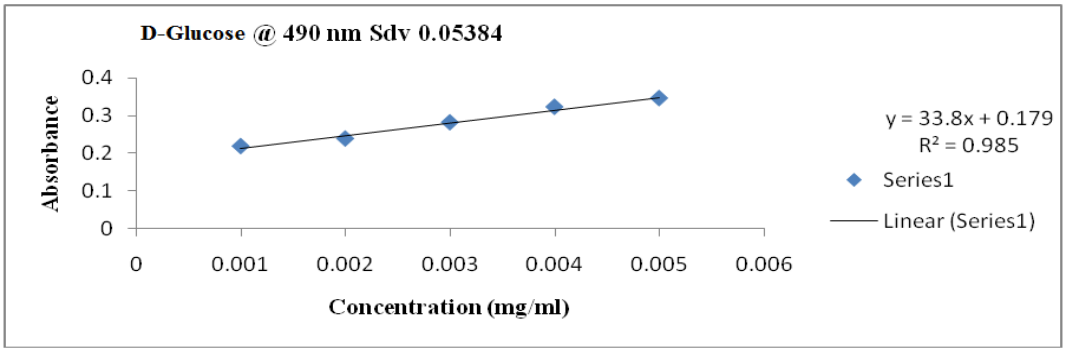

Fig 1: Calibration curve

2.2.6 Determination of total starch: (Montgomery R. 1957) [55], Estimation of total Starch in plant material was carried out according to (Mont Gomery, 1957) [55] [Spectrophotometric method]

Table 2: Preparation of calibration curve for starch content. (Std. used as soluble starch)

S. no.	Amount from stock (ml)	80% phenol solution (ml)	Conc. sulphuric acid (ml)	Dist. Water (ml) up to	Conc. (mg/ml)	Abso. At 490 nm
1	0.1	0.1	5	10	0.001	0.185
2	0.2	0.1	5	10	0.002	0.197
3	0.3	0.1	5	10	0.003	0.209
4	0.4	0.1	5	10	0.004	0.211
5	0.5	0.1	5	10	0.005	0.241
6	Blank	0.1	5	10		

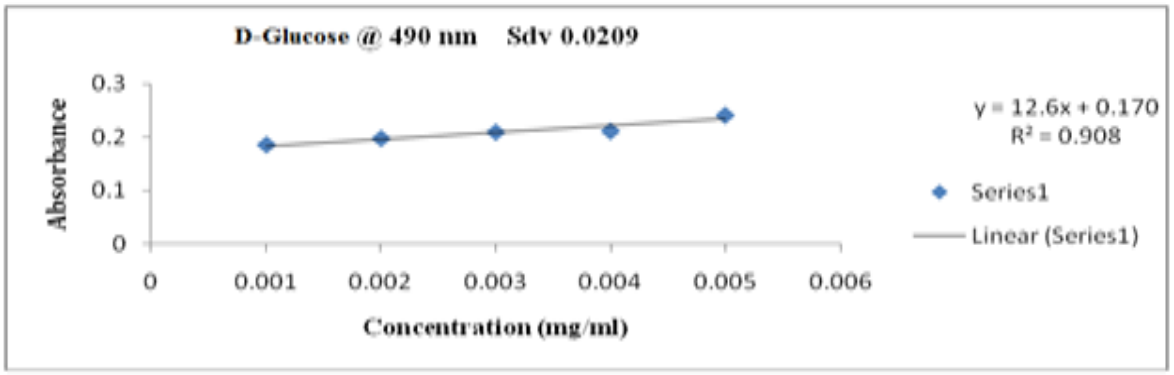

Fig 2: Calibration curve

2.2.7 Determination of total tannins: (Anonymous 1984) Estimation of tannin percentage in the plant material was carried out according to the method described in AOAC (Anonymous, 1984).

Table 3: Preparation of calibration curve for tannin content (Std. used as Tannic acid)

S. no.	Amount from stock (ml)	Folin-ciocalteu's phenol reagent(ml)	Saturated sodium carbonate solution (ml)	Distilled water(ml) Upto	Conc. (mg/m l)	Abso At 760 nm
1	1	5	10	100	0.001	0.152
2	2	5	10	100	0.002	0.238
3	3	5	10	100	0.003	0.332
4	4	5	10	100	0.004	0.444
5	5	5	10	100	0.005	0.531
6	Blank	5	10	100		

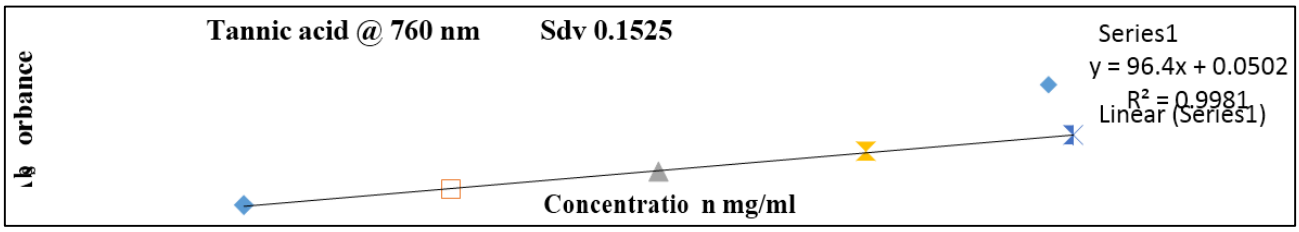

Fig 3: Calibration curve

2.2.8 Determination of total phenolics: (Bray H. C. and Thorpe W. V. 1954) Total phenols estimation can be carried out with Folin-Ciocalteu reagent (FCR).

Table 4: Preparation of calibration curve for phenolic content

S. No.	Amount from stock (ml)	Dist. Water (ml)	Folin- ciocalteu's phenol reagent(ml)	20% sodium carbonate solution (ml)	Dist. Water (ml) Up to	Conc. (mg/ml)	Abso. At 765 nm
1	0.2	10	1.5	4	25	0.0008	0.139
2	0.4	10	1.5	4	25	0.0016	0.264
3	0.6	10	1.5	4	25	0.0024	0.369
4	0.8	10	1.5	4	25	0.0032	0.467
5	1	10	1.5	4	25	0.0040	0.565
6	Blank	10	1.5	4	25		

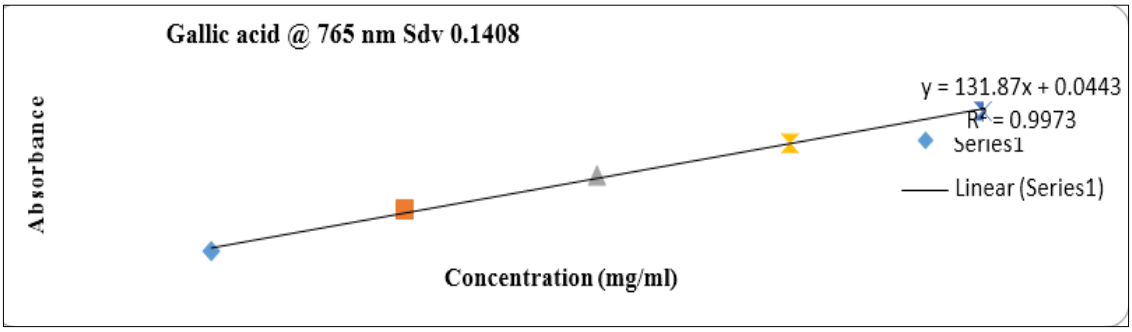

Fig.4: Calibration curve for phenolic content

2.2.9. Determination of total flavonoids: (Ez Ordon L. A. A. *et al.*, 2006) Total flavonoids were estimated using the method of Ordon *et al.*, [2006],used to estimate total flavonoid contents of the extract solution based on the formation of a complex flavonoid-aluminium.

Table 5: Preparation of calibration curve for flavonoid content

S. no.	Amount from stoke (ml)	2% aluminum chloride solution(ml)	Dist. Water (ml) up to	Conc. (mg/ml)	Abso. At 420 nm
1	0.2	0.5	10	0.002	0.401
2	0.4	0.5	10	0.004	0.739
3	0.6	0.5	10	0.006	1.065
4	0.8	0.5	10	0.008	1.354
5	1	0.5	10	0.010	1.745
6	Blank	0.5	10		

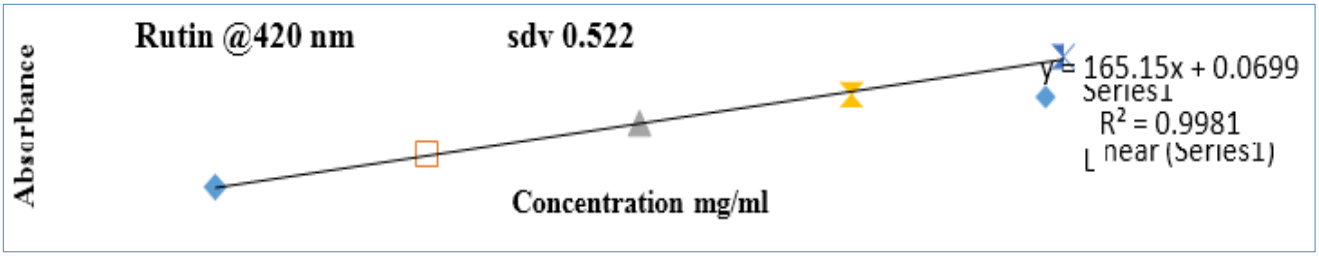

Fig 5: Calibration curve

3. Chromatographic Analysis

3.1 HPTLC analysis

It was done by using 3 different reference standards namely, β-sitosterol, stigmasterol and ursolic acid. β-sitosterol, stigmasterol and ursolic acid were applied on one precoated silica gel G60 F254 Merck glass plate.

The HPTLC technique in standardization is required for -

- Quantification of marker components by area under curve
- Determination of the accurate RF values for the marker

components

- Determination of the purity of the substance (peak purity)
- Determination of the absorption maxima of the substance

4. Result

4.1 Macroscopy

Table 6

Size	1.2-2.5 cm leangth and 0.25 cm in breadth	1.8-2.5 cm leangth and 0.3 cm in breadth
Shape	Oblong	Oblong
Apex	Blunt,	Blunt,
Surface	Glabrous	Glabrous
Leaflet	10-12 pairs, subsessile	15-18 pairs, petiolate
Type	Bipinnately compound	Bipinnately compound
Venation	Reticulate	Reticulate
Stipule	Stipular spines are variable	Stipular spines are variable
Margin	Entire	Entire
Base	Round	Round
Arrangement	Alternate	Alternate

4.2 Microscopy

Thick and straight walled epidermal cells, large mucilage cavities in the mesophyll tissue and paracytic type stomata, prismatic type of calcium oxalate crystals in the mesophyll tissue, dense deposition of tannin content, The mesophyll has a palisade cell and spongy mesophyll tissue has three or four layers of loosely arranged parenchyma cells. The vascular bundle is collateral with a conical mass of thick-walled, angular xylem elements and a thin arc of phloem elements; A thick arc of gelatinous sclerenchymatous cells occurs on both upper and lower sides of the bundle.

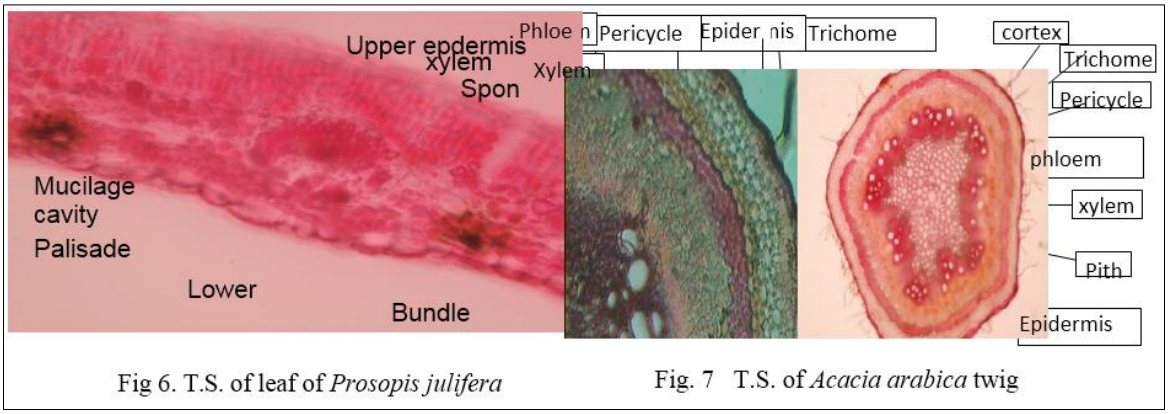

Fig 6. T.S. of leaf of *Prosopis julifera*

Fig. 7 T.S. of *Acacia arabica* twig

Table 7: Microscopy of Bark

	Acacia Arabica (Bark)	***Prosopis julifera* (Bark)**
Cork	15-25 layered, thin-walled, slightly flattened mostly rectangular, brown coloured cork cells, A few lenticels formed by rupturing of cork cells, secondary cortical cells ovate to elongated, many tanniferous stone cells, variable in shape and size present in large groups.	10-15 layered, thin-walled, rectangular brown cork cells. A few lenticels formed by rupturing of cork cells, tannin cell present and fibers also present in cortex.
Cortex		
Phloem	phloem consists of sieve tubes, companion cells, fibres, crystal fibres and phloem parenchyma, phloem tissues filled with reddish or brown contents present, crystal fibres thick-walled, elongated, divided by transverse septa into segments, each contain a prismatic crystal of calcium oxalate, medullary rays uni to-multi- seriate, crystals of calcium oxalate found scattered amongst the stone cell"cells of secondary cortex and phloem parenchyma.	Phloem consists of sieve tubes, companion cells, fibres, and phloem parenchyma, medullary rays uni to multiseriate. Gum resin duct present in phloem.

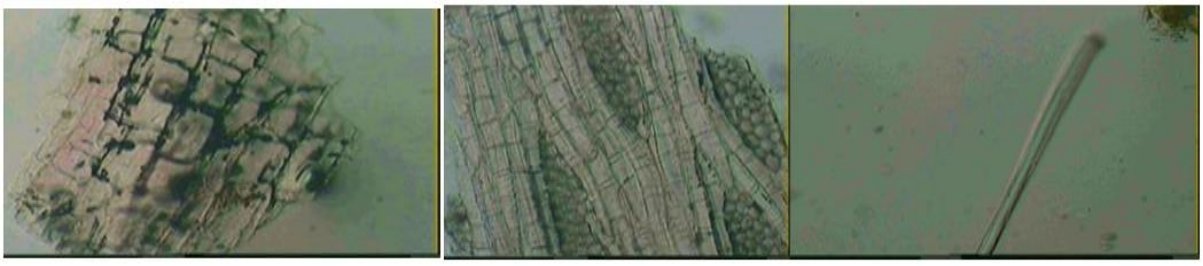

Fig 8: Prosopis julifera bark A, cork cell, B, medulalry rays and phloem, C, fiber,

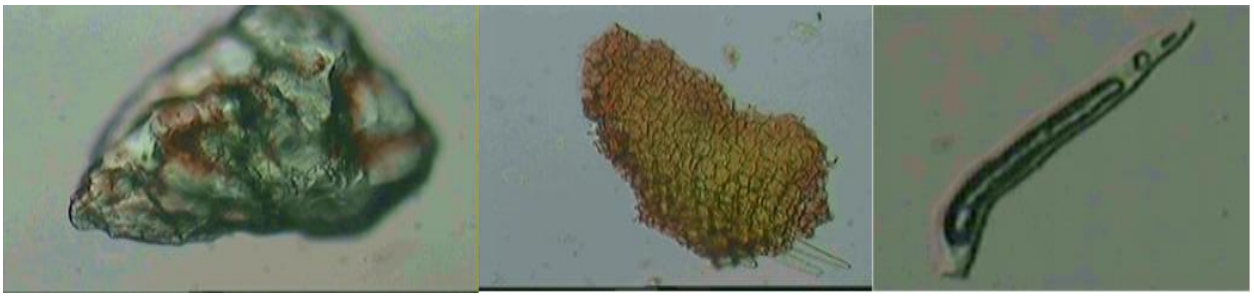

Fig 9: Twig of *Acacia arabica* A, Prismatic calcium oxalate crystal, B, Epidermal cell with fiber, C, Trichome

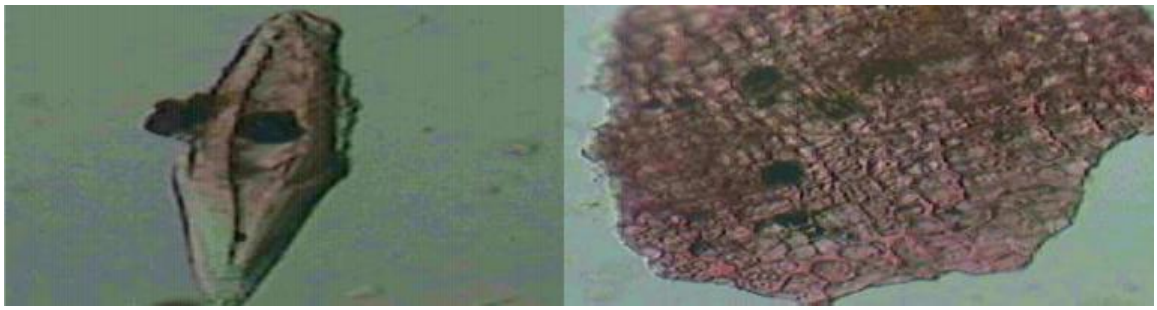

Fig 10: Prosopis twig

4.3 Flourescence analysis

Table 8: Fluorescence analysis in day light

S. No.	Reagent used	*A. arabica* (leaf)	*A. arabica* (bark)	*A. arabica* (twig)	*P. julifera* (leaf)	*P. julifera* (bark)	*P. julifera* (twig)
1.	Powder as such	Dark green	Brown	Yellow	Green	Light Yellow	Light orange
2.	Powder + 1N NaOH in H2O	Redish brown	Black	Yellow	Green	Yellow	Light green
3.	Powder + 1N HCI	green	Brown	Yellow	Green	Brownish yellow	Light green
4.	Powder + 1N H2SO4	green	Blackish brown	Yellow	Green	Yellow	Light green
5.	Powder + HNO3	Brown	orange	Light orange	Yellowish green	Bright yellow	Orange
6.	Powder + 1N NaOH in MeOH	Black	Black	Dark yellow	Dark green	Dark brown	Light orange
8.	Powder + KOH	brown	Redish brown	Yellow	Light green	Bright yellow	Orange
9.	Powder + H2SO4	Dark brown	Redish brown	Black	Blakish green	Black	Black
10.	Powder + GAA	Black green	Brown	Yellow	Green	Yellow	Green
11.	Powder + MethanoI	Dark green	Brown	Yellow	Light green	Yellow	Green
12.	Powder + Acetone	Dark Green	Dark brown	Yellow	Light green	Yellow	Yellow
13.	Powder+EtOH	Brown	Black	Yellow	Light green	Yellow	Yellow
14.	Powder+Alc FeCI3	green	Dark green	Yellow	Yellowish green	Black	Green

Table 9: Fluorescence analysis in 254 nm.

S. No	Reagent used	*A. arabica* (leaf)	*A. arabica* (bark)	*A. arabica* (Twig)	*P. julifera* (leaf)	*P. Julifera* (bark)	*P. julifera* (twig)
1.	Powder as such	Greenish brown	green	Green	Green	Green	Green
2.	Powder + 1N NaOH in H2O	Dark green	Dark Green	Dark green	Green	Green	Green
3.	Powder + 1N HCI	green	Light Green	Green	Yellow green	Green	Green
4.	Powder + 1N H SO 2 4	Dark green	Black	Green	Yellow green	Green	Green
5.	Powder + HNO3	Dark green	Light green	Green	Green	Green	Green
6.	Powder + 1N NaOH in MeOH	Dark green	Black	Green	Green	Green	Dark green
8.	Powder + KOH	Black	green	Green	Yellow green	Green	Green
9.	Powder + H2SO4	Dark green	Black	Dark green	Dark green	Blackis h green	BlackishGreen
10.	Powder + GAA	Dark green	Green	Green	Green	Green	Green
11.	Powder + MethanoI	Brown	Grey	Green	Green	Green	Green
12.	Powder + Acetone	Dark Green	Light Green	Green	Green	Green	Green
13.	Powder+EtOH	Green	Black	Green	Green	Green	Green
14.	Powder + Alc FeCI3	Dark green	Dark green	Green	Green	Dark green	Bright green

Table 10: Fluorescence analysis in 365 nm.

S. No	Reagent used	*A. arabica (leaf)*	*A. arabica (bark)*	*A. arabica (twig)*	*P. julifera (leaf)*	*P. julifera (bark)*	*P. julifera (twig)*
1.	Powder as such	Black	Dark black	Black	Blackish green	Black	Black
2.	Powder + 1N NaOH in H2O	Black	black	Black	Blackish green	Black	Black
3.	Powder + 1N HCI	Black	Dark black	Black	Blackish green	Black	Black
4.	Powder + 1N H SO 2 4	Black	Black	Black	Blackish green	Black	Black
5.	Powder + HNO3	Dark black	Dark black	Black	Blackish green	Black	Black
6.	Powder + 1N NaOH in MeOH	Dark black	Dark black	Black	Blackish green	Black	Black
8.	Powder + KOH	Black	Dark black	Black	Blackish green	Black	Black
9.	Powder + H2SO4	Black	Black	Black	Blackish green	Black	Black
10.	Powder + GAA	Black	Dark black	Black	Blackish green	Black	Black
11.	Powder + MethanoI	Black	Black	Black	Blackish green	Black	Black
12.	Powder + Acetone	Dark black	Black	Black	Black green	Black	Black
13.	Powder + EtOH	Black	Black	Black	Blackish green	Black	Black
14.	Powder + Alc FeCI3	Black	Black	Dark Black	Blackish green	Black	Dark Black

4.4 Physicochemical analysis

Table 11: Moisture content

Observation	*Acacia arabica* (Leaves)	*Acacia arabica* (Bark)	*Acacia arabica* (Twig)	*Prosopis julifera* (Leaf)	*Prosopis julifera* (Bark)	*Prosopis julifera* (Twig)
Range (%)	3.90-4.2%	4.90-5.40%	5.2-5.7%	4.6-4.1%	4.2-4.5%	5.5-5.3%
Average (%)	3.95%	5.20%	5.45%	4.75%	4.35%	5.4%

Table 12: Ash value

Species and parts	Total ash (%)	Average (%)	Acid insoluble ash (%)	Average (%)	Water soluble ash (%)	Average (%)
A.arabica(leaf)	9.25-9.55	9.4	1.13-1.25	1.21	0.855-0.895	0.870
A.arabica(bark)	8.00-8.10	8.05	1.19-1.045	1.033	0.842-0.888	0.865
A.arabica(twig)	7.5-7.9	7.75	0.999-1.35	1.0746	0.865-0.840	0.852
P.julifera(leaf)	8.00-8.20	8.1	1.26-1.55	1.41	0.752-0.782	0.767
P.julifera(bark)	8.20-8.30	8.25	1.02-1.15	1.085	0.768-0.807	0.787
P.julifera(twig)	8.35-8.40	8.4	0.930-1.10	1.037	0.812-0.853	0.832

Table 13: Total phenolic content

Species and parts	phenolic content (%)	Average (%)
A.arabica(leaf)	0.0405-0.0406	0.04055
A.arabica(bark)	0.0400-0.0402	0.0401
A.arabica(twig)	0.0328-0.0348	0.0338
P.julifera(leaf)	0.0406-0.0408	0.047
P.julifera(bark)	0.825-0.00851	0.00838
P.julifera(twig)	0.0138-0.140	0.01392

Table 14: Total tannin content

Species and parts	Tannin content (%)	Average (%)
A.arabica(leaf)	10.2 5-10.35	10.30
A.arabica(bark)	20.25-20.32	20.28
A.arabica(twig)	22.42-22.53	22.47
P.julifera(leaf)	5.38-5.40	5.39
P.julifera(bark)	10.65-10.88	10.774
P.julifera(twig)	15.49-15.62	15.51

Table 15: Total Flavonoid content

Species and parts	Flavonoid content (%)	Average (%)
A.arabica(leaf)	0.1822-0.1842	0.1832
A.arabica(bark)	0.0220-0.0235	0.02275
A.arabica(twig)	0.030-0.0340	0.0270
P.julifera(leaf)	0.2412-0.2436	0.2424
P.julifera(bark)	0.05336-0.05454	0.05390
P.julifera(twig)	0.00672-0.00680	0.00675

Table 16: Total starch content

Species and parts	Starch content (%)	Average (%)
A.arabica(leaf)	3.68-3.96	3.75
A.arabica(bark)	4.14-4.46	4.30
A.arabica(twig)	9.9-10.65	10.34
P.julifera(leaf)	4.14-4.34	4.24
P.julifera(bark)	4.8-5.2	5.0
P.julifera(twig)	5.25-5.45	5.35

Table 17: Total Sugar content

Species and parts	Suger content (%)	Average (%)
A.arabica(leaf)	6.17-6.95	6.56
A.arabica(bark)	2.24-2.62	5.65
A.arabica(twig)	2.10-2.18	2.14
P.julifera(leaf)	11.45-11.71	11.58
P.julifera(bark)	11.17-11.99	11.68
P.julifera(twig)	8.2-9.0	8.6

4.5 Phytochemical analysis

Table 18: Extractive value

Species and parts	Hexane soluble (%)	Average (%)	Alcohol soluble (%)	Average (%)	Water soluble (%)	Average (%)
A. Arabica(leaf)	5.9-6.1	6	10.66-11.00	10.83	11.13-11.44	11.33
A. arabica (bark)	4.14-4.3	4.2	15.51-15.83	15.55	8.98-9.35	9.165
A. arabica (Twig)	1.06-1.22	11.4	2.64-3.10	2.87	6.02-6.36	6.19
P. julifera (leaf)	6.38-6.66	6.57	11.85-12.15	12.0	18.26-18.56	18.416
P. julifera (bak)	1.53-1.86	1.645	17.83-18.16	17.33	15.10-15.23	15.165
P. julifera (Twig)	1.16-1.16	1.16	5.5-5.8	5.66	6.8-7.2	7.0

Table 19: Successive solvent extractive value

Species and parts	Hexane (% extractive)	Chloroform (% extractive)	Acetone (% extractive)		
A. arabica (leaf)	4.19	6.5	7.2		
A. arabica (bark)	0.40	1.9	7.18	8.34	8.36
A. arabica (Twig)	1.82	1.83	9.8	9.9	9.2
P. julifera (leaf)	4.23	3.95	2.98	5.73	6.13
P. julifera (bark)	0.9	2.28	6.1	10.5	8.3
P. julifera (twig)	3.16	1.36	3.2	2.3	8.5

Table 20: Qualitative chemical tests of hexene extracts

Test	*A. arabica (leaf)*	*A. arabica (bark)*	*A. arabica (Twig)*	*P. julifera (leaf)*	*P. julifera (bark)*	*P. julifera (twig)*
Steroids	+	+	+	+	+	+
Triterpenoids	+	+	+	+	+	+
Saponin	--	--	--	--	--	--
Flavonoids	--	--	--	--	--	--
Tannin	--	--	--	--	--	--
Resin	--	--	--	--	--	--
Alkaloids	--	--	--	--	--	--
Glycosides	--	--	--	--	--	--
Carbohydrate	--	--	--	--	--	--
Reducing sugar	--	--	--	--	--	--
Protein & amino acids	--	--	--	--	--	--

+ Present, - Absent

Table 21: Qualitative chemical tests of Acetone extracts

Test	*A. arabica (leaf)*	*A. arabica (bark)*	*A. arabica (Twig)*	*P. julifera (leaf)*	*P. julifera (bark)*	*P. julifera (twig)*
Steroids	_	-	--	-	+	+
Triterpenoids	--	-	--	+	+	+
Saponin	--	--	--	--	--	--
Flavonoids	--	--	--	--	-	-
Tannin	+	+	+	+	+	+
Resin	--	--	-	-	-	-
Alkaloids	-	-	-	-	-	-
Glycosides	--	-	-	-	-	--
Carbohydrate	--	-	-	-	-	-
Reducing sugar	-	-	-	-	--	--
Fixed oils & fats						
Protein & amino acids	--	--	--	-	-	--

Table 22: Qualitative chemical tests of ethanolic extracts

Test	*A. arabica (leaf)*	*A. arabica (bark)*	*A. arabica (Twig)*	*P. julifera (leaf)*	*P .julifera (bark)*	*P. julifera (twig)*
Steroids	--	--	--	--	--	--
Triterpenoids	--	--	--	--	-	-
Saponin	--	-	-	-	--	--
Flavonoids	+	+	+	+	+	+
Tannin	+	+	+	+	+	+
Resin	--	--	--	--	--	--
Alkaloids	--	--	--	--	--	--
Glycosides	--	--	--	--	--	-
Carbohydrate	+	--	--	+	--	--
Starch	--	--	--	--	--	--
Protein & amino acids	--	--	--	--	--	--

Table 23: Qualitative chemical tests of water extracts

Test	*A. arabica (leaf)*	*A. arabica (bark)*	*A. arabica (Twig)*	*P.julifera (leaf)*	*P.julifera (bark)*	*P. julifera (twig)*
Steroids	--	--	--	--	--	--
Triterpenoids	--	--	--	--	--	--
Saponin	--	--	--	--	--	--
Flavonoids	--	--	--	--	--	--
Tannin	+	+	+	+	+	+
Resin	--	--	--	--	--	--
Alkloids	--	--	--	--	--	--
Glycosides	--	--	--	--	--	--
Carbohydrate	+	+	+	--	+	+
Sugar	+	+	+	+	+	+
Protein & amino acids	--	--	--	--	--	--

4.6 HPTLC Analysis

Table 24: Qualitative analysis

Species and parts	β-sitosterol	Stigmasterol	Ursolic acid
A. arabica(leaf)	+		-
A. arabica(bark)		+	-
A. arabica(twig)		+	-
P. julifera(leaf)	+		-
P. julifera(bark)		+	-
P. julifera(twig)			+

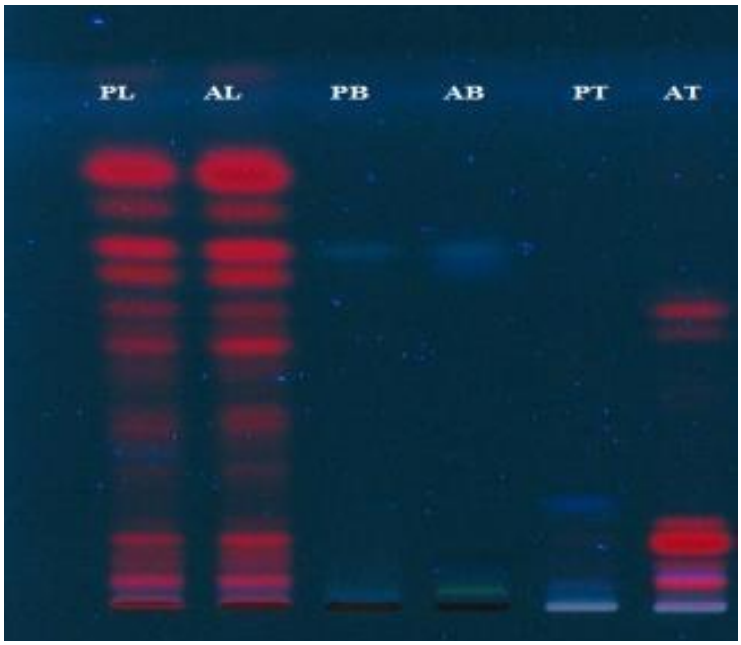

Fig. 11. HPTLC plate of Prosopis and Acacia at 366 nm

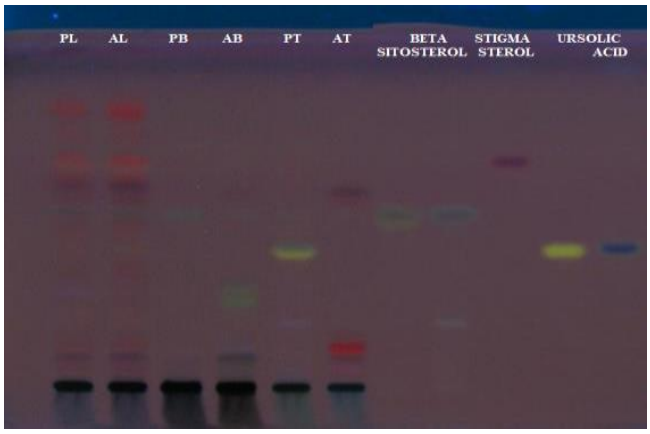

Fig 12: HPTLC Plate of Prosopis and Acacia at 254 nm.

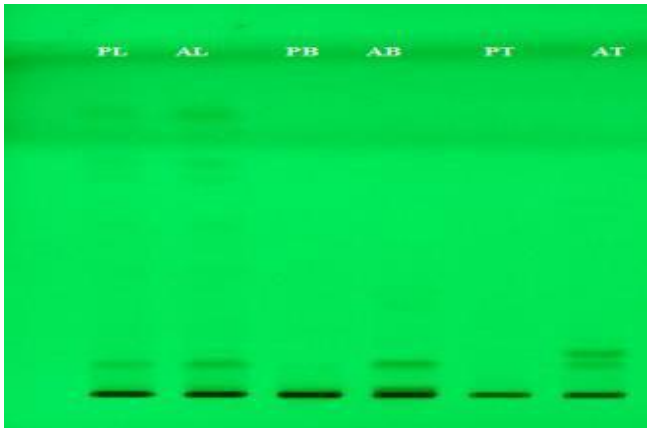

Fig 13: HPTLC Plate Prosopis and Acacia

Fig 14: HPTLC Plate at Visible Light.

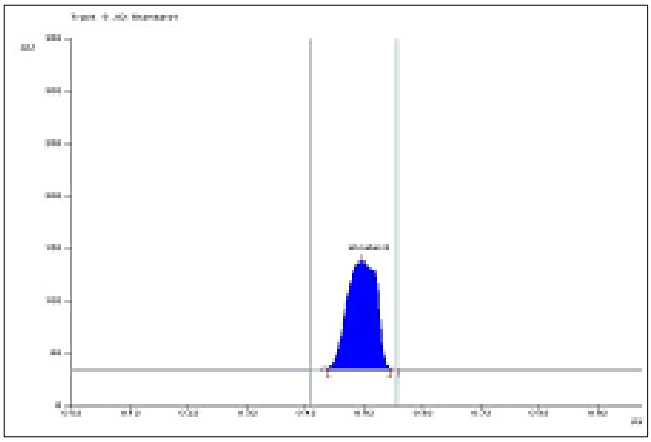

Fig 15: Chromatograph of standard β-sitosterol

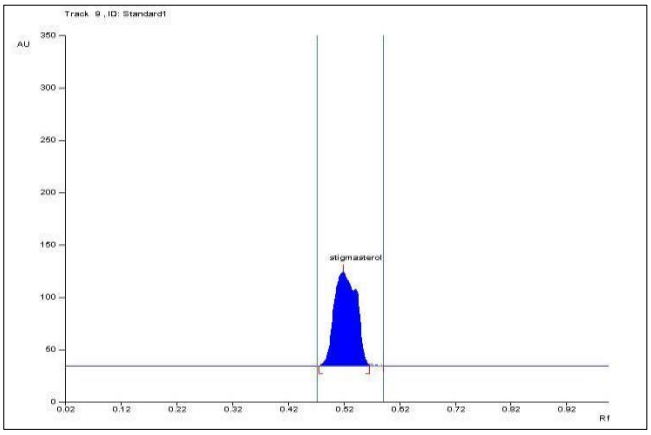

Fig 16: Chromatograph of standard of stigmasterol

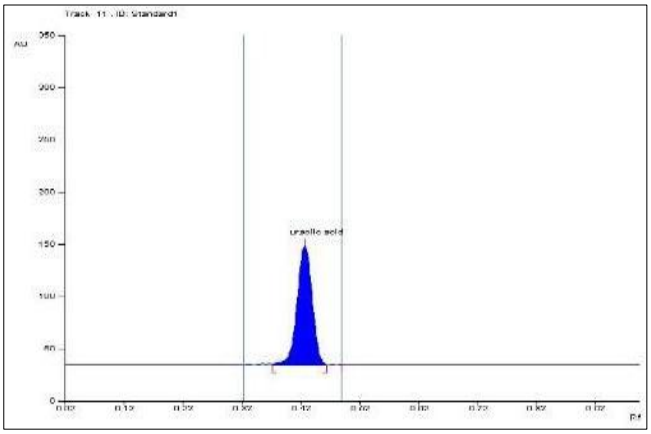

Fig 17: Chromatograph of standard ursolic acid

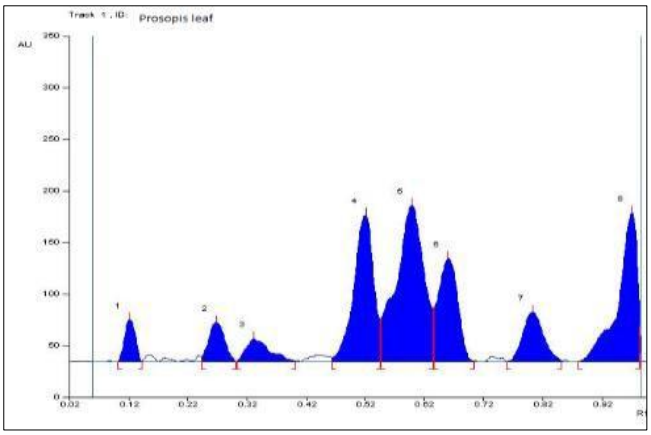

Fig 18: Chromatographic profile of *Prosopis* leaf

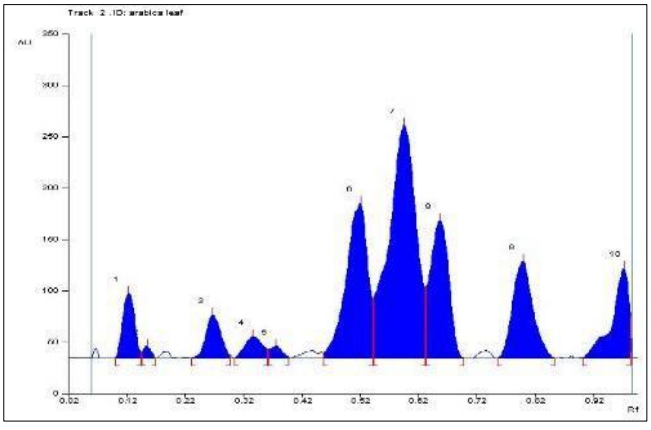

Fig 19: Chromatographic profile of *Acacia arabica* leaf

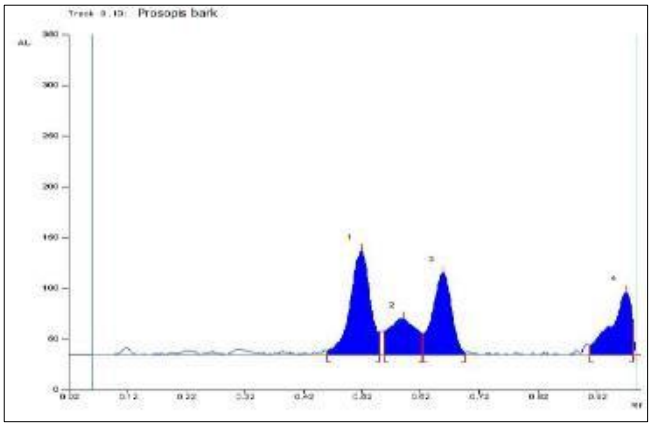

Fig 20: Chromatographic profile of *Prosopis* bark

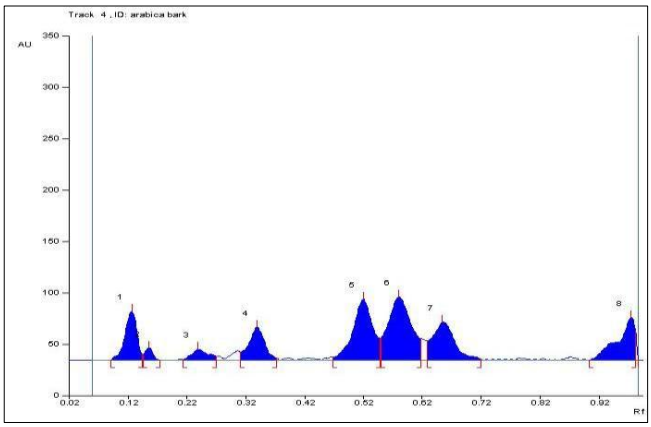

Fig 21: Chromatographic profile of *Acacia* bark

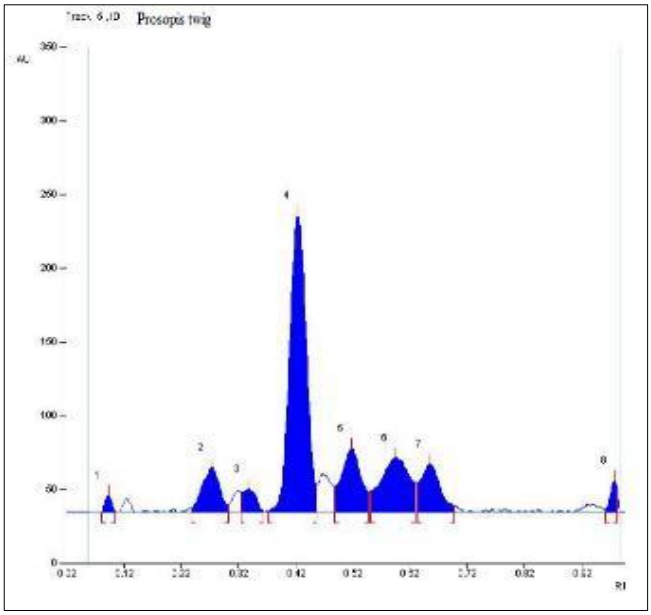

Fig 22: Chromatographic profile of *Prosopis* twig

Table 25: Absorbance at various concentrations

Concentration	0.02	0.04	0.06	0.08	0.1
Ascorbic acid	0.153	0.133	0.114	0.099	0.116
Quercitin	0.217	0.182	0.202	0.211	0.168
Acacia leaf	0.130	0.140	0.131	0.127	0.128
Acacia bark	0.182	0.180	0.176	0.170	0.162
Acacia twig	0.150	0.158	0.153	0.148	0.162
Prosopis leaf	0.192	0.191	0.190	0.194	0.201
Prosopis bark	0.161	0.176	0.160	0.172	0.170
Prosopis twig	0.182	0.186	0.196	0.176	0.172

5. Discussion

Botanical study is of prime importance in establishing quality control (identification) of herbal drugs. It may also provide a suitable criteria to differentiate the different parts used of *Acacia Arabic and Prosopis julifera (Sw).DC*. Detailed study of macroscopical, microscopical and powder microscopy and organoleptic study of powdered drug was done of stem bark, leaf, and twig microscopy.The results of histochemical analysis showed that tannins were present in all the parts of the *Acacia arabica and Prosopis julifera(Sw.)DC*. Calcium oxalate crystals are more common among diversified plant group. They exhibit the unique properties of pleomorphism and birefringence and were present in stem bark, twigs. Absence of cutin and suberin shows the absence of phloem cells in all the sections. All parts of all the sections stained black when treated with ferric chloride 10% which shows the prescence of tannins. Stone cell present in twig of both species. Ash content followed by stem bark and twig. But in *Prosopis julifera* twig contain maximum percentage followed by stem bark and twig. Leaf of *Acacia arabica* has maximum percentage of Ash content. Leaf *of Acacia arabica and Prosopis julifera* have maximum water soluble Ash content followed by Bark and twig. Twig of *Prosopis julifera* has maximum acid insoluble ash content followed by stem bark and twig. While leaf of *Acacia arabica* has maximum acid insoluble ash content followed by stem bark and twig.The results of total extractive values shows that twig of *Acacia arabica* containe large percentage of hexene soluble extract followed by leaf and bark while leaf of *Prosopis julifera* has maximum followed by bark and twig, maximum percentage in *Prosopis julifera* leaf and minimum twig. But in ethnol both stem bark have maximum content followed by leaf and twig, *Prosopis julifera* stem bark has maximum ethanol extract content and mimimum in twig. But in water soluble extract, leaf contains more percentage of extract followed by stem bark, and twig. According to the results *Acacia* leaf contain the highest amount of phenols followed by stem bark and twig, and *Prosopis* leaf also contain highest amount followed by twig and bark. Prosopis leaf has maximum percentage and bark contain lowest amount. The level of flavonoids in the methanolic extract of the various parts. Total flavonoid content was much higher in the leaf followed by stem bark, and twig. Leaf of *Prosopis julifera* contain maximum amount of flavonoid and twig contain minimum.

Conclusion

It is concluded that given plant is *Acacia arabica* and *Prosopis julifera*, I have done the comparative pharmacognostical study between *Acacia arabica* and *Prosopis julifera* and conclude that *Acacia arabica* plays more significant role and has more scientific value. The present study was aimed at pharmacognostical study. Plants *Acacia Arabica* and *Prosopis julifera* were studied for pharmacognostical characteristic, namely, morphology, microscopy, physicochemical, parameters which can be of utilized in identification and Authentication of plants. Successive, extractive and phytochemical screening revealed the present of Tannin Alkaloids, steroids and Terpenoids in various extracts however most of the medicinally potential phytoconstituents where present in alcoholic and aqueous extracts, Methnolic extracts used for the HPTLC analysis. Several medicinal properties have been scientifically established by various worker.

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