IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

PHARMACOGNOSTICAL EVALUATION OF ALLIUM CEPA USING UV-VISIBLE SPECTROSCOPY, HPTLC AND POWDER MICROSCOPIC METHODS

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Abstract: Allium cepa commonly known as Onion is consumed as food across the world and also used to treat inflammatory diseases in traditional systems of medicine. The present study provides a detailed pharmacognostic evaluation based on its physicochemical, macroscopic, microscopic and chromatographic properties. The physicochemical parameters such as loss on drying, solubility in different solvents, ash content, acid insoluble ash, water soluble ash, volatile oil, fibre content etc. were determined by standard methods. Anatomical features of the stem of *Allium cepa* were determined. For this the sample was fixed in FAA, cast into paraffin blocks and sectioned with the help of Rotary Microtome. The stomata morphology, venation pattern and trichome distribution were studied. Microscopic descriptions of tissues were supplemented with micrographs wherever necessary. Photographs of different magnifications were taken with Nikon Labphot 2 Microscopic Unit. Powder microscopy was carried out using standard methods. HPTLC profile of the ethyl acetate plant extract was carried out in short UV, long UV and using vanillin-sulphuric acid as detection reagent. The Rf values of the spots developed were noted which is an important parameter for identification of plant materials. The pharmacognostical parameters along with the HPTLC profile may be utilized to identify the drug material and for laying down the pharmacopoenial standards.

INTRODUCTION

Allium cepa is a widely useful food material and is used as medicine for various inflammatory diseases. It contains polyphenolic compounds namely flavonoids and about 120 organic compounds. Flavonoids have a wide range of pharmacological activities that include anti-oxidant, antimicrobial, anti-inflammatory, antimutagenic, antitumour, antidiabetic Vaso-relaxant, immunomodulatory and both oestrogenic and anti-oestrogenic activities (Lin et al. 2014). Due to its anti-inflammatory, anti-oxidant and anti-cancer activities, researches are now going on to evaluate its therapeutic potential. The present study aims at the pharmacognostic characterisation using UV-Visible Spectroscopy, HPTLC, powder microscopy and physiochemical studies [3,4] of the bulb of *Allium cepa*.

Table 1. characterization of *Allium Cepa.*

Botanical Name	**Allium Cepa**
Kingdom	**Plantae**
Division	**Magnoliophyta**
Class	**Monocotyledonae**
Order	**Liliales**
Family	**Liliaceae**
Genus	**Allium**
Species	**Cepa**

Figure **1**-*Plant Allium cepa*

NEED OF THE STUDY

Identification of every medicinal plant is necessary for research purposes. *Allium cepa* plant is most widely useful food material aswellas medicinal plant. Hence identification and evaluation of present plant is important for future research in this field.

RESEARCH METHODOLOGY

Collection of Plant Materials

Fresh and healthy Allium cepa (Red Onion) were collected from local market, Trivandrum, India, on June 2023.

Physico-chemical parameters

The physico-chemical examinations include determination of total ash, acid insoluble ash, and water-soluble ash, extractable matter in water and alcohol, loss on drying at 105˚C, volatile oil, swelling index, foaming index, and fibre content. All the physio-chemical parameters and the limit test for arsenic and heavy metals were determined by the methods of WHO (1998) guidelines [2,10]

Organoleptic characters:

Organoleptic characters such as colour, odour and taste were noted.

Powder microscopy:

About 0.5gm of the finely powdered sample was mounted in Glycerine at room temperature for 2 h and observed under 10X and 40X objective of bright field microscope (Meswox, India) for powder characteristics. Photomicrographs of diagnostic characters were captured using attached camera.

UV-Visible Spectroscopy

This is mainly caused by the absorption by compounds present in the alcoholic extract of *Allium cepa*. The alcohol extract is subjected to analysis shows wavelength range of 200-900 nm using UV-VIS spectrophotometer using model UV3120 for detection and record.

Alcoholic Extraction of *Allium cepa* for HPTLC studies

1g of powdered *Allium cepa* refluxed with 7.5mL alcohol at a temperature of 60 degree for 10 minutes to get the extract. The extracts were filtered and concentrated to desired volume.

HPTLC finger printing

Development of high-performance thin layer chromatographic (HPTLC) profile

HPTLC profile of the alcohol extract of the *Allium cepa* was performed on silica gel 60 F254 pre-coated aluminium sheets using CAMAG instrument using HPTLC system (CAMAG, Switzerland) made up of a Linomat sample applicator, a CAMAG twin – trough plate development chamber, CAMAG TLC Scanner 3, CAMAG Reprostar 3 photo document system and WinCATS Software 4.03. The extract for the study was prepared by soaking 4 g of the powdered plant material in 40 ml of alcohol and kept overnight. The solution was boiled for 10 minutes and filtered. The filtrate was concentrated and made up to 10 ml in standard flask. The plate was developed in Toluene: Ethyl acetate (5:1.5). The plate was dried and visualised under UV 254 nm and 366 nm, and derivatised using vanillin-sulphuric acid reagent and heated at 105° C till the colour of the bands appeared and photodocumented [8].

IV. RESULTS AND DISCUSSION

Macroscopic characterisation

The onion (*Alliumcepa* L.,from Latin *cepa* "onion"), is the most widely cultivated species of the genus Allium. The plant has a fan of hollow, bluish-green leaves with bulb at the base of the plant. The bulbs are composed of shortened, underground stems surrounded by fleshy modified scale (leaves) that envelop a central bud at the tip of the stem and are a member of the family Liliacea contains an abundance of phytocompounds having medicinal properties. [9]

Physio- chemical analysis

The Physio-chemical parameters according to standard parameters for the plant *Allium cepa* reveals the identity of the plant and is inevitable for identifying plant for researchers.

The results obtained for the analysis is shown in Table 2

Sl. No.	Parameters	*Allium cepa* (Tuber)
1.	Loss on drying	10.64%
2.	Total Ash	2.73%
3.	Acid insoluble ash	0.29%
4.	Water soluble ash	1.15%
5.	Sulphated ash	3.70%
6.	Water soluble extractives	75.08%
7.	Alcohol soluble extractives	68.22%
8.	Swelling index	7 ml
9.	Foaming index	<100
10.	Volatile oil	Trace
11.	Ph	5.35

Table 2: Physio-chemical properties of *Allium cepa* L. (Peel)

Organoleptic characters

The parameters like state, nature, odour, taste, touch, flow property and appearance were also analysed and tabulated in Table 3.

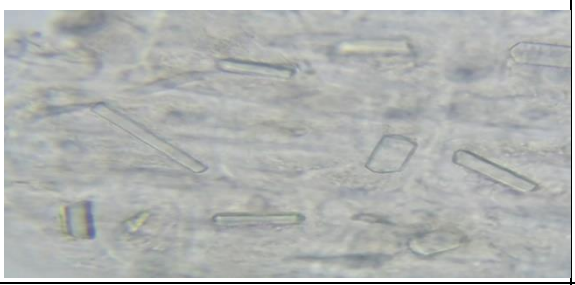
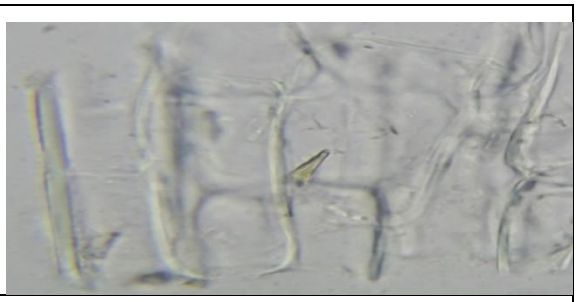
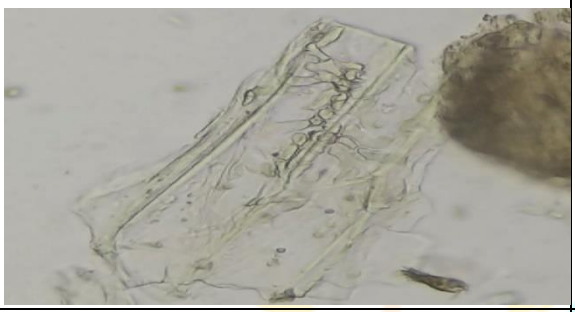
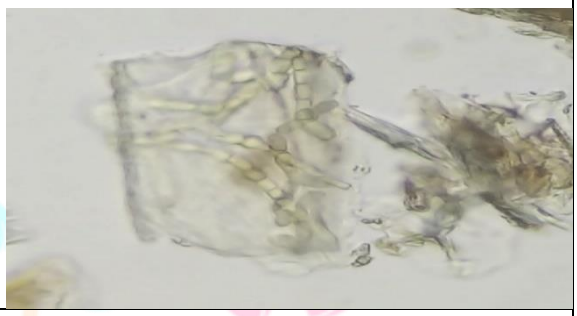
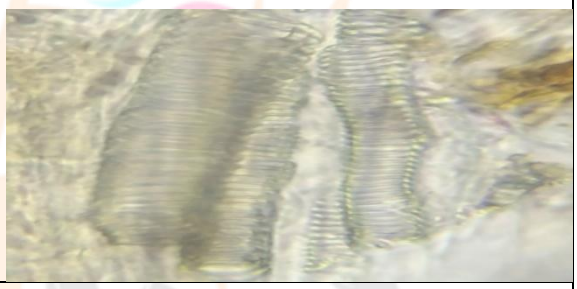
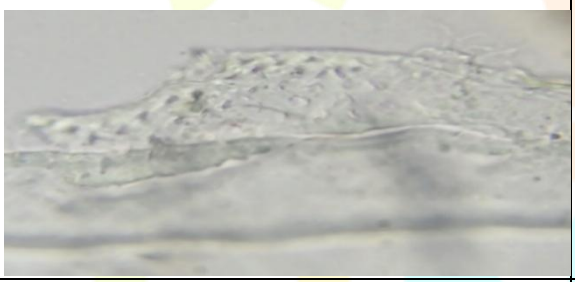
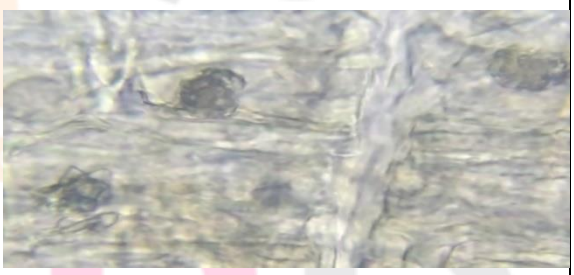
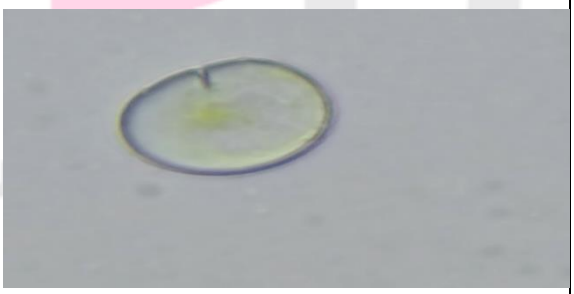
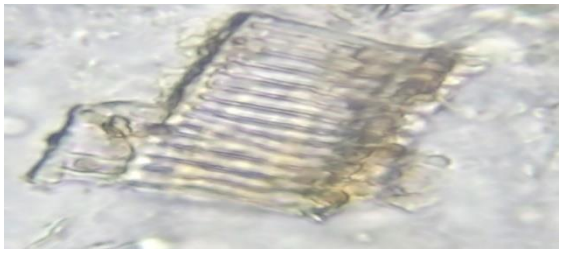
Table 3: Organoleptic characters of *Allium cepa* L. (Peel)

Sl. No.	Specification	Character
1	State	Solid
2	Nature	Granular
3	Odour	Characteristic odour
4	Touch	More or less rough
5	Flow Property	Non-Free flowing
6	Appearance	Dark Brown in colour
7	Taste	Characteristic taste

Powder microscopy:

The following cellular characters were observed in the powder sample of *Allium cepa*. Epidermal cells and their fragments, Calcium oxalate crystals (rosette and prismatic), simple starch grains, thick fibre, xylem vessels with thickenings), thick fibre etc. are seen. Among these the presence of calcium oxalate crystals is notable one because its presence points the important facts in photosynthesis. As its functions include high-capacity calcium regulation and protection capacity of plant against herbivory and also genetic regulation of calcium oxalate formation. (Pub Med.ncbi.nlm.nih.gov.) (11). It can also control Iron regulation in plants. The results obtained are shown in fig.2-12.

Powder characteristics of *Allium cepa* L. (Peel)

	
Prismatic Calcium oxalate crystals	Epidermal cells
	
Epidermal cells	Fragments of ruptured cell walls
	
Xylem vessel with spiral thickening	
	
Pitted vessel	Rosette Calcium oxalate crystal
	
Simple starch grain with hilum	Simple starch grain
	

Xylem vessel with scalariform thickening	Thick fiber

Figure2-12 shows powder characteristics of plant.

UV-Visible Spectroscopy

UV-Visible spectrum of ethanolic extract of *Allium cepa shows* two major peaks of flavones and derivatives. These two strong absorption peaks commonly referred to as band I (300-380nm) and band II (240-280nm). Band I is associated with the presence of a B-ring cinnamoyl system. Band II absorption is due to an A-ring benzoyl system. Substitutions on A or B ring may produce hypsochromic or bathochromic shifts of the absorptions, which are useful for clarifying structures. [11]

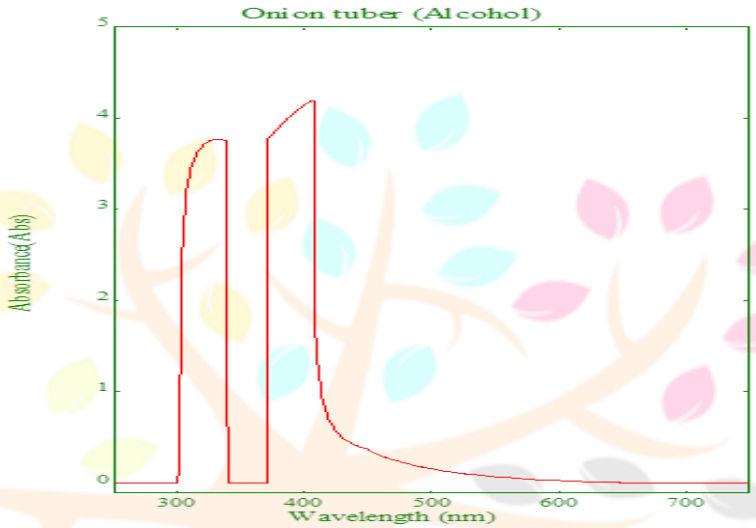


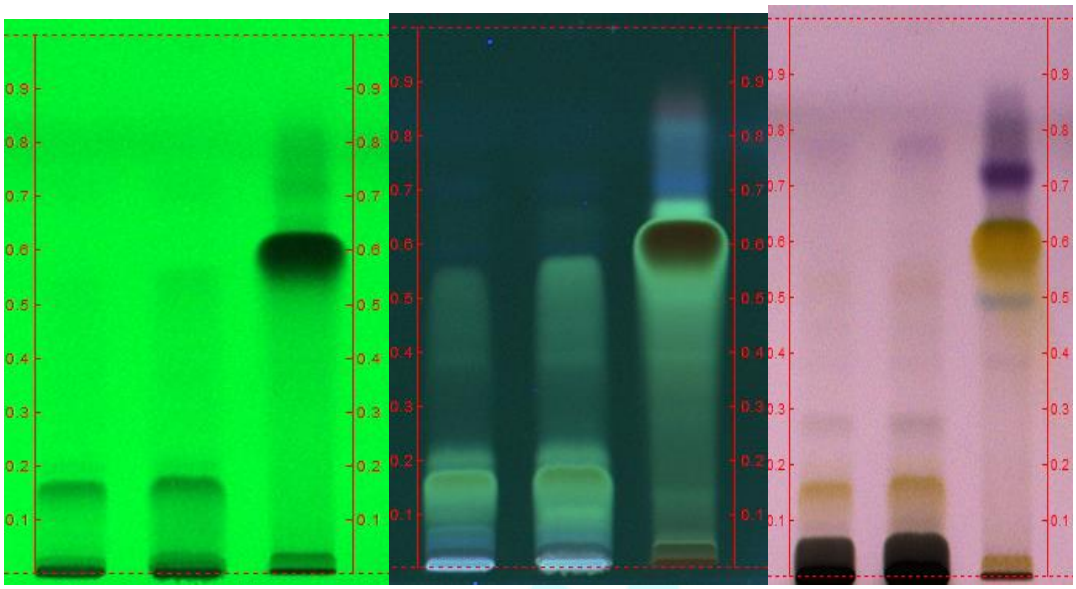
Figure 13 UV-Visible spectrum of alcoholic extract of *Allium cepa*.

From the results of UV-Visible spectrum, presence of compound Quercetin in the ethanolic extract of plant *Allium Cepa* is confirmed.

High Performance Thin Layer Chromatography (HPTLC)

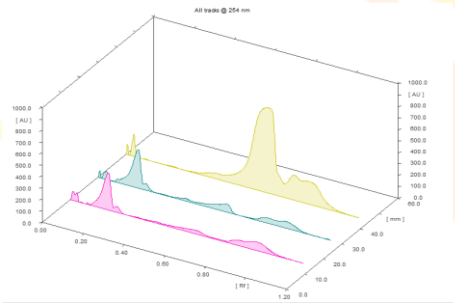
The HPTLC of the ethyl alcohol extract of the plant material was carried out. The plates were viewed under UV short, UV long and developed in anisaldehyde sulphuric acid reagent. HPTLC profile is a valuable parameter for identification of plant materials. HPTLC profile of alcoholic extract is given in Figure 14. The scanned Peak table at 254nm is given in Table 2, 366nm is given in Table 3, at 580nm after derivatisation using anisaldehyde sulphuric acid and heating at105ºC for 5 minutes is given in Table

For HPTLC study, two spots of sample and one spot of reference material Q was introduced. Result shows various fractions for spot 1 and spot 2 of extract of *Allium Cepa* and is compared with standard Quercetin. Fraction at same distance from the point of application for Q and sample confirmed the presence of Q in the sample. This is confirmed with 3D chromatogram UV short, UV long and visible light. They are given below.

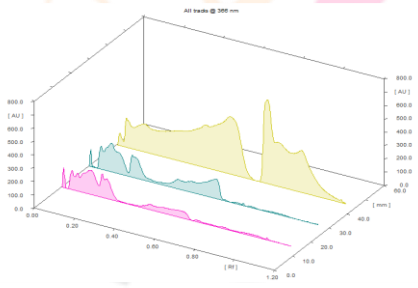


Under UV short **Under UV long** **Under white light after Derivatisation**

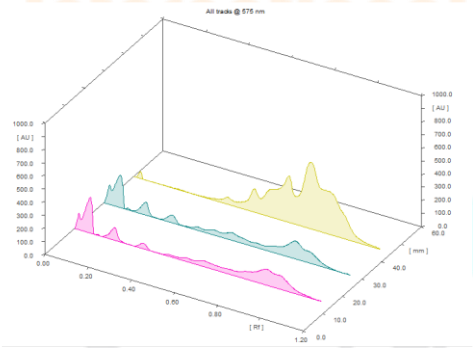
Figure 14: HPTLC profile of ethyl alcohol extract Allium cepa at (a) 254 nm, (b)366 nm and (c) Day light after derivatisation and heating at 105°C for 5 minutes (spray reagent - anisaldehyde sulphuric acid) and scanned it at 575 nm.



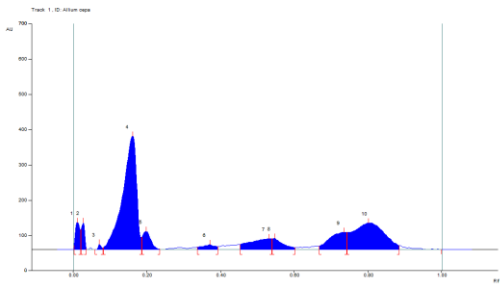
At 254 nm



At 366 nm

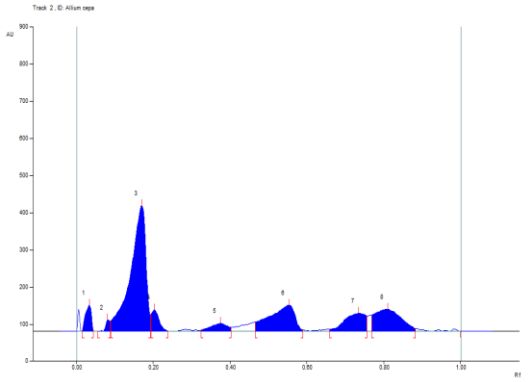


At 575 nm



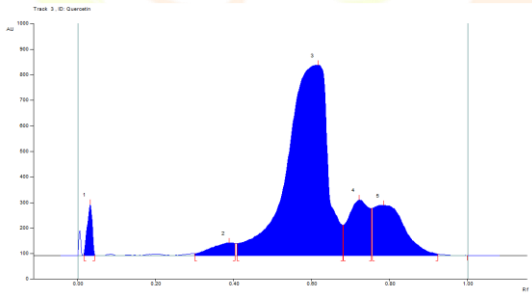
Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	10.7 AU	0.01 Rf	77.2 AU	10.39 %	0.02 Rf	55.1 AU	808.8 AU	3.65 %
2	0.03 Rf	57.0 AU	0.03 Rf	76.4 AU	10.29 %	0.04 Rf	2.4 AU	561.7 AU	2.53 %
3	0.07 Rf	0.2 AU	0.08 Rf	15.0 AU	2.02 %	0.09 Rf	4.6 AU	100.2 AU	0.45 %
4	0.10 Rf	5.4 AU	0.19 Rf	322.0 AU	43.38 %	0.21 Rf	34.2 AU	9958.2 AU	44.94 %
5	0.21 Rf	35.5 AU	0.23 Rf	50.9 AU	6.86 %	0.27 Rf	0.8 AU	941.7 AU	4.25 %
6	0.39 Rf	6.4 AU	0.43 Rf	13.7 AU	1.84 %	0.45 Rf	8.4 AU	405.8 AU	1.83 %
7	0.52 Rf	14.4 AU	0.61 Rf	31.1 AU	4.19 %	0.62 Rf	30.8 AU	1495.5 AU	6.75 %
8	0.62 Rf	30.8 AU	0.63 Rf	31.6 AU	4.26 %	0.69 Rf	5.5 AU	755.3 AU	3.41 %
9	0.77 Rf	9.1 AU	0.84 Rf	49.4 AU	6.65 %	0.85 Rf	48.1 AU	1856.4 AU	8.38 %
10	0.85 Rf	48.2 AU	0.92 Rf	75.1 AU	10.12 %	1.02 Rf	10.6 AU	5277.2 AU	23.81 %

Figure 15



Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.02 Rf	0.1 AU	0.04 Rf	70.4 AU	10.10 %	0.05 Rf	1.2 AU	871.5 AU	3.76 %
2	0.06 Rf	0.0 AU	0.09 Rf	31.2 AU	4.47 %	0.10 Rf	27.6 AU	267.8 AU	1.16 %
3	0.10 Rf	28.1 AU	0.20 Rf	339.1 AU	48.64 %	0.22 Rf	45.1 AU	11099.7 AU	47.93 %
4	0.22 Rf	46.3 AU	0.23 Rf	57.3 AU	8.21 %	0.27 Rf	0.0 AU	920.5 AU	3.97 %
5	0.37 Rf	2.9 AU	0.43 Rf	21.4 AU	3.07 %	0.46 Rf	10.5 AU	750.7 AU	3.24 %
6	0.54 Rf	25.0 AU	0.64 Rf	70.2 AU	10.07 %	0.68 Rf	3.7 AU	3739.5 AU	16.15 %
7	0.76 Rf	5.1 AU	0.84 Rf	48.1 AU	6.90 %	0.87 Rf	41.6 AU	2163.7 AU	9.34 %
8	0.88 Rf	43.8 AU	0.93 Rf	59.4 AU	8.53 %	1.01 Rf	6.7 AU	3343.3 AU	14.44 %

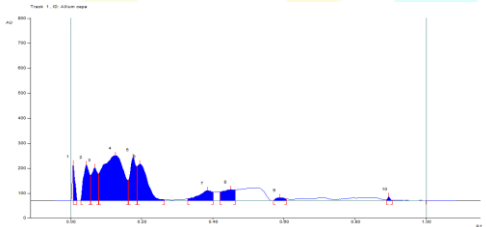
Figure 16



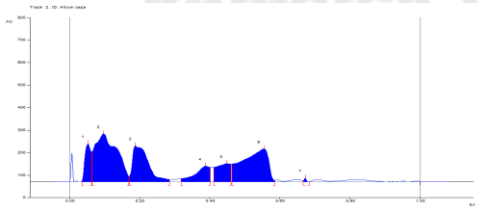
Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.02 Rf	3.7 AU	0.04 Rf	200.2 AU	14.19 %	0.05 Rf	2.8 AU	2058.4 AU	2.27 %
2	0.35 Rf	7.5 AU	0.45 Rf	50.1 AU	3.55 %	0.46 Rf	47.5 AU	2449.1 AU	2.70 %
3	0.47 Rf	47.7 AU	0.71 Rf	746.2 AU	52.88 %	0.78 Rf	19.6 AU	63679.7 AU	70.19 %
4	0.78 Rf	119.9 AU	0.83 Rf	217.9 AU	15.44 %	0.86 Rf	84.8 AU	9544.5 AU	10.52 %
5	0.87 Rf	185.9 AU	0.90 Rf	196.8 AU	13.95 %	1.06 Rf	6.8 AU	12988.7 AU	14.32 %

Figure 17

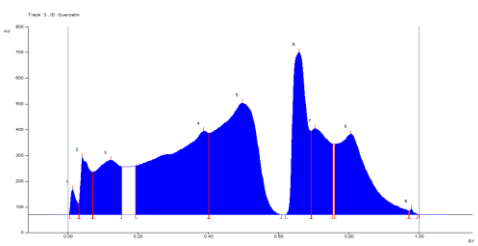
Table 4-6 and figure18-20: Scanned Peak table-After development the plate was scanned at 254nm



Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01 Rf	146.3 AU	0.01 Rf	146.3 AU	14.16 %	0.02 Rf	4.4 AU	600.4 AU	2.77 %
2	0.03 Rf	2.6 AU	0.05 Rf	142.9 AU	13.84 %	0.06 Rf	01.9 AU	1949.7 AU	8.99 %
3	0.07 Rf	102.0 AU	0.08 Rf	131.8 AU	12.76 %	0.09 Rf	06.5 AU	1866.1 AU	8.61 %
4	0.09 Rf	106.9 AU	0.15 Rf	179.9 AU	17.41 %	0.19 Rf	81.5 AU	8529.4 AU	39.34 %
5	0.19 Rf	82.2 AU	0.20 Rf	173.6 AU	16.81 %	0.21 Rf	37.4 AU	2446.8 AU	11.29 %
6	0.22 Rf	138.5 AU	0.22 Rf	146.2 AU	14.15 %	0.30 Rf	3.4 AU	3379.4 AU	15.59 %
7	0.38 Rf	7.8 AU	0.44 Rf	40.0 AU	3.87 %	0.46 Rf	34.0 AU	1282.9 AU	5.92 %
8	0.48 Rf	35.1 AU	0.52 Rf	44.3 AU	4.29 %	0.53 Rf	42.6 AU	1298.8 AU	5.99 %
9	0.65 Rf	0.5 AU	0.68 Rf	11.9 AU	1.15 %	0.70 Rf	6.8 AU	234.9 AU	1.08 %
10	1.02 Rf	3.1 AU	1.03 Rf	16.0 AU	1.55 %	1.04 Rf	1.9 AU	92.2 AU	0.43 %

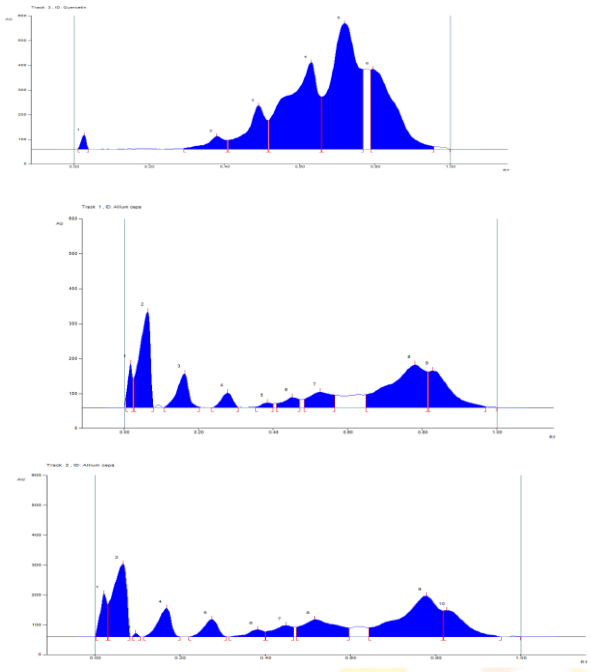


Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.04 Rf	3.6 AU	0.06 Rf	170.0 AU	19.77 %	0.07 Rf	34.3 AU	2355.0 AU	7.07 %
2	0.07 Rf	134.3 AU	0.11 Rf	213.1 AU	24.78 %	0.20 Rf	24.1 AU	11055.5 AU	33.20 %
3	0.20 Rf	24.3 AU	0.22 Rf	161.1 AU	18.73 %	0.33 Rf	10.3 AU	5959.8 AU	17.90 %
4	0.37 Rf	14.6 AU	0.45 Rf	70.0 AU	8.14 %	0.46 Rf	64.2 AU	2402.2 AU	7.21 %
5	0.47 Rf	64.4 AU	0.51 Rf	81.5 AU	9.48 %	0.53 Rf	79.5 AU	2678.2 AU	8.04 %
6	0.53 Rf	79.2 AU	0.64 Rf	146.7 AU	17.06 %	0.67 Rf	6.8 AU	8756.2 AU	26.29 %
7	0.76 Rf	4.7 AU	0.77 Rf	17.4 AU	2.03 %	0.79 Rf	1.6 AU	94.8 AU	0.28 %



Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01 Rf	4.2 AU	0.02 Rf	96.6 AU	3.73 %	0.04 Rf	41.8 AU	1216.7 AU	0.80 %
2	0.04 Rf	48.4 AU	0.05 Rf	221.9 AU	8.58 %	0.08 Rf	65.4 AU	4951.0 AU	3.27 %
3	0.08 Rf	165.8 AU	0.14 Rf	211.3 AU	8.17 %	0.18 Rf	86.6 AU	11401.8 AU	7.53 %
4	0.22 Rf	189.6 AU	0.45 Rf	324.5 AU	12.54 %	0.46 Rf	16.7 AU	36806.9 AU	24.30 %
5	0.46 Rf	316.8 AU	0.57 Rf	433.5 AU	16.75 %	0.70 Rf	0.0 AU	40150.0 AU	26.51 %
6	0.71 Rf	0.2 AU	0.76 Rf	630.7 AU	24.37 %	0.80 Rf	24.0 AU	20169.5 AU	13.31 %
7	0.80 Rf	324.8 AU	0.81 Rf	334.0 AU	12.90 %	0.87 Rf	73.9 AU	13585.6 AU	8.97 %
8	0.87 Rf	273.2 AU	0.93 Rf	313.3 AU	12.11 %	1.11 Rf	15.0 AU	23000.5 AU	15.18 %
9	1.12 Rf	14.5 AU	1.12 Rf	22.1 AU	0.85 %	1.14 Rf	3.1 AU	198.8 AU	0.13 %

Table 7-9 Figure 21-23: Scanned Peak table-After development the plate was scanned at 366nm



Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01 Rf	32.5 AU	0.02 Rf	124.9 AU	14.67 %	0.03 Rf	81.6 AU	1277.5 AU	4.39 %
2	0.03 Rf	83.1 AU	0.07 Rf	272.9 AU	32.07 %	0.09 Rf	1.7 AU	6407.0 AU	22.04 %
3	0.12 Rf	0.4 AU	0.19 Rf	96.6 AU	11.36 %	0.23 Rf	2.1 AU	2427.2 AU	8.35 %
4	0.27 Rf	0.1 AU	0.32 Rf	41.5 AU	4.88 %	0.35 Rf	0.1 AU	1011.3 AU	3.48 %
5	0.41 Rf	1.9 AU	0.44 Rf	13.7 AU	1.61 %	0.46 Rf	10.7 AU	317.2 AU	1.09 %
6	0.47 Rf	11.7 AU	0.52 Rf	28.8 AU	3.39 %	0.54 Rf	23.2 AU	947.8 AU	3.26 %
7	0.55 Rf	24.1 AU	0.60 Rf	44.6 AU	5.24 %	0.65 Rf	35.9 AU	2228.5 AU	7.67 %
8	0.75 Rf	36.8 AU	0.90 Rf	122.6 AU	14.41 %	0.93 Rf	02.9 AU	9490.9 AU	32.65 %
9	0.94 Rf	102.7 AU	0.95 Rf	105.3 AU	12.37 %	1.11 Rf	2.6 AU	4959.5 AU	17.06 %

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.00 Rf	8.2 AU	0.03 Rf	144.6 AU	16.09 %	0.04 Rf	08.3 AU	1864.3 AU	5.91 %
2	0.04 Rf	108.9 AU	0.08 Rf	243.6 AU	27.11 %	0.10 Rf	5.8 AU	6219.4 AU	19.72 %
3	0.10 Rf	1.1 AU	0.11 Rf	11.4 AU	1.26 %	0.12 Rf	0.4 AU	92.3 AU	0.29 %
4	0.13 Rf	0.2 AU	0.20 Rf	95.2 AU	10.59 %	0.23 Rf	0.2 AU	2352.0 AU	7.46 %
5	0.25 Rf	0.0 AU	0.32 Rf	58.1 AU	6.47 %	0.35 Rf	1.1 AU	1567.2 AU	4.97 %
6	0.36 Rf	0.1 AU	0.44 Rf	24.4 AU	2.72 %	0.46 Rf	17.1 AU	716.3 AU	2.27 %
7	0.46 Rf	17.1 AU	0.52 Rf	37.8 AU	4.21 %	0.54 Rf	32.4 AU	1397.3 AU	4.43 %
8	0.54 Rf	32.5 AU	0.59 Rf	58.1 AU	6.46 %	0.69 Rf	30.2 AU	3842.6 AU	12.19 %
9	0.74 Rf	30.5 AU	0.89 Rf	136.7 AU	15.21 %	0.94 Rf	87.3 AU	9856.3 AU	31.26 %
10	0.94 Rf	87.5 AU	0.95 Rf	88.7 AU	9.87 %	1.10 Rf	0.3 AU	3623.7 AU	11.49 %

Peak	Start Position	Start Height	Max Position	Max Height	Max %	End Position	End Height	Area	Area %
1	0.01 Rf	2.7 AU	0.03 Rf	57.6 AU	3.91 %	0.05 Rf	1.5 AU	606.7 AU	0.76 %
2	0.34 Rf	4.6 AU	0.44 Rf	52.6 AU	3.57 %	0.47 Rf	36.4 AU	2077.7 AU	2.61 %
3	0.47 Rf	36.8 AU	0.56 Rf	176.1 AU	11.95 %	0.59 Rf	16.9 AU	7166.2 AU	8.99 %
4	0.60 Rf	117.8 AU	0.72 Rf	352.0 AU	23.89 %	0.75 Rf	12.6 AU	23332.5 AU	29.29 %
5	0.76 Rf	212.6 AU	0.83 Rf	510.1 AU	34.62 %	0.88 Rf	24.1 AU	29247.0 AU	36.71 %
6	0.90 Rf	322.0 AU	0.91 Rf	325.2 AU	22.07 %	1.10 Rf	11.2 AU	17242.9 AU	21.64 %

Table 10-12: Scanned Peak table-After development the plate was derivatised using anisaldehyde sulphuric acid as spray reagent and heated at105ºC for 5m) and scanned it at 575nm.

Table 10-12 and Figures24-26 HPTLC finger print profile of 2-10µl of alcohol extract of Allium cepa at 254nm,366nm and 575 nm.

The HPTLC analysis of plant extract shows characteristic peak of plant *Allium cepa* in track 1 and 2. It was then compared with purchased Quercetin dihydrate in track 3. At 254nm, R_f value of 0.35 R_f and 0.02 R_f showed a remarkable band with maximum area percentage for the plant Allium cepa in track 2 and in track 1, highest peak 4 with .10 R_f with area 44.94%. . In track 3 peak 3 shows maximum 0.10 R_f for highest area percentage. At 366nm, maximum concentration of phytochemicals is at the R_f values 0.09 with area 39.34% and 0.07 R_f with 33.20% in track 1 and 2 respectively. In track 3, R_f 0.46 with 26.31%. In a derivatized plate of 575nm, maximum area percentage corresponds to Rf value of 0.75 for 52.65% in track 1, R_f 0.74 with 31.26% for track 2 and 0.76 R_f with 36.7% area were seen.

CONCLUSION

The important characters of a plant analysis is its microscopic and macroscopic characters. Here the present work points microscopic and macroscopic characters along with HPTLC analysis and UV-Visible spectroscopy helps to identify the quality, identity and importance of the plant *Allium cepa*. Since *Allium cepa* is used as widely accepted food material and medicinal plant, the study helps to identify real, good quality plant from with absence of unwanted chemicals. Hence the detailed study of plant helps to find the presence of Quercetin in Allium cepa and the presence of microscopic unique characters of Allium cepa which helps to find the importance of plant Allium cepa. It could be helpful for authentication of this medicinally important plant. As plant has high medicinal effects it can be useful for treating various infectious disease. It also extends application for treating covid by natural Quercetin. Natural Quercetin can be used as drug that will decrease the drug resistance as well as hazardous effects of synthetic Quercetin drug for various disease.

AKNOWLEDGEMENT

The authors are very much thankful to the Department of Chemistry, Department of Botany, SRRI, Poojappura, TVM, PG Department of Chemistry, MSM College, Kayamkulam and PG Department of Chemistry, S.N. College, Kollam.

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