



**COMPARATIVE PHARMACOGNOSTICAL & PHYTOCHEMICAL STUDY OF
CHAKRAMARD SEED & GOMUTRA BHAVIT CHAKRAMARD SEED**

Preeti Pandey^{*1}, D. C. Singh², Shailendra Pradhan³ and Deepak Kumar Semwal⁴

¹P.G. Scholar, P.G Dept. of Dravyaguna, Rishikul Campus, UAU, Haridwar.

²Professor & H.O.D, P.G Dept. of Dravyaguna, Rishikul Campus, UAU, Haridwar.

³Asst. Professor, Gurukul Campus, UAU, Haridwar.

⁴Asst. Professor, Dept. of Phytochemistry, UAU, Harrawala, Dehradun.

***Corresponding Author: Dr. Preeti Pandey**

P.G. Scholar, P.G Dept. of Dravyaguna, Rishikul Campus, UAU, Haridwar.

Article Received on 29/04/2020

Article Revised on 19/05/2020

Article Accepted on 09/06/2020

ABSTRACT

The present study deals with the Pharmacognostical, Physicochemical, Phytochemical and Chromatography study of *Chakramard* seed and Gomutra bhavit *Chakramard* seed on different six extract to provide identification & qualitative analysis. More active ingredients of Seed also evaluate because due to its maximum percentage, it has various Medicinal activity. *Cassia tora* Linn. (*Caesalpinaceae*) is a well known oriental herb or undershrub, found as a rainy season weed throughout India. Traditionally, the whole plant as well as specific parts such as leaves, seeds and roots have been widely used against different diseases. It is a rich source of anthraquinone glycosides. A wide range of chemical compounds have been isolated from this plant. It has variety of biological/pharmacological activities such as hepatoprotective, anti-inflammatory, antigenotoxic, hypolipidemic, spasmogenic and antinociceptive, antiproliferative, immunostimulatory, hypotensive, purgative, antidiabetic, estrogenic and antiestrogenic, antiulcer, antioxidant, antifungal, anti-shigellosis, anthelmintic, anti-mutagenic, anti-bacterial and anti-plasmodial activities. The present review summarizes Pharmacognostical profile and phytochemical studies of *Cassia tora* L.seed & Gomutra bhavit *Cassia tora* L.seed.

KEYWORDS: *Cassia tora* L.seed & Gomutra bhavit *Cassia tora* L.seed.

INTRODUCTION

Since ancient times, mankind all over the world mainly depended upon the plant kingdom to meet their all need of medicines for the treatment of various diseases. Traditional Indian system of medicine, *Ayurveda*, *Sidha* and *Unani* systems are based upon the use of plants. Medicinal plants still play an important role in emerging and developing countries of Asia, both in preventive and curative treatments as these are relatively safe, cost effective and efficacious solutions to primary health care.^[1]

Cassia tora L. is foetid annual shrub with pinnate leaves bearing 3 pairs of ovate-oblong leaflets, bright yellow

flowers in pairs and stout long pods containing 25-30 green seeds. This is a very common weed throughout India.^[2]

MATERIAL AND METHODS

Collection of drug: [Fig. 1.1]

The drug sample was collected from field of B.H.E.L (Haridwar) at the month of November.

The fresh Gomutra sample was collected from Vidyapeeth (Rishikul). After collection of Gomutra, seven times of gomutra bhavna in *Chakramard* seed has been done.

OBSERVATION AND RESULT

A) PHARMACOGNOSTICAL STUDY

S-1(Chakramard seed), S-2 (Gomutra bhavit Chakramard seed)

ORGANOLEPTIC STUDY^[3]: [Table No. 1] [Fig.1.2]

S. No.	Character	S-1	S-2
1.	Shape	Elongated, rhombohedral and obliquely pointed	Elongated, rhombohedral and obliquely pointed
2.	Size	4-5mm length, 1-2mm thick	4-5mm length, 1-2mm thick
4.	Odour	Odourless	Urea like smell
5.	Colour	Greenish brown to brownish black	Blackish brown
6.	Taste	Pungent	Pungent
7.	Surface	Smooth	Hard

MICROSCOPIC STUDY

Microscopic characters of S-1 & S-2 in Transverse section. [fig.1.3 &1.4]

➤ Single layer epidermis filled with mucilage was present.

➤ Palisade cell was present.

➤ A wide zone of thick wall Parenchymatous cell was present.

➤ Mesophyll composed of polygonal cell filled with Starch grains and crystal of Calcium oxalate.

POWDER MICROSCOPY STUDY^[4]

Features seen in the Powder microscopy of S-1 & S-2 [Table No. 2] [fig.1.5 & 1.6]

S. No.	Features	S-1	S-2
1.	Starch grains	+	+
2.	Mesotesta	+	+
3.	Parenchymatous cell	+	+
4.	Fibres & Vessels	+	+
5.	Mesotesta	+	+
6.	Calcium oxalate	+	+
7.	Crystals of uric acid	-	+

B) PHYSICOCHEMICAL STUDY: [Table No. 3]

S. No.	Test	<i>Cassia tora</i> L. Seed	Gomutra bhavit <i>Cassia tora</i> L.seed
1.	Foreign Matter	0	0
2.	Moisture content (%)	9.34%	9.59%
3.	Swelling factor	0	0
4.	Aqueous soluble extract (%)	23.76%	20.43%
5.	Alcohol soluble extract (%)	7.06%	7.19%
6.	Petroleum ether extract (%)	2.82%	2.9%
7.	Total ash (%)	4.90%	6.18%
8.	Water soluble ash (%)	11.21%	16.32%
9.	Acid insoluble ash (%)	0.18%	0.2%

C) PHYTOCHEMICAL STUDY**QUALITATIVE TEST****1. Carbohydrate test: [Table No. 4]**

S. No.	Name of test	S-1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aqueous Ehanol	Aqueous
A.	Molisch test	-ve	-ve	-ve	- ve	-ve	-ve
B.	Fehling test	- ve	-ve	-ve	+ve	+ve	+ve

S-2

A.	Molisch test	-ve	-ve	-ve	- ve	-ve	-ve
B.	Fehling test	- ve	-ve	-ve	+ve	+ve	+ve

2. Alkaloids: [Table No. 5]

S. No.	Name of test	S -1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Mayer's test	-ve	+ve	-ve	- ve	-ve	-ve
B.	Dragendorff's test	+ve	-ve	+ve	-ve	-ve	-ve

S-2

A.	Mayer's test	-ve	+ve	-ve	- ve	+ve	+ve
B.	Dragendorff's test	+ve	-ve	+ve	-ve	-ve	-ve

3. Amino acid: [Table No. 6]

S. No.	Name of test	S -1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Nin-hydrine test	-ve	-ve	-ve	- ve	-ve	-ve

S-2

A.	Nin-hydrine test	+ve	+ve	+ve	-ve	-ve	-ve
----	------------------	-----	-----	-----	-----	-----	-----

4. Proteins: [Table No. 7]

S. No.	Name of test	S-1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Biuret test	+ve	+ve	+ve	+ve	-ve	-ve
B.	Xanthoprotic test	+ve	+ve	-ve	-ve	-ve	-ve

S-2

A.	Biuret test	+ve	+ve	+ve	+ve	-ve	-ve
B.	Xanthoprotic test	+ve	+ve	-ve	-ve	-ve	-ve

5. Saponin: [Table No. 8]

S. No.	Name of test	S-1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Foam test	-ve	-ve	-ve	-ve	+ve	+ve

S-2

A.	Foam test	-ve	-ve	-ve	-ve	+ve	+ve
----	-----------	-----	-----	-----	-----	-----	-----

6. Glycosides: [Table No. 9]

S. No.	Name of test	S-1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Borntrager's test	-ve	-ve	+ve	+ve	+ve	+ve
B.	Modified Borntrager's test	-ve	-ve	-ve	+ve	+ve	+ve
C.	With dil. HNO ₃ test	-ve	+ve	-ve	-ve	-ve	-ve

S-2

A.	Borntrager' test	-ve	-ve	+ve	+ve	+ve	+ve
B.	Modified Borntrager's test	-ve	-ve	-ve	+ve	+ve	+ve
C.	With dil. HNO ₃ test	-ve	+ve	-ve	+ve	+ve	+ve

7. Lipid and Fat: [Table No. 10]

S. No.	Name of test	S-1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Greasy spot test	-ve	-ve	-ve	+ve	+ve	-ve

S-2

A.	Greasy spot test	-ve	-ve	-ve	+ve	+ve	-ve
----	------------------	-----	-----	-----	-----	-----	-----

8. Steroids: [Table No. 11]

S. No.	Name of test	S-1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Salkowaski test	+ve	+ve	-ve	-ve	-ve	-ve

S-2

A.	Salkowaski test	+ve	+ve	-ve	-ve	-ve	-ve
----	-----------------	-----	-----	-----	-----	-----	-----

9. Flavanoids: [Table No. 12]

S. No.	Name of test	S-1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Sinoda's test	-ve	-ve	+ve	+ve	+ve	-ve

S-2

A.	Sinoda test	-ve	-ve	+ve	+ve	+ve	-ve
----	-------------	-----	-----	-----	-----	-----	-----

10. Tannin: [Table No. 13]

S. No.	Name of test	S-1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Lead acetate test	-ve	-ve	-ve	-ve	+ve	+ve
B.	Ferric chloride test	-ve	-ve	-ve	-ve	+ve	-ve

S-2

A.	Lead acetate test	-ve	-ve	-ve	-ve	+ve	+ve
B.	Ferric chloride test	-ve	-ve	-ve	-ve	+ve	-ve

11. Phenolic Compound: [Table No. 14]

S. No.	Name of test	S-1					
		n- hexane	Chloroform	Ethyl acetate	Ethanol	Aq. Ehanol	Aqueous
A.	Phenolic test	-ve	-ve	-ve	-ve	-ve	-ve

S-2

A.	Phenolic test	+ve	+ve	+ve	+ve	-ve	-ve
----	---------------	-----	-----	-----	-----	-----	-----

QUANTITATIVE STUDY

Estimation of Total Glycosides & Alkaloid content: [Table No. 15]

S. No	Name of Sample	% of Glycoside	% of Alkaloid
1.	Seed of <i>Cassia tora</i> L.	19.406%	1.125%
2.	Gomutra bhavit seed of <i>Cassia tora</i> L.	19.415%	1.137%

THIN LAYER CHROMATOGRAPHY

TLC Profile of samples on Silica Gel. [Table No. 16]

Samples	Visualization	No. of spots	R _f Value
<i>Cassia tora</i> L.Seed	Iodine Vapour	02	0.15, 0.30,
	Conc. Sulphuric acid	03	0.15, 0.30, 0.51
<i>Gomutra bhavit seed of Cassia tora</i> L.	Iodine Vapour	02	0.15, 0.30,
	Conc. Sulphuric acid	03	0.15, 0.30, 0.51

DISCUSSION

- ❖ **In Organoleptic study**, there is no difference in Size, shape & taste of both sample while Gomutra bhavit *Chakramard* seed appear as Blackish brown in colour, Urea like odour, and Smooth in Texture.
- ❖ **Physicochemical** study of *Chakramard* seed and Gomutra bhavit *Chakramard* seed was done to present parameters for quality, purity & safety assurance of the crude drug & the amount of active constituents in different types of extracts.

In this study portion, Gomutra bhavit *Chakramard* seed has showed maximum value in **Moisture content, alcoholic soluble, Petroleum ether soluble extract & Ash value**, as compare to *Chakramard* seed. But in Aqueous soluble extractive value, it has slightly less than *Chakramard* seed.

- ❖ **Phytochemical** (Qualitative Analysis)
 - Phytochemical Qualitative analysis of *Chakramard* seed & Gomutra bhavit *Chakramard* seed was done to present the parameters for presence of phytoconstituents in plant extracts which are known

to exhibit medicinal as well as physiological activities.

- In Gomutra bhavit *Chakramard* seed, presence of phytoconstituent are more positive than *Chakramard* Seed in *Phenol, Amino acid, Glycosides, Protein, Tannin* etc. in which *Phenol & Amino acid* was found out maximum which may show Gomutra bhavit seed has more therapeutic activity as compare to *Chakramard seed*.
- ❖ **Phytochemical** (Quantitative Analysis)
 - Glycosides, Alkaloids are secondary metabolites present in plants which are responsible for different actions on biological system.
 - Total Glycoside was found in maximum % ie. **19.406% & 19.415%** in *Chakramard* seed & Gomutra bhavit Seed respectively which may be responsible for anti-microbial & other activity.

❖ **Thin Layer Chromatography**

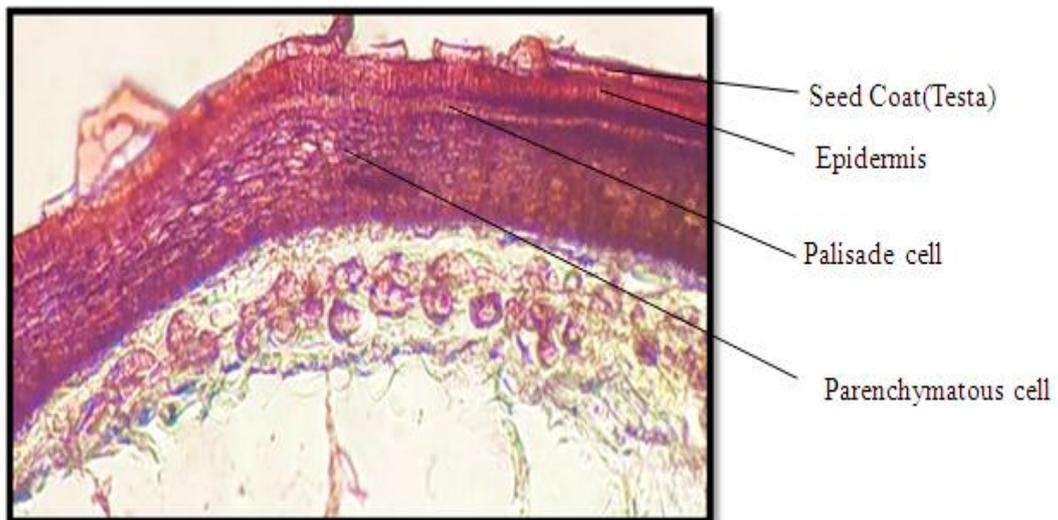
T.L.C showed same R_f value in both sample in the presence Iodine vapour & Conc. H₂SO₄.



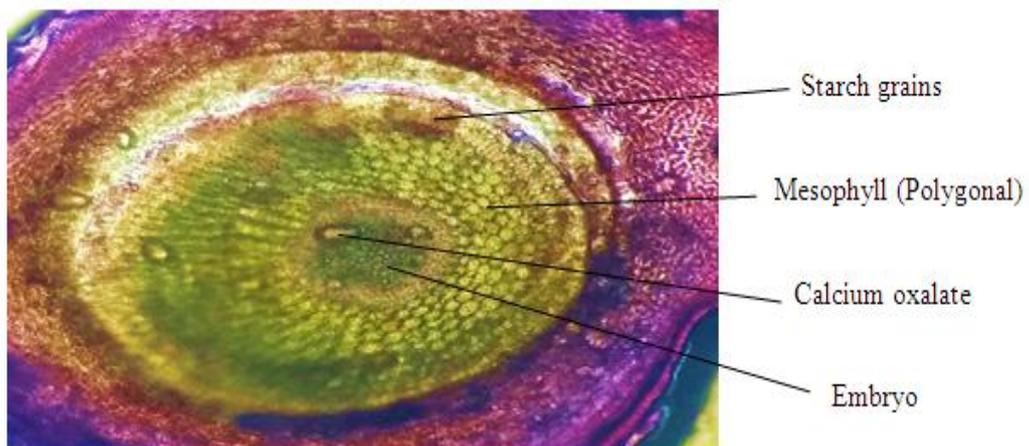
[Fig. 1.1] – *Chakramard* seed & Gomutra bhavit *Chakramard* seed



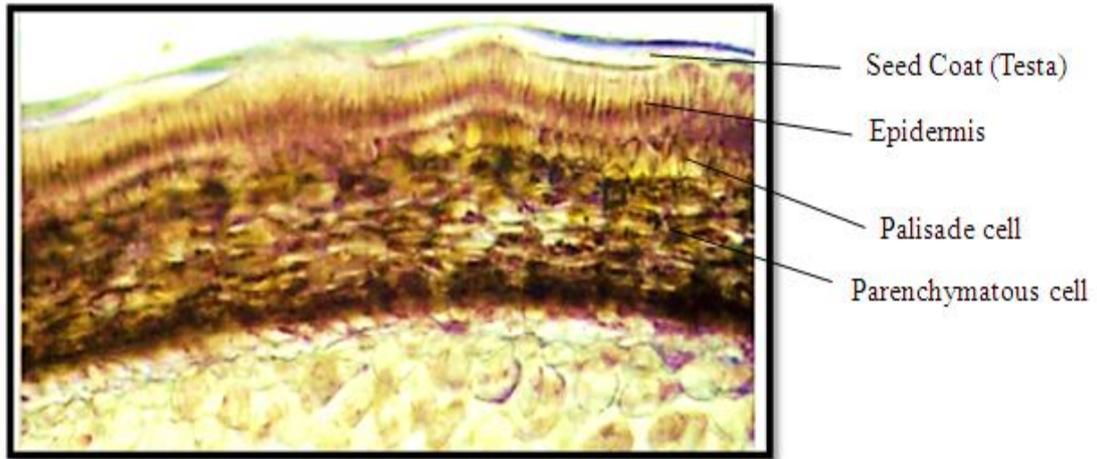
[Fig. 1.2] – Organoleptic profile



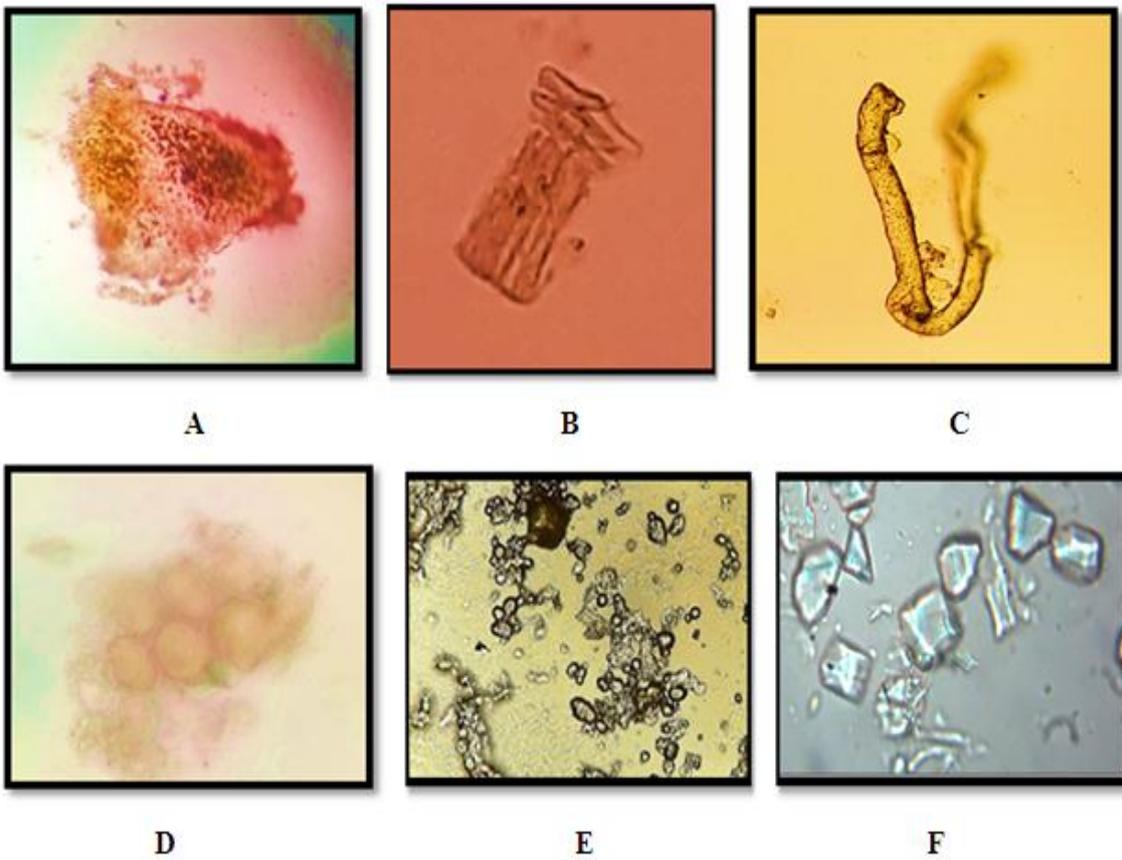
[Fig. 1.3 A] – T.S. of *Chakramard* seed.



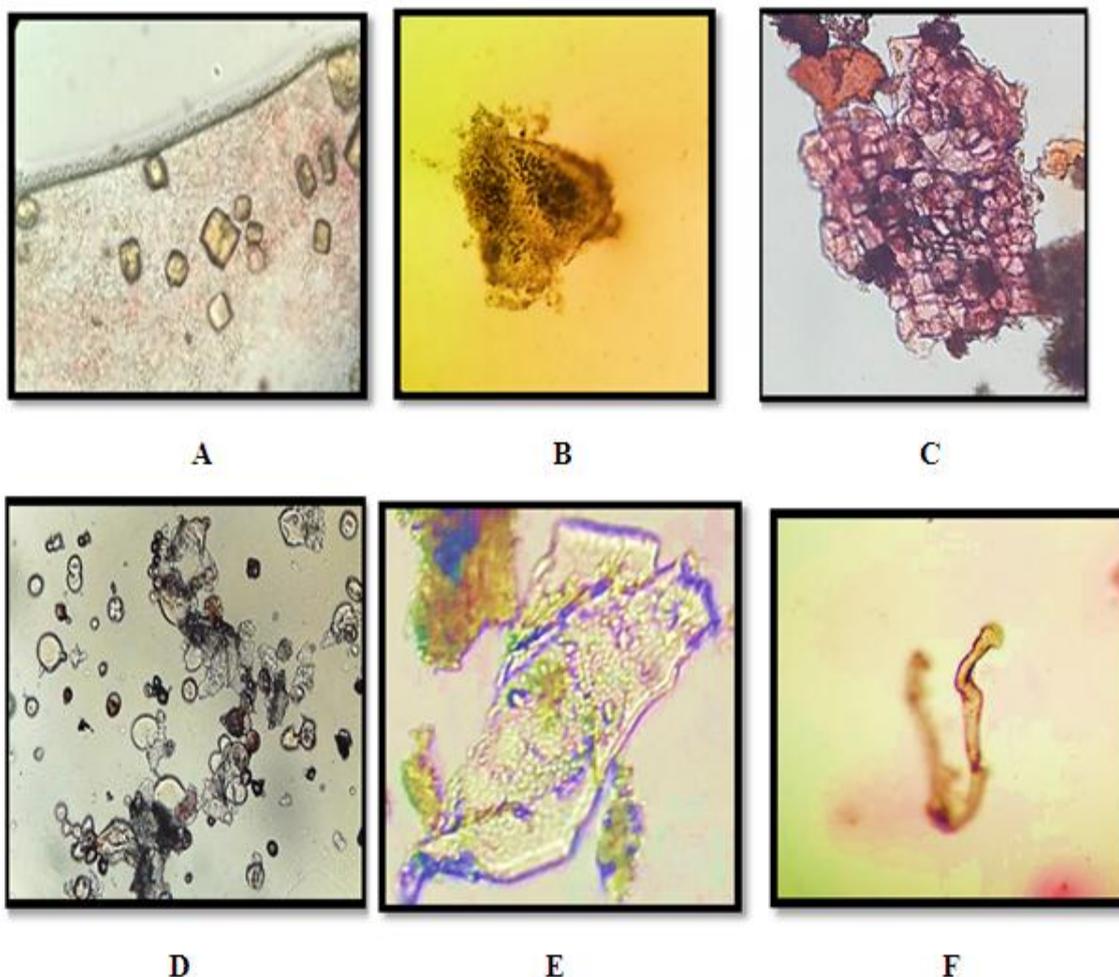
[Fig. 1.3 B] – T.S of *Chakramard* seed.



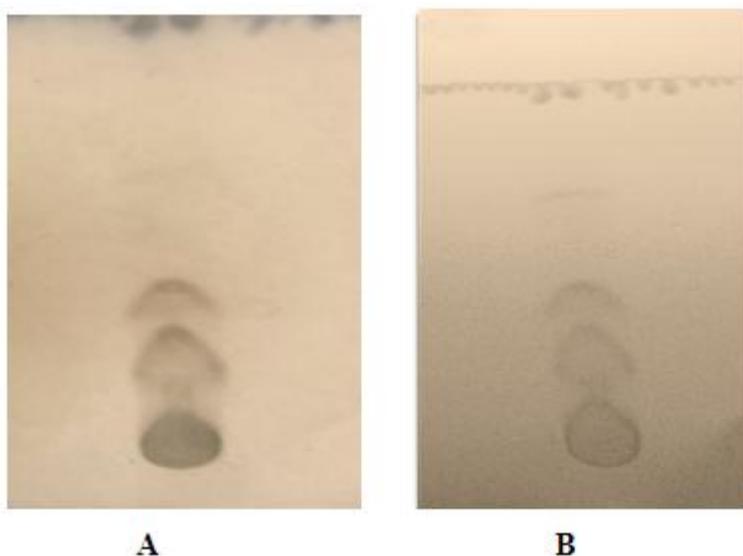
[Fig.1.4] – T.S of Gomutra bhavit *Chakramard* seed.



[Fig. 1.5] A- Mesotesta, B- Vessels, C- Fibres, D- Parenchymatous cell, E- Starch grains, F- Calcium oxalate.



[Fig. 1.6] A- Crystals of Uric acid, B- Mesotesta, C- Calcium oxalate, D- Vessels, E- Starch grains, F- Fibres.



[Fig. 1.7] A - T.L.C of *Chakramard* seed B - T.L.C of Gomutra bhavit *Chakramard* seed.

CONCLUSION

❖ Preliminary phytochemical tests with seed extract of *Chakramard* and Gomutra bhavit *Chakramard* have showed positive results for different bioactive molecules, in which Gomutra bhavit seed has

evaluated more positive result in different phytochemical constituent specially in **Amino acid & Phenolic compound**. *Chakramard* seed mainly contains glycoside. Maximum of total Glycoside

present in Gomutra bhavit seed extract which may be strong factor for medicinal activity.

REFERENCES

1. Kalia AN. Textbook of Industrial Pharmacognosy. CBS Publishers and Distributors, 2009:1.) (Handa SS, Kapoor VK. Textbook of Pharmacognosy. 2nd ed. Vallabh Prakashan, 2003: 9.
2. M.Daniel, Medicinal Plants Chemistry And Properties, Publish By Science Publisher, Edition-2006, P-175.
3. The Ayurvedic Pharmacopoeia of India, Part-I, Vol-3, Ministry of Health and Family Welfare, Government of India, New Delhi, Controller of Publication Civil Lines, 1st Edition, Publication: 2001, Print : p.153.
4. The Ayurvedic Pharmacopoeia of India, Part-I, Vol-3, Ministry of Health and Family Welfare, Government of India, New Delhi, Controller of Publication Civil Lines, 1st Edition, Publication: 2001, Print : p.154.