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PHARMACOGNOSTIC STUDIES OF THE SEEDS OF *ULEX EUROPAEUS* LINN.

H.C. GUPTA

Homoeopathic Drug Research Institute, 2, Nabi-Ullah Road, Lucknow-226018

Key Words: *Ulex europaeus* Linn., Seeds, Histological Studies

ABSTRACT

The authentication of crude drugs is of prime importance for the preparation and quality of the finished products in Homoeopathy. The present paper deals with various parameters viz. macroscopic & organoleptic characters, qualitative microscopical studies on transection & longitudinal sections. power studies and micrometry for evaluating the seeds of valued exotic medicianl plant *Ulex europaeus* Linn. in view of obtaining the specific diagnostic characters for quality assurance of the medicine in Homoeopathy.

INTRODUCTION

Ulex europaeus Linn. (Eng: Gorse, Furze, Whin) of family Fabaceae is a spiny weed, introduced in India from England and naturalized at the higher altitudes of the Nilgiri, Plani & Kodaikanal hills of South India; it is also cultivated in the Shimla hills as a winter fodder. The seeds contain Cytisine (1.05%) and two unidentified bases (picrates, m.p. 80-85 & 175). Two anti-H (o) haemagglutinins have been isolated from saline extract. It is employed in clinical laboratories for routine separation of secretors and non-secretors; routine diagnosis of human sub-groups A & AB and also in forensic medicine for the study of putative paternity and in criminal investigation. (Anonymous 1989). The drug finds its mention in British Homoeopathic Pharmacopoeia. (Anonymous (1993).

MATERIAL AND METHODS

The authentic seeds of the plant *Ulex europaeus* Linn. were supplied by the Survey of Medicianl Plants & Collection Unit, Ooty (T.N.) for drug standardixation studies at our institute. Transactional and longitudinal sections were preferred by the microtomy of the seeds at 15-20 microns as per schedule of Johansen (1940). The standard methods of macro, microscopical characterization in sections and powder of seeds were followed (Trease and Evans 1978; Jackson and Snowdon 1968). The photomicrographs pertaining to histological characters were taken with the help of Olympus PM-6 (Japan). The Camera Lucida mirror type was employed for the line drawings of tissue/cells in powder and transactions of the seeds (Trease and Evans 1978).

OBSERVATIONS

MACROSCOPICAL STUDIES AND ORGANOLEPTIC TESTS (Fig. 1)

Seeds approx. 3x2 mm, strophiolate, shining, hard, brownish green to brownish black externally, ovate to obovate in shape, somewhat flattened with small growth at broad end. No scar or marking on external surface of seed. Cotyledons two, yellowish white & soft. Odour like gram seeds flour and taste is bitter.

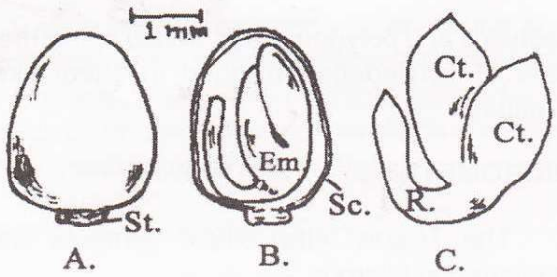

Fig. 1. *Ulex europaeus* Linn. Seed.

A. External view, B. Disected seed showing embryo, C. Detached embryo.

(St.- Strophiole, Em. - Embryo, Sc. - Seed coat, Ct. - Cotyledon, R - Radicle)

MICROSCOPICAL STUDIES (Fig. 2, 3, 4)

Transection of seed shows outermost thick walled, palisade like epidermis followed by one layered, lignified dumble or 'I' shaped sclereids. The lumen of palisade cell is enlarged at the base then narrows at the greater part of its length. The sclereids are thick walled, wide iumend and broader at the top and base. Below sclereids, a zone of thin and wavy walled parenchyma with air chambers is present. Under the seed coat one spherical parenchymatous mass of radicle and two elongated parenchymatous structures of cotyledons are observed in transection. The cotyledons are

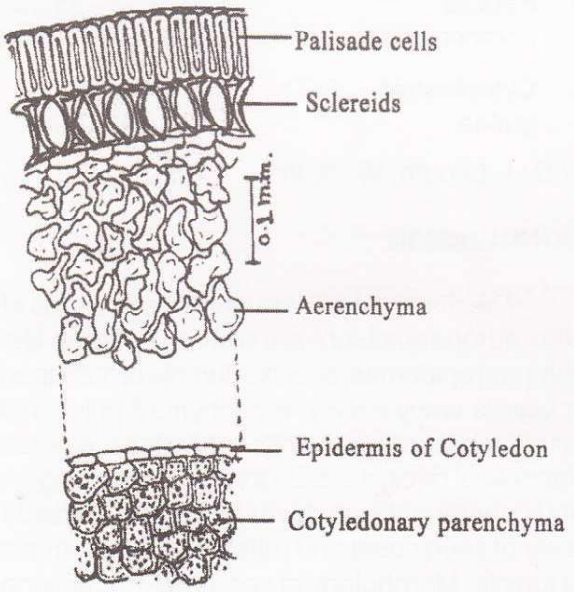

Fig. 2. *Ulex europaeus* Linn. Seed. T.S. Seed. A Portion Enlarged

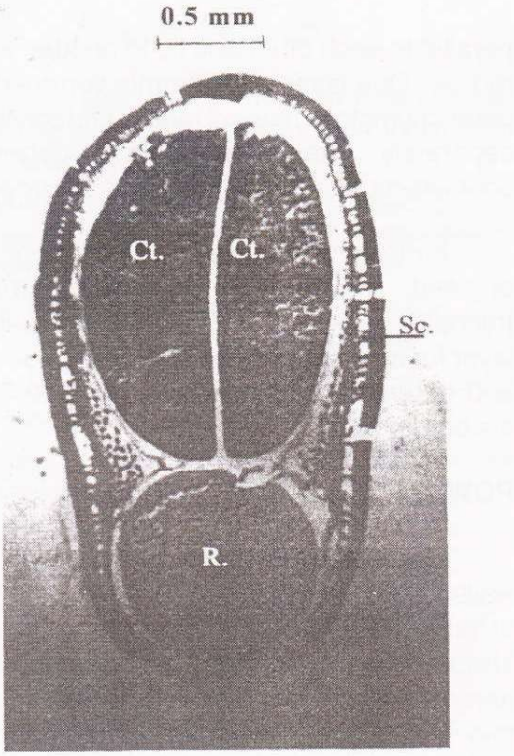

Fig. 3. *Ulex europaeus* Linn. T.S. Seed Showing seed coat (Sc.), two cotyledons (Ct.) & a radicle (R.)

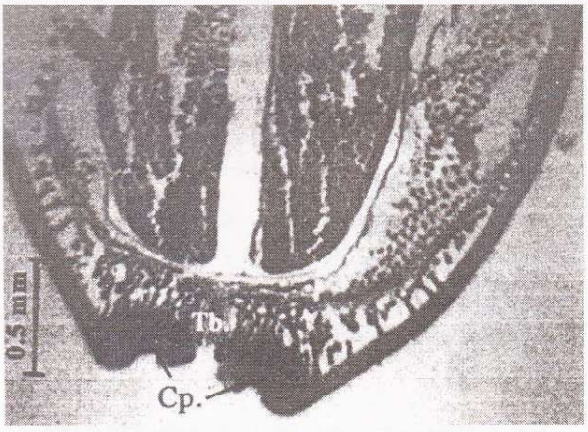

Fig. 4. *Ulex europaeus* Linn. Median Longitudinal Section of the seed through hilar region showing tracheidial bar (Tb.) and counter palisade (Cp.)

parallel to each other and lie to another side of radicle. One layered epidermis surrounds the parenchymatous mass of radicle and cotyledons separately. The parenchyma of cotyledons contains round to polygonal cytoplasmic grains.

In median longitudinal section through hilum of seed, a tracheidial bar having group of tracheids in median groove, a counter palisade layer fused with palisade layer of the seed coat and parenchymatous mass of broken funicle are observed.

POWDER STUDIES (Fig. 5)

Macerated seeds show columnar, thick walled, elongated palisade cells with wide lumen at base and tapering to upper side; dumbel or 'I' shaped sclereids; thin and wavy walled aerenchyma with air chambers; round to oblong, thin walled parenchyma cells with air spaces and cytoplasmic oval to polygonal grains; pitted tracheids and polygonal, thin walled epidermal cells of cotyledons arranged in sheet like structure.

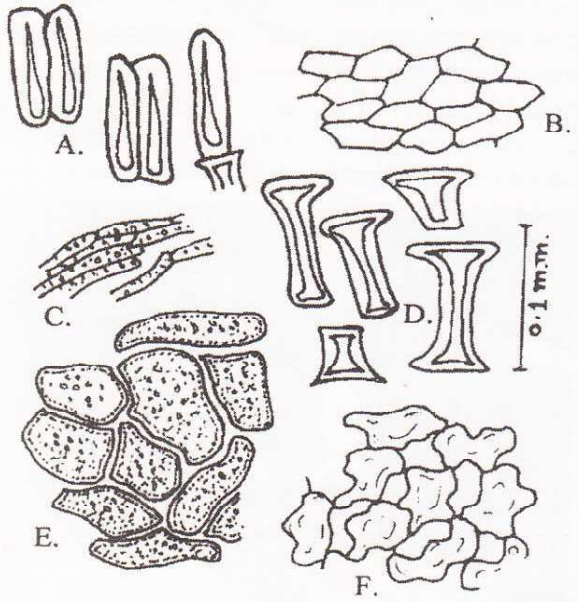

Fig. 5. *Ulex europaeus* Linn.: Powder Studies.

A. - Palisade cells, B. - Epidermis of Cotyledons, C. - Pitted tracheids, D. - Sclereids, E. - Cotyledonary parenchyma with cytoplasmic grains, F. - Aerenchyma.

MICROMETRY :

The Tissue/Cells/Cellular contents are measured in microns :-

1.	Palisade cells	:	L-73.5 – 79.38 W-14.7 – 17.64
2.	Sclereids	:	L-35.28 – 107.28 W-14.9 – 35.28
3.	Aerenchyma	:	L-20.58 – 58.8 W-17.64 – 29.4
4.	Tracheids	:	- W-2.94 – 5.88
5.	Epidermal cells of cotyledon	:	L-20.58 – 29.4 W-11.76 – 20.58
6.	Cotyledonary parenchyma	:	L-58.8 – 111.72 W-17.64 – 29.4
7.	Radicle parenchyma	:	L-23.52 – 35.28 W-11.76 – 17.64
8.	Cytoplasmic grains	:	- W-1.47 - 2.94

N.B.: L-Length, W-Width.

CONCLUSION

The diagnostic characteristics of seeds of Ulex europaeus Linn. are distinct palisade like compact epidermis, specific dumble or 'I' shaped sclereids, wavy walled aerenchyma & polygonal cytoplasmic grains in both cotyledons, a pitted tracheidial bar in median groove of hilum region and counter palisade layer fused with palisade layer of seed coast and parenchymatous mass of funicle. Morphology of seeds reveals shining hard brownish green to brownish black testa without any marking, approx. 3x2 mm, ovate to obovate flattened seeds with small cream

coloured strophiole at broad end with two identical yellowish white, soft and bitter cotyledons and a cylindrical radicle. The characteristics may be taken as Pharmacopoeial Standards in respect of authentication of the raw drug.

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