IRIS GERMANICA

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Introduction

Iris germanica Linn. (Family - Iridaceae) commonly known as: **"Fleur-de-lis or Orris"** is a handsome, perennial herb with dark blue or purplish blue flowers. It is widely distributed over central and southern Europe, extending to Africa, and a common garden plant in England. It is cultivated as an ornamental plant in the United States, Morocco, and also in Italy, especially in the neighbourhood of Florence, and Verona. Iris root (rhizome) was imported in India from Persia and cultivated in Kashmir. In Homoeopathy, the drug has been mentioned in "Allen's Encyclopedia Materia Medica" and in "A Dictionary of Practical Materia Medica" by Clarke but is not an official drug in any of the homoeopathic pharmacopoeias. The drug is prepared from the fresh rhizome and its use is recommended in the dropsy, and as a cathartic. The pharmacognostic characteristics of *Iris germanica* have been worked out and are being reported.

Nomenclature

Iris germanica Linn:

The Greek name 'Iris' is probably of Persian origin. The plant is named after the rainbow goddess 'Iris' from the beauty and variety of colours in the flowers of the genus. From the ancient times, Iris stood as a symbol of power and majesty. It was dedicated to Juno and was the origin of the sceptre, the Egyptians placing it on the brow of the Sphinx and on the sceptre of their Kings, the three leaves of its blossoms typifying faith, wisdom and valour.

The common names of the plant are:

Sanskrit	:	Padma-pushkara
Hindi	:	Keore-ke-mul
German	:	Vellchenwurzel
French	:	Fleur-de-lis
English	:	Orris

Folklore, Medicinal and Non-Medicinal Uses

The drug is mainly used in folk medicine as an expectorant and demulcent for colds, catarrh etc. It possesses stimulant, cathartic and diuretic properties, and is used in bronchitis, dropsy and liver complaints; as powder or in poultice, it is applied to sore and pimples.

Orris rhizome is used in the preparation of toilet powders, dentifrices, etc., while the oil is used in perfumery. Resinoids of Orris are fixatives and find use in high class soaps, cosmetics, dentifrices, etc. Orris oil is also used for flavouring soft drinks, candies and gelatin desserts. Extracts of iris bulbs are employed in meat curing and pickle solutions to prevent food poisoning.

Cultivation and Collection

The plant is propagated by division of the rhizomes of old plants or from the seeds. The plants thrive in a variety of soils but the rhizomes of those grown in gravelly soil appear to be most fragrant. Propagation from rhizome cuttings should be done in the spring or fall and plants should be set a foot apart in rows at least 60 cm apart for cultivation. They should be planted horizontally with only a light covering of soil. The cutting should represent a single section of the rhizome with a single fan of leaves and half the fan cut off to balance root disturbances. Sunlight and good soil drainage are essential for a successful crop. The rhizomes are harvested in the third year, washed, deprived of their roots and corky epidermis and dried first in the open air and later in warm rooms The dried drug must be preserved against insect attack during storage.

Botany

Iris germanica Linn. belongs to the Iridaceae family. Iris is a genus of rhizomatous or bulbous herbs distributed in the north temperate regions of the world. About a dozen species occur in India and a few exotics are cultivated for ornament.

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Figure 1: Flowering stem of *Iris germinaca*

Figure 2 : *Iris germinaca* rhizome with roots

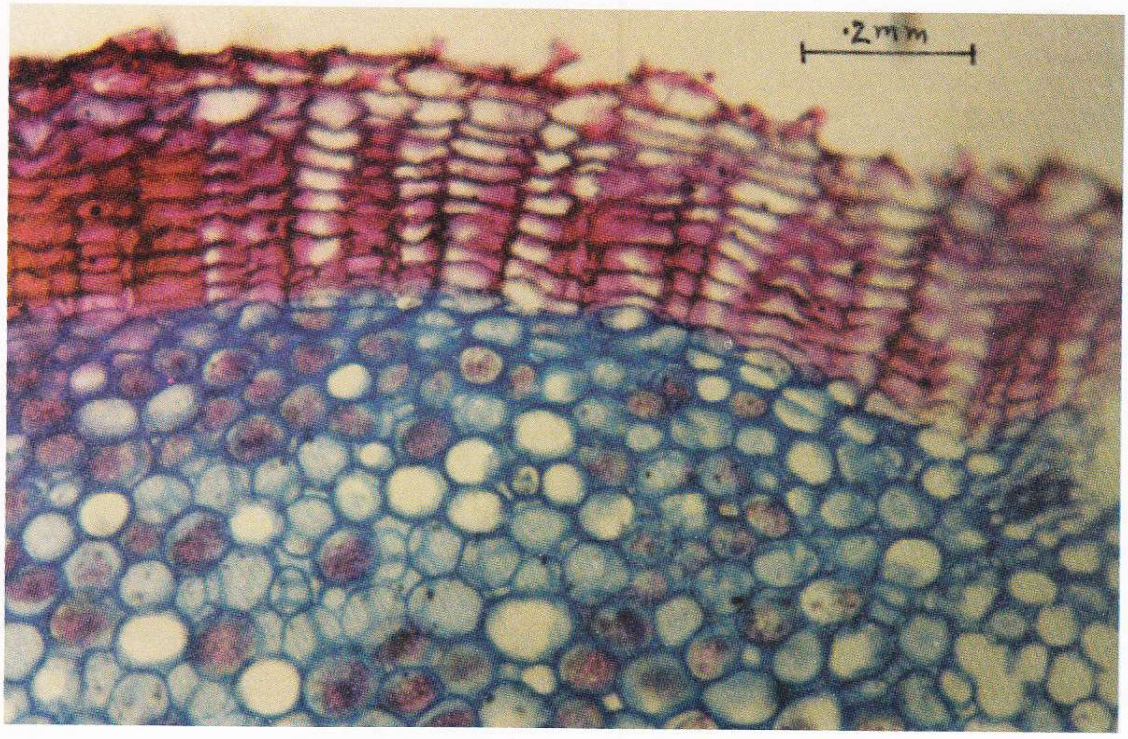

Figure 3 : T.S. Rhizome, a peripheral portion; showing cork & cotex

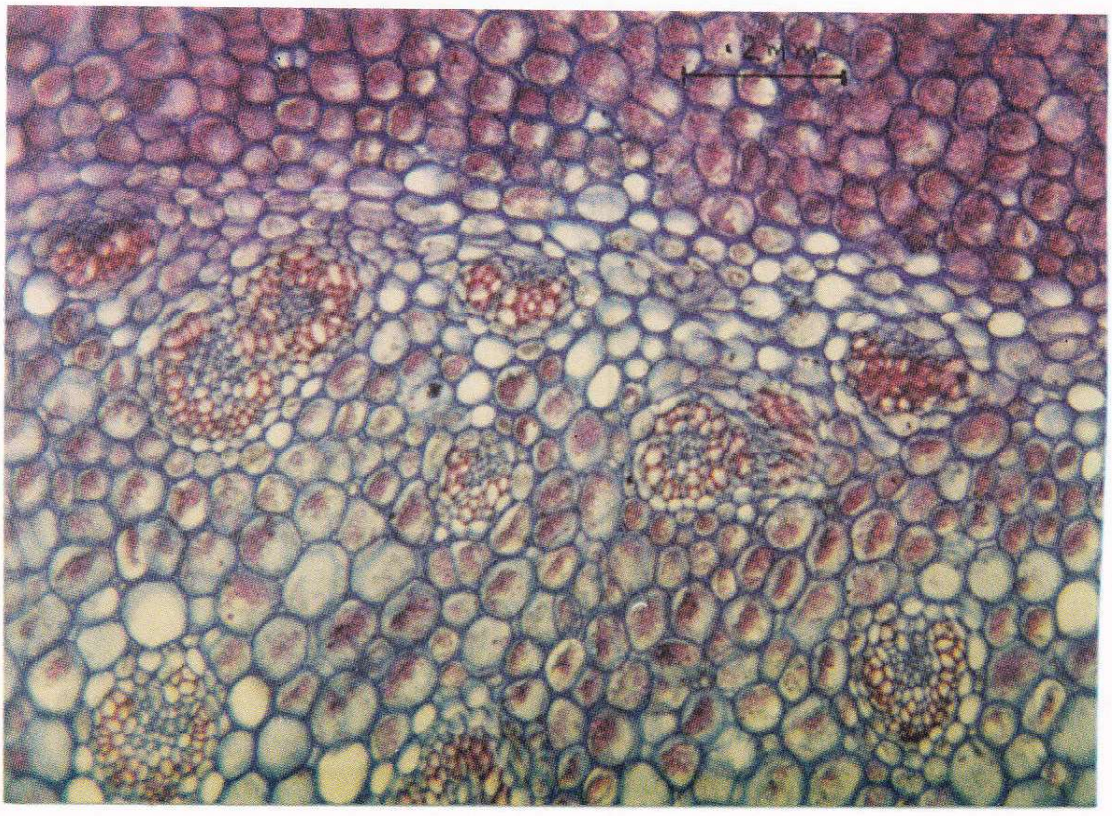

Figure 4 : T.S. Rhizome, an outer part of the stele; showing scattered vascular bundles

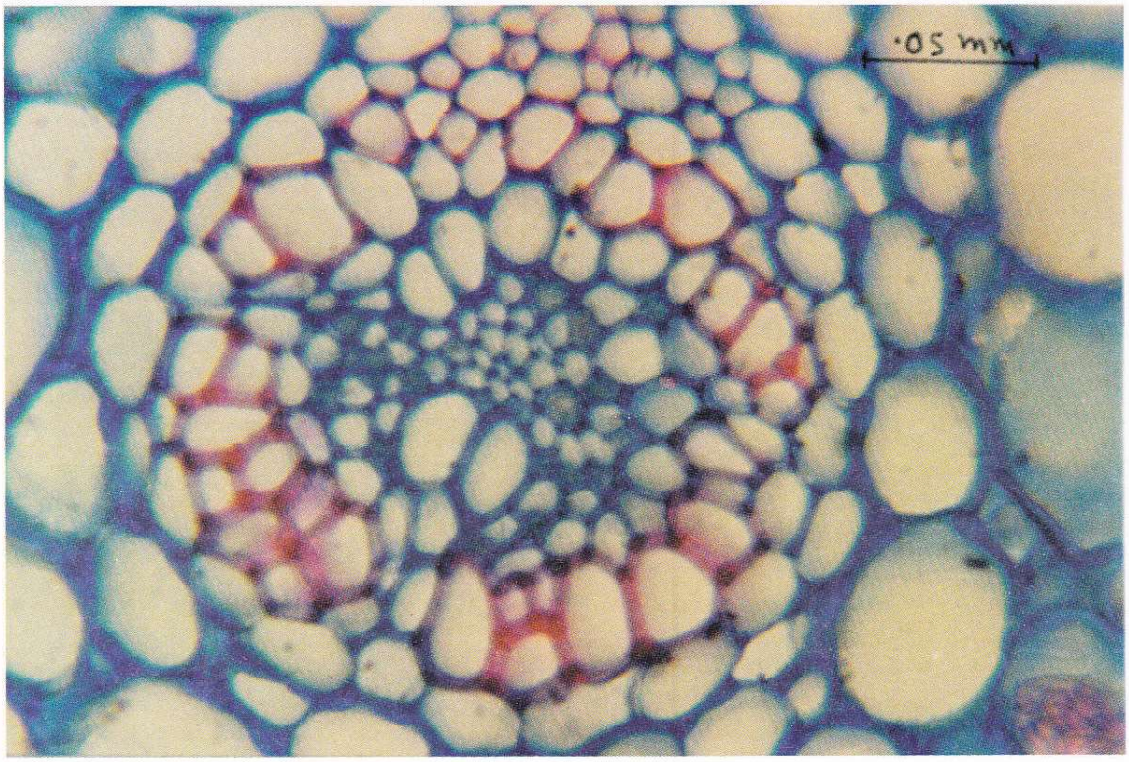

Figure 5 : T.S. Rhizome, a portion of stele; showing a vascular bundle (amphivasal or leptocentric) magnified.

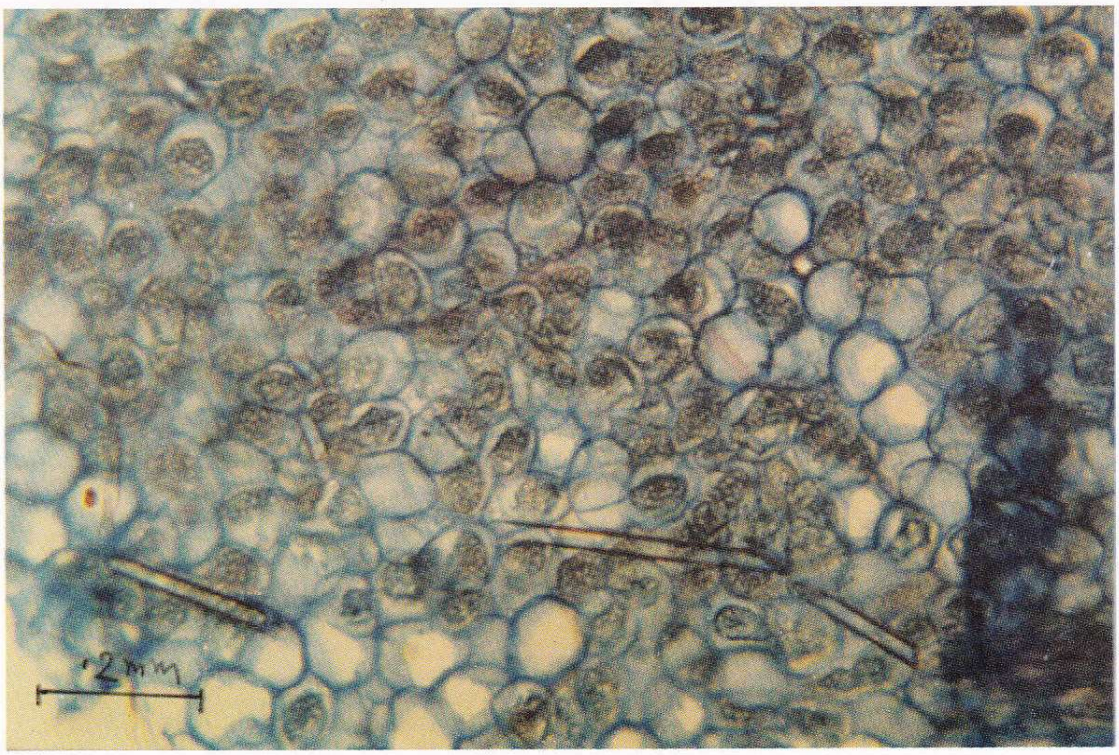

Figure 6 : T.S. Rhizome, parenchyma cells showing much large, elongated prisms of calcium oxalate.

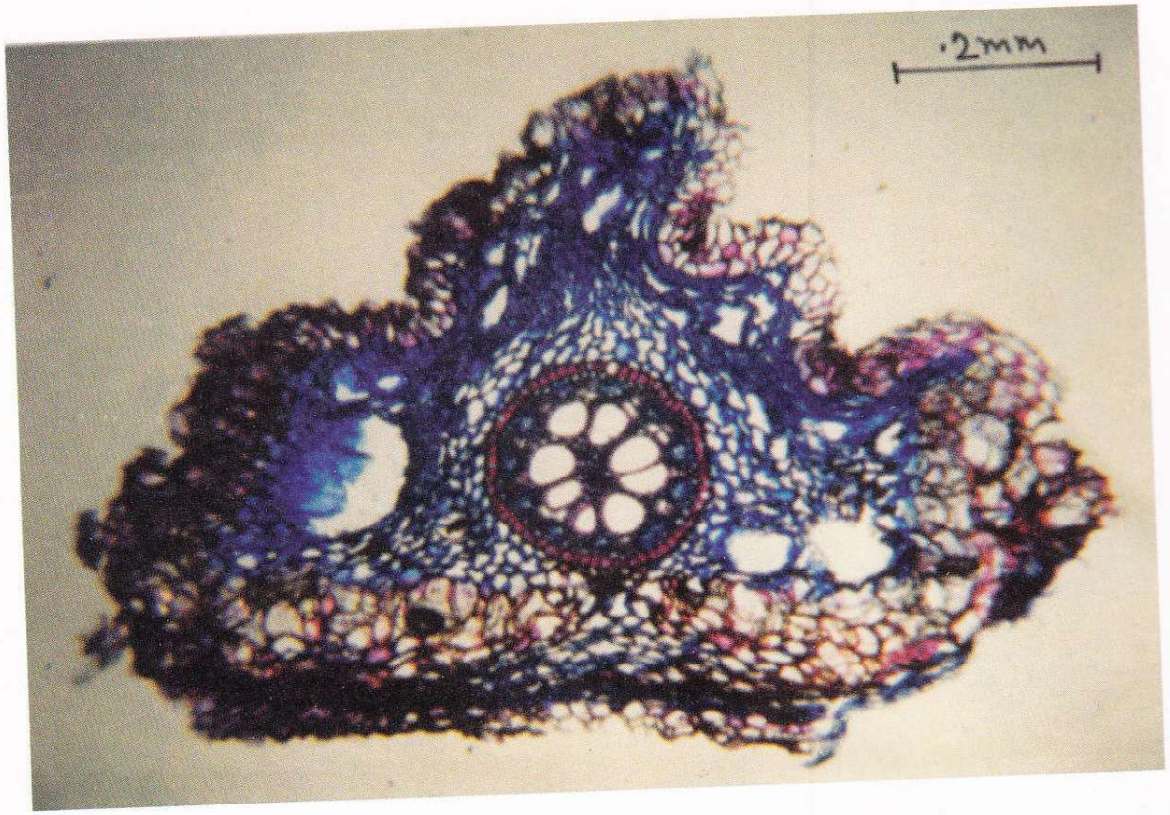

Figure 7 : Roots showing arrangement of tissues.

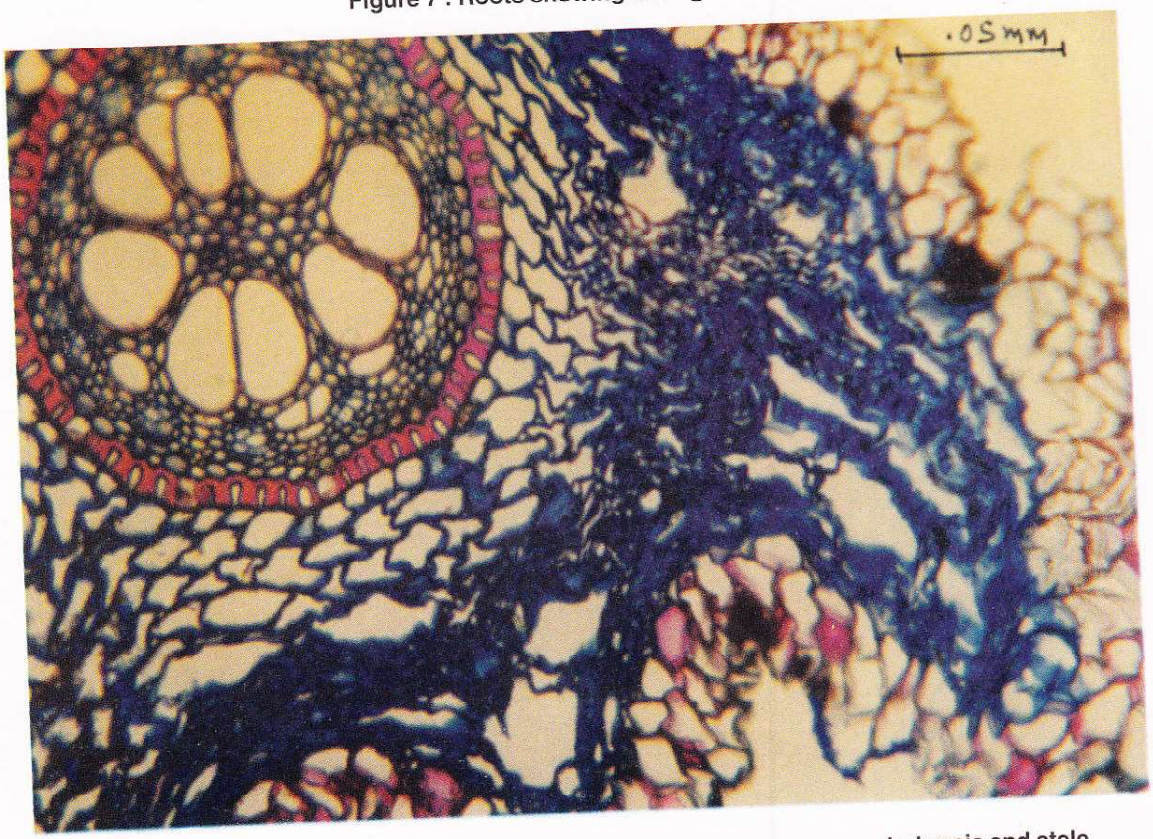

Figure 8 : Root, a portion enlarged; showing cork, cortex, endodermis and stele.

Description (See Fig.1)

A rhizomatous perennial herb up to 1 m in height; stem usually with a 2-fid terminal head having one short and other longer lateral branch, each bearing a single flower. Leaves 30-45 cm, equitant, broad, sword shaped, glaucous. Flowers nearly sessile in spathe, spathe-valves tinged with purple, scarious in the upper half. Perianth 6 clawed, 7-10 cm across, outer segments broadly ovate, recurved, deep violet with yellow, white and brown veins at the base of the blade, the medium line with yellow long-beard, inner segments light violet, erect, arching, slightly smaller than the outer segments. Stamens 3, opposite the outer perianth segments; anthers linear, extrose. Ovary 3 angled; style divided distally into three petaloid branches arching over the stamens, each two lobed at the tip; stigma a thin plate or lip at the base of two lobes. Capsules trigonous, 4-7 cm long infrequently produced.

Part used

Rhizome

The drug was supplied by Survey of Medicinal Plants & Collection Unit, Ooty.

Pharmacognosy

Macroscopic (See Fig.2)

Occurs as entire or broken pieces from 5-10 cm in length and 2.5 to 4 cm in width, pale, cream or yellowish-brown, round or dorsiventrally flattened and constricted at intervals bearing one or two short lateral branches at the apex. Each of the enlargements corresponds to an year's growth of the rhizome. The branches are developed from the buds after rhizome has flowered. On the undersurface are large, fibrous adventitious roots and the outer surface is annulated and there are traces of leaves or marks of leaf-trace bundles. Transversely cut surface shows large stele containing scattered bundles and comparatively narrow cortex separated from stele by distinct line (endodermis). Fresh rhizomes are odourless and acrid, but during long process of drying they loose their acridity and develop characteristic aromatic odour reminiscent of violets.

Microscopic

Rhizome (See Figs.3,4,5&6)

The diagnostic characteristics in transverse section are: cork of rectangular, thin walled suberized cells; cortex of starch bearing thick-walled parenchyma cells with intercellular spaces, central stele a large region of starch and crystal bearing parenchyma cells with leptocentric vascular bundles scattered throughout but more numerous on the outer part of the stele. Starch grains numerous; oval or spherical, cylindrical or oblong. Solitary or twin, large, elongated, whole or broken prisms of calcium oxalate with oblique or chisel-shaped ends scattered in parenchymatous tissue.

Root (See Figs.7&8)

Transverse section exhibits: exodermis of few layers of suberized, oval or rounded, thick walled cells; cortex broad, outer cortex consisting of small cortical parenchyma cells enclosing intercellular cavities between them and inner cortex of thin-walled parenchyma cells; endodermis distinct with U-shaped thickenings; stele polyarch, consists of 8-13 radial bundles of xylem alternating with phloem embedded in parenchymatous conjunctive tissue; pith of thick-walled parenchyma cells.

Powder

Yellowish-white to yellowish-brown, numerous parenchyma cells filled with simple starch-grain having round to oval shapes, rounded at the broader end and truncate at the other end, some curved; or with irregular protuberances, fragments of cortex with irregularly polygonal cells having thickened walls and intercellular spaces; tracheids with scalariform and reticulate thickenings, fragments of rectangular, brown, thin-walled cork cells and long prisms of calcium oxalate up to 500 μ in width. Odour; fragrant resembling violet flowers.

Constituents

Orris rhizome yields about 0.1-0.2 percent of a yellowish, buttery, aromatic substances, known as oil or butter of Orris. The oil contains principally (about 85 per cent) myristic acid together with irone, in particular α, β and γ -irone (odour resembling violets), triterpenes namely iridale and iridogermanal, isoflavonoids including irilone, irisolone, irigenin, tectoridin. The rhizome also contains a crystalline glucoside-iridin, a xanthones - C-glucosy-lxanthones, starch and calcium oxalate.

Pharmacology

It has been reported that petroleum-ether, ether, chloroform and methanol extracts obtained from the rhizome of the plant failed to exhibit anti-inflammatory property against Carrageenin induced

rat hind paw oedema. The rhizome exhibited neuromuscular blocking activity on isolated tissue preparations as well as on intact animals. The extracts exhibited non-specific antispasmodic effect and inhibitory effect on isolated rat uterus preparation. Warm water extract of the rhizome exhibited inhibitory effect on beef heart phosphodiasterase. It inhibited cyclic AMP phosphodiasterase. Iregenin, a flavonoid, contained in the rhizome was proved to contain inhibitor of cyclic AMP phosphodiasterase.

Methanol extract of *Iris germanica* roots have been reported to exhibit potent antiulcerogenic effect against indomethacin, aspirin and water immersion stress induced ulcers in rats.

Toxicology

No health hazards or side effects are known in conjunction with the proper administration in therapeutic dosages. The juice of the fresh plant has an irritating effect upon skin and mucous membrane. Some persons are allergic to orris and develop asthma or urticaria.

Acknowledgement

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