Pharmacognostic Evaluation of *Manilkara hexandra* (Roxb.) Dubard Seeds

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**ABSTRACT**

*Manilkara hexandra* (Roxb.) Dubard belongs to family Sapotaceae. It is commonly called as Rayan /Khirni. The local people and aboriginals use the oil extracted from the seeds for cooking purpose. The seed has several therapeutic uses too. They are used in sperrmicidal activity, besides it is recommended for leprosy, ophthalnic, ulcers and in the opacity of the cornea. The oil from the seed is considered to be demulcent and emollient, used in piles. Although seeds and oil are in use; deliberate attempt to study them has lacked. Pharmacognosy can be the first step in deciding the status of a plant organ as a crude medicine. Hence comprehensive Pharmacognostic study of *Manilkara hexandra* seed was done. In the present investigation various aspects of pharmacognosy like macroscopy, microscopy, histochemical analysis, powder study, preliminary phytochemical screening, fluorescence analysis, and physicochemical constants were laid down.

**Keywords:** Pharmacognosy, Khirni, Rayan, Manilkara hexandra, seed.

**INTRODUCTION**

Herbal preparations have always been the principle form of medicine in India and presently becoming popular throughout the developed world. Hence it is necessary to identify and characterize the crude drugs well before the use. This can be easily and reliably done by the pharmacognostic study. Pharmacognosy is the developing science that deals with complete and systematic knowledge of a crude drug of herbal, animal or mineral origin. *Manilkara hexandra* (Roxb.) Dubard a tall tree commonly known as Rayan /Khirni. It is an evergreen tree of Western Ghat (Maharashtra) India. It belongs to family Sapotaceae. The fruit is edible and also known for its medicinal values. The seeds are used as emollient, demulcent, piles, ulcers, and spermicidal activity by the aboriginals. However, the said plant part is studied for the first time. The present study is intended to bring the salient; morphological characters of these seeds so as to lay down the standards which are of utmost important to authentify a crude drug.

**MATERIAL AND METHODS**

The seed samples were collected from wild with prior permission from various places within Mumbai. The sample was authenticated for its botanical identity from Blatter Herbaria (Mumbai). A voucher specimen has been deposited in Botany Research Laboratory of K.V. Pendharkar College, Thane, Maharashtra, India (KVP/BOT/0073). The fresh mature seeds were used for macroscopic, microscopic and histochemical studies. Remaining seeds were dried and ground to powder. Macroscopic study was performed for various parameters. For microscopic inspection hand cut transverse sections of seeds were taken and made permanent with suitable stains. The histochemical analysis for the cell contents were performed using various reagents. In powder study, the drug was treated with aqueous solution of chloral hydrate and mounted in 50% glycerin for microscopic studies. The fluorescence response of powdered drugs exposed to U.V. radiations was studied using the standard procedure. For phytochemical analysis, determination of ash values and extractive values were done. In qualitative phytochemical screening, a known quantity of dried powder was extracted with chloroform, alcohol and water. These extracts were tested for different constituents.

**RESULTS**

*Macroscopic study of seed*

The fruit is a berry usually one seeded, rarely with two seeds. The seeds are albuminous and exarillate. It is oblique to ovoid in shape, slightly compressed, reddish brown and shining, 1mm-2.5mm x 2mm-2.5mm. Hilum laterally placed and elongated. The testa is hard, reddish brown, shining, 1mm-1.5mm in thickness. The seed tegmen is light brown with impression of perisperm. Perisperm is thin layered, light brown with striations more appraised to the tegmen when matured. Endosperm is thick and fleshy with impression of perisperm, 1.1mm-1.5mm in thickness. Cotyledons are thin, papery, 15mm x7mm with prominent reticulate venation, accumbent. Radicle and...
plumule short. The seed has slight characteristic odour and is bitter to taste. (Figs: 1, 2, 3)

**Microscopic study of seeds**

The seed coat has two layers, an outer testa and inner tegmen.

**Testa:** is the outer part of the seed coat, with lignified sclerids which are more or less isodimetric, light brown, the lumen is filled with latex content. The

**T.S. of Manilkara hexandra seed** shows the following parts:
sclerids are smaller in diameter towards the periphery, larger towards the centre.

Tegmen: dark brown, sclerenchymatous with vascular bundle. Nucellus is in the form of collapsed cells, leading to the formation of perisperm.

Endosperm: large zone of thin walled parenchymatous, with oil globules, few simple and compound starch grains.

Cotyledons: with outer and inner epidermis, compactly arranged parenchymatous cells. The thickness is more in the centre 20-22 cell thick, which gradually decreases on the lateral sides, 10-12 cell. The ends are rounded and broader with larger cells. The poorly developed vascular bundles larger at the centre and smaller ones laterally. Oil globules present. (Figs: 4, 5, 6)

Histochemical analysis: The seed section were stained with various reagents The results obtained are given in table 1.

Powder study of seeds

The seed powder is light brown in colour, coarse and oily in texture. It has a characteristic odour and bitter taste. Microscopically the powder shows presence of sclerenchymatous cells of testa filled with brown content, 33.3-44.2µm in diameter; parenchymatous oval cells of tegmen with brown content, 6-8µm in diameter; simple type of starch grains 3.3-6.9µm in diameter; abundant oil globules 39.9-78.54µm in diameter, elongated cells of nucellus 0.66-3.33µm in length and 49.95 – 53.28µm in breadth; patches of endospermic cells 16.66 – 35.6µm in diameter and parenchymatous contyledonary cells 16.66 – 26.66µm in diameter. (Figs.7 – 12)

Physicochemical evaluation: The parameters like ash values and extractive values for the seed are summarized in table 2. Powder study of seeds

The seed powder was treated with various reagents and the results obtained are mentioned in table 3.

Physicochemical evaluation: The parameters like ash values and extractive values for the seed are summarized in table 2.

Fluorescence analysis: The seed powder was treated with various reagents and the results obtained are mentioned in table 3.

Preliminary phytochemical analysis: The qualitative phytochemical analysis of Manilkara hexandra seed
reveals the presence of various primary and secondary biomolecules. Table 4

DISCUSSION
The seed of Manilkara hexandra (Roxb.) Dubard are of therapeutic value. The above pharmacognostical parameters given for the seeds are of importance in correct identification of the material. The qualitative phytochemical investigation revealed the presence of various phytoconstituents in the seeds. Further detailed phytochemical and pharmacological studies can lead Manilkara hexandra seed into the herbal market.

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REFERENCES