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A fossil berry type of fruit from deccan Intertrappean beds of Mohgaonkalan, MP, India

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ABSTRACT

Present paper describes in details the petrified, dicotyledonous, unilocular, berry type of fruit. The fruit is, clothed with hairs and without seed or seeds. It is ellipsoid in shape with two projections near the apex. The fossil fruit is collected from Deccan Intertrappean exposures of Mohgaonkalan (M.P.), India. On cutting the chert, the present specimen was exposed in longitudinal plane. On comparison between present fossil fruit and fruits of modern families and earlier reported fossil fruits from this locality, the fossil fruit shows closely resembles with the genus *Cucumis* of family *Cucurbitaceae,* which shows large berry, clothed with hairs and hence it is kept in new genus *Cucurbitaceocarpon sahnii* gen.et sp.nov.The generic name is after family *Cucurbitaceae* and specific name is after eminent Paleobotanist Prof. Birbal sahni.

Key words: Intertrappean, unilocular, dicotyledonous, berry, fruit.

INTRODUCTION

Intertrappean exposures at Mohgaonkalan, in the Deccan are very rich in fossil flora. The fossilliferous Cherts were collected from this locality. So far number of petrified berry and capsular type of fruits reported from Intertrappean beds of Mohgaonkalan, M.P., India. Some of the notable ones are, *Enigmocarpon parijai* (Sahni, 1943), *Doberocarpon gerhardii* (Chitaley and Sheikh,1971), *Deccanocarpon arnoldii* (Paradkar,1975) are some of the capsular fruits. *Mohgaoncarpon eydei* (Yawale, 1977), *Kremocarpon indicum* (Upadhye and Patil, 1978), *Erythroxylocarpon intertrappea* (Khubalkar, 1982), are the berries.

MATERIAL AND METHOD

The present fossil fruit specimen is collected during short excursion to Mohgaonkalan, M.P., India, a well known fossilliferous locality belonging to uppermost Cretaceous period. On cutting the chert, the present specimen

was exposed as a petrifaction, in longitudinal plane. The sections of material were prepared by peel method and examined microscopically. The preservation is being fine, revealed many important characters.

Description

The petrified fruit is unilocular berry type, clothed with hairs and without seed or seeds. It is dicotyledonous, ellipsoid in shape with two projection near the apex. It is exposed in longitudinal plane and is about 6.4 mm. long and 4.5 mm. broad (Text.fig. 1, Pl.fig.2).

Pericarp or fruit wall is about 296 – 300 μ thick and is differentiated into epicarp, mesocarp and endocarp (Text. fig. 1, Pl. fig 2. C).

Epicarp is outer zone of pericarp measures about 74μ thick, and is made up of thin walled parenchymatous cells. It show hairy outgrowth on it (Text.fig.1, Pl. fig.2A, B).

Middle layer is mesocarp measures 222μ thick in middle part of fruit and at basal part about 2.4mm. thick, and it consist of thin walled parenchymatous cells. Outer and inner cells of mesocarp are obliquely cut at periphery, showing vascular supply (Pl.fig2.C, D).

Endocarp is innermost zone of pericarp, consisting of thick walled compactly arranged parenchymatous cells. As the cells are not highly thickened, the term stony layer cannot be used at all, being berry type of fruit.

The fruit is without seed or seeds, but only one chamber is present in horizontal position about 2.3x3.7mm. in size surrounded by silica layer. The chamber might be containing seed or seeds at peripheral region (Text. fig. 1, Pl. fig. 2A).

In the chamber there is no sign of axis, thus seed or seeds might have arranged in parital placentation, along the thin layer of compactly arranged thick walled cells. Endosperm and embryo not preserved.

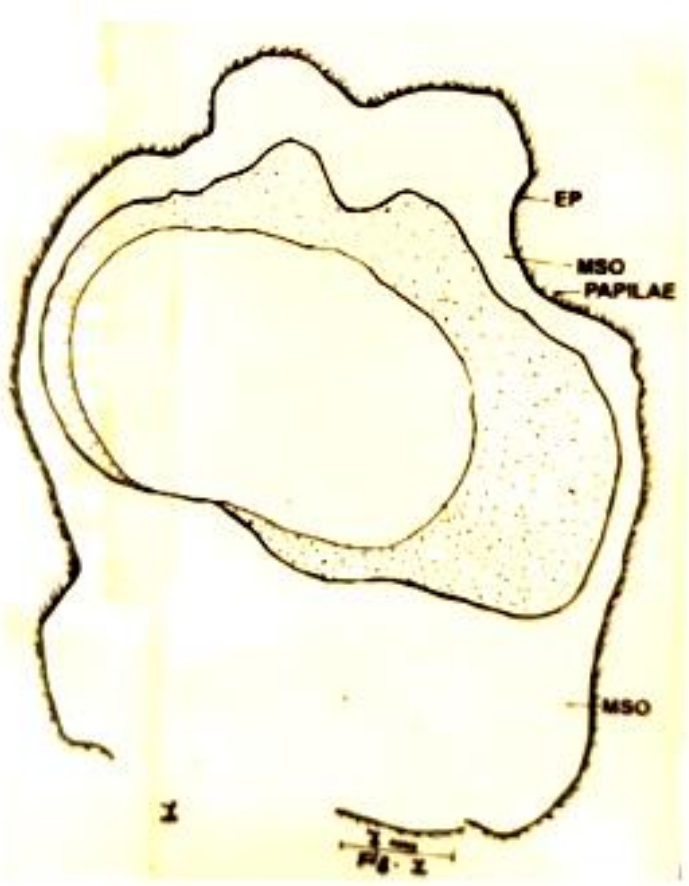

Figure 1: Entire fruit in L.S. showing epicarp, (EP) mesocarp (MSO) and endocarp, horizontal chamber and hairs.

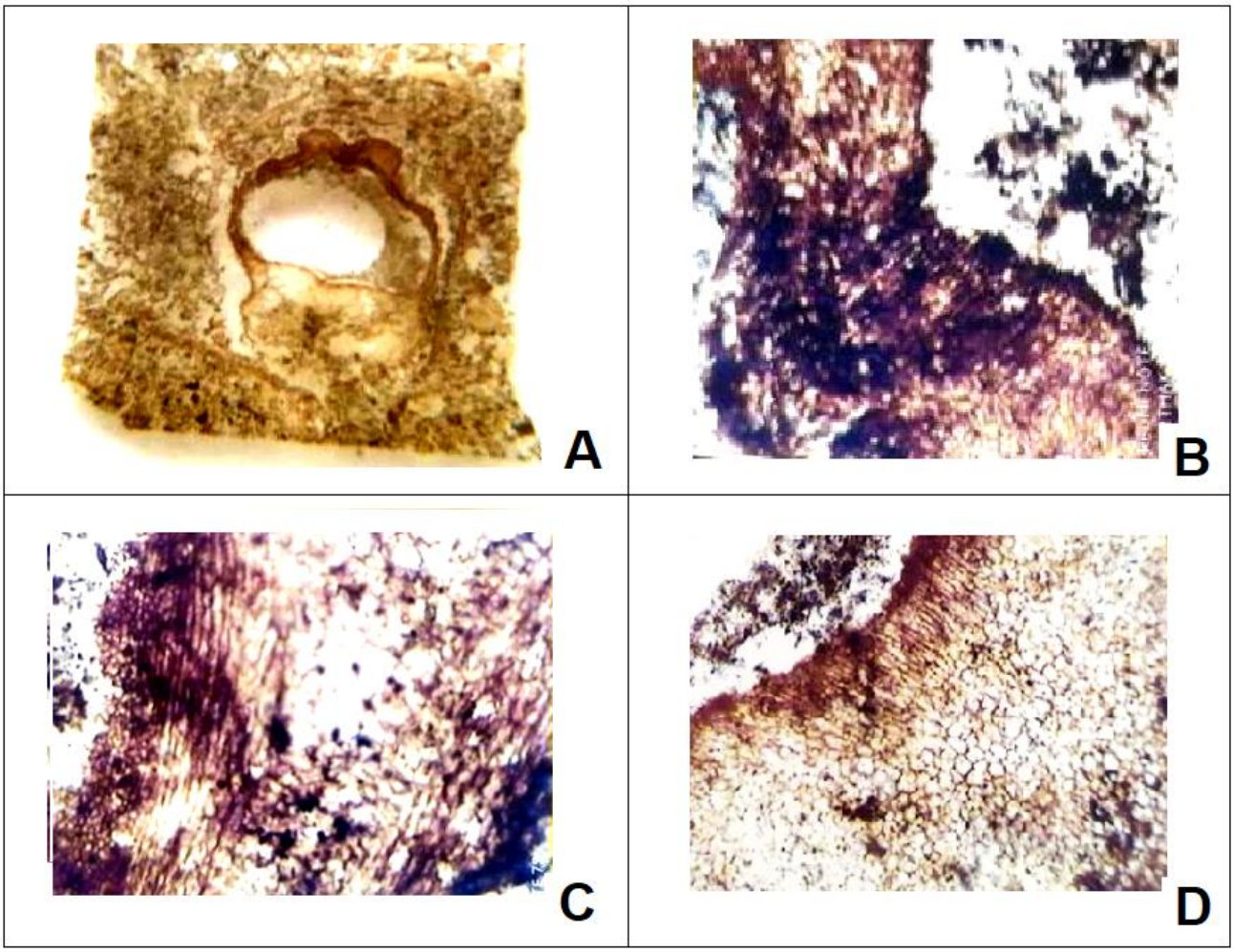

Figure 2 A: L.S. of entire fruit-Direct from slide. ; **B :** Part of fruit magnified, showing two projections at apex and hairs x 40' **C:** Pericarp in L.S. showing epicarp, obliquely cut cells of mesocarp showing vascular supply and endocarp x 40; **D:** L.S. of mesocarp at basal region, showing thin walled parenchymatous cells x 40.

DISCUSSION AND COMPARISON

The following important characters are considered for identification of fruit.

1. Fruit with hairy outgrowth on pericarp.
2. Ellipsoid shape of fruit.
3. Single loculus horizontal in position.
4. Berry type of fruit.

After studying all the important characters of fossil fruit, it is concluded that, the present fossil fruit is unilocular without seed or seeds. It is berry type of fruit with parital placentation of seed or seeds. It is compared with modern families like *Papaveraceae*, *Violaceae, Caryophyllceae, Cruciferae, and Cucurbitaceae* as well as reported fossil fruits.

In family *Papaveraceae*, the fruits are capsular, while present fossil fruit is berry which is different from fruits of family *Papaveraceae.*

In family *Violaceae,* fruits are either loculicidal capsule or berry, seeds winged in some species, which is not seen in present fossil fruit.

The present fossil fruit is also compared with fruits of family *Caryophyllaceae,* in having capsular type of fruits, dehiscing apically or valved or indehiscent achene, seed with hard embryo, while in present fossil specimen, fruit is berry, which does not show any similarity with fruits of family *Caryophyllaceae,* hence it is different.

It is also compared with family *Cruciferae,* in having siliqua or silicula or one seeded nut. But the present fossil fruit is berry, which is different from above fruits.

The present fossil fruit shows close resemblances with the genus *Cucumis* Of family *Cucurbitaceae,* which shows large berry clothed with hairs, cavity in horizontal position.

Comparision is also done with known fossil fruits.

Mohgaoncarpon eydei (Yawale,1977), is unilocular many seeded berry tapering towards both the ends, with papillate outgrowth, but present fossil specimen is blunt towards both the ends, cloth with hairs on pericarp which is different from above fruit.

Kremocarpon aquatica (Chitaley and Kate,1975), it is fibrous berry type of fruit, which is different from present specimen.

On comparision with *Kremocarpon indicum* (Upadhye and Patil,1978), the present specimen shows similarity in unilocular condition and outgrowth on pericarp, but differs in smaller in size, narrow at one end and broad at other end, absence of projection at apex, hence it is different from present fossil fruit.

Chitaleocarpon deccanii (Kumar,1984), fruit is stalked 1.37mm. long, without stalk 0.949mm, long, absence of projection at apex and hairy outgrowth on pericarp, but the present fossil fruit is without stalk, size of fruit 6.4mm. in long and 4.5mm, in broad with hairy outgrowth on pericarp and projection at apex, which is different from above fruit.

Hence from the above comparison between present fossil fruit and fruits of modern families and earlier reported fossil fruits from this locality, it comes to the conclusion that, the above fossil fruit closely resembles with the genus *Cucumis* of family *Cucurbitaceae,* which shows large berry, clothed with hairs and hence it is kept in new genus *Cucurbitaceocarpon sahnii* gen.et sp.nov.

The generic name is after family *Cucurbitaceae* and specific name is after eminent Paleobotanist Prof. Birbal sahni.

DIAGNOSIS:

Cucurbitaceocarpon sahnii *gen.nov*.

Fruit berry, dicotyledonous, ellipsoidal in shape clothed with hairy outgrowth. It is unilocular without seed or seeds, two projection at apex, pericarp differentiated in to epicarp, mesocarp, endocarp, epicarp thick walled parenchymatous, mesocarp thin walled arenchymatous, endocarp not stony layered.

***Cucurbitaceocarpon sahnii* gen.et sp.nov.**

Fruit berry, dicotyledonous, size 6.4mm. long 4.5mm. broad, single locule horizontal in position, size 2.3x3.7mm. Pericarp 296-300µ thick shows epicarp 74µ thick, mesocarp 222µ thick in middle part and at basal part 2.4mm thick, endocarp not highly thickened. Endosperm cells, embryo not preserved.

Holotype - MOH/MBB/DIC F-5.
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Locality - Intertrappean beds of Mohgaonkalan, M.P., India.

Horizon - Deccan intertrappean series of India.

Age - ? Uppermost Cretaceous.

Conflict of Interest

The author declares that there is no conflict of interest.

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