Further contribution in the knowledge of a fossil fruit, *Sahniocarpon*, from Deccan intertrappean beds of Mohgaonkalan, M.P. India

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**ABSTRACT**

The present petrified capsular fruit *Sahniocarpon* has been described from Mohgaon-kalan (22°1' N; 79°11' E), the well known fossiliferous locality of Deccan -Intertrappean series, in Chhinwada district, Madhya Pradesh, India. The fossil fruit is pentacarpellary syncarpous in T.S., though two carpels are seen in L.S., in present specimen. It is tapering at apical and basal ends and broad in middle. Fruit is about 4.62 mm long and 2 -3.84 mm broad and shows stalk like structure at the base with septicidal dehiscence. Pericarp or fruit wall is smooth, without any scale or hairs. L. S. of fruit shows two locules each with singles elongated seed separated by single septum. Embryo and endosperm are not preserved well. The present fossil fruit is being different from all known fossil capsular fruits and not satisfactorily resembling modern fruit, but shows similarity with reported fossil fruit *Sahniocarpon* hence a new species of genus *Sahniocarpon* is created as *Sahniocarpon ganeshii*. Sp. Nov.

Key words: Deccan -Intertrappean, Angiosperms, Dicotyledons, Capsular fruit.

**INTRODUCTION**


**MATERIAL AND METHODS**

The fossiliferous cherts were collected from Mohgaonkalan, M.P., India. On cutting the cherts the present fossil capsular type of fruits were exposed in longitudinal plane on different cherts. As preservation was satisfactory, it was studied by peel method by taking serial sections of material.

The three specimens of fruit are tabled below, for their size, plane of exposures and microscopic details. From the table it is clear that the three specimens are of one and same fruit, except slight variation in their size and layer of seed coat. (Table 1). The fruit is capsuling, slightly tapering at apical and basal end and broad in middle. It is about 4.62 mm long and 2-3.84 mm broad. It shows stalk like structure (Text. figs. 1 & 2, Pl. fig.1).

The fruit wall or pericarp is smooth without any scales or hairs. The longitudinal sections of fruit show two locules, each with single elongated seed separated by single septum. Embryo and endosperm are not preserved well. The present fossil fruit is being different from all known fossil capsular fruits and not satisfactorily resembling modern fruit, but shows similarity with reported fossil fruit *Sahniocarpon* hence a new species of genus *Sahniocarpon* is created as *Sahniocarpon ganeshii*. Sp. Nov.

The two seeds in the fruit are separated by single septum. The septum is made up of thin walled cells (Text. figs.1 & 2, Pl. figs.1 & 2). There is a wider gap present between seed and fruit wall. Each chamber has a single seed vertically placed (Text. figs.1 & 2, Pl. figs.1 & 2). The thickness of paricarp is 1-1.8mm and is differentiated into two zones. The outer zone is limited by epidermis; it is made up of thick walled cells (Pl. figs. 6 & 7). This zone is of many layers of thick walled cells. It is followed by inner zone which consists of thin walled parenchymatous cells about 0.35-0.5mm thick with intercellular spaces. Outer and inner zones showed vascular supply with scalariform thick enlings. (Text. figs. 1 & 2, Pl. figs. 6 & 7).

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parenchymatous cells (Pl. fig.4). A stalk like structure is present at the base of fruit (Text figs. 1 & 2, Pl. fig. 1). It is not in organic connection with the fruit wall, but close association almost juxtaposed. The stalk shows 4-5 layers of thin walled cells. Endodermis and embryos are not preserved.

**DISCUSSION**

The present fossil fruit is formed from pentacarpellary, syncarpous, superior ovary with axile placation in T.S., though two carpels are seen in L.S. in present specimens, having single seed in each loculus. The elongated large seeds are found to be embedded in soft tissue of the fruit in other specimens. The fruit wall shows slits against the septum, which suggests pentalocular condition but it is seen bilocular in L.S. in present specimen with septidal dehiscence, having anatropus seed in each loculus. The fruit shows 4-7 layers of highly thick walled sclerenchymatous cells in middle zone of seed coat in one specimen. Hence the new species of genus *Sahniocarpon* is created as *Sahniocarpon ganeshii*. The present fossil capsular fruit is compared with fruits of families like, *Tiliaceae*, *Malvaceae*, *Sterculiaceae*, *Sapindaceae*, *Convolvulaceae*, and *Linaceae*. In *Tiliaceae*, *Malvaceae*, *Sterculiaceae*, *Sapindaceae*, and *Convolvulaceae*, capsules are loculicidal or schizocarpic, dehiscing into two to many seeded cocci. This condition is different from present fossil fruit.

The family *Guttiferae* has capsular fruits with septidal or septifragal dehiscence; they are 3-6 locular with many seeds in loculus. In present fossil fruit there is a single seed in each loculus. *Geraniaceae* has 3-5 locular capsule with single seed in each loculus, as seen single seed in bilocular condition in L.S. in present fossil specimen but the capsule are loculisid, when septidal the condition is many seeded with false partition. Another family to with few resemble-
nances seen is *Linaceae*, here fruit is 3-5 locular with septidal dehiscence as in fossil specimen, however number of seeds are 1-2 per loculus and the fruit is divided into number of valves, which is not seen in present fruit. Comparison is also done with the known fossil fruits. *Enigmocarpon parijai* (Sahni, 1943) is 6-12 locular capsule differs from the present specimen. *Indocarpa intertrappea* (Jain, 1964) is a tetralocular fruit with many seeds in each loculus having affinities with *Guttiferae*. *Indocarpa mahabalei* (Nambudiri, 1969) differ from present fossil in having three locular capsules.

*Harriscarpon sahnii* (Chitaley & Nambudiri, 1968) though pentalocular and more or less same size, but has two seeds in each loculus, a condition not seen in present specimen. The only comparable character in all the known fossil fruits from India and does not satisfactorily resemble the modern fruits. But shows resemblances with reported fossil fruit *Sahniocarpon harrisi* (Chitaley & Patil, 1973) with some differences, hence the new species of the genus *Sahniocarpon* is created as *Sahniocarpon ganeshii*.

The fruit is dicotyledonous and is tapering at both the ends, size is 4.62mm long and 2-3.84mm broad, pericarp is 1-1.8mm thick and is differentiated into outer zone of thick walled cells, inner zone with thin walled parenchymatous cells, there are two seeds, one in each loculus vertically placed, placation is axile. Each seed is about 1.7mm long and 1.2mm broad, seed coat is differentiated into outer zone of thin walled parenchymatous cells, middle thick walled sclerenchymatous cells and inner thin walled parenchymatous cells. A stalk like structure is present at the base of fruit, embryo and endosperm not preserved.

**Table: 1 Analysis of different parameters of fossil specimens of Sahniocarpon**

<table>
<thead>
<tr>
<th>Specimen No.</th>
<th>Plane of Exposure</th>
<th>Size of Specimen</th>
<th>Thickness of Wall</th>
<th>No. of Septae &amp; Loculi</th>
<th>No. of Seeds in Each Loculus</th>
<th>Shape &amp; Size of Seed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L.S.</td>
<td>4.62 x 2-3.84mm</td>
<td>1-1.8mm</td>
<td>1-2</td>
<td>1</td>
<td>1.7x1.2mm</td>
</tr>
<tr>
<td>2</td>
<td>L.S.</td>
<td>5 x 4mm</td>
<td>1.3mm</td>
<td>1-2</td>
<td>1</td>
<td>2.3x1.8mm</td>
</tr>
<tr>
<td>3</td>
<td>L.S.</td>
<td>2.5x 2mm</td>
<td>962µ</td>
<td>1-2</td>
<td>1</td>
<td>1.8x1.2mm</td>
</tr>
</tbody>
</table>
REFERENCES


Dahegaonkar RR. (2002) Investigation of fossil flora from the Deccan Intertrappean beds of Chhindwara (M.P.) and Yawatmal (M.S.).


