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GLOSSOPTERIS ACUTENSIS, A NEW SPECIES OF GLOSSOPTERIS FROM PERMOTRIASSIC BEDS OF KAMTHI STAGE, SATNAVARI, DISTRICT-NAGPUR INDIA

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ABSTRACT

Glossopteris was one of the first fossil plants to be described by Brongniart who gave this name to certain tongue-shaped leaves from India and Australia, possessing a midrib and net venation. Later such leaves have been found widely occurring in the Permian rocks of Gondwanaland, a name which has been given to the southern landmasses comprising South America, South Africa, India, Australia and Antarctica. *Glossopteris* leaves are also found in abundance, mostly as impressions with or without carbon, in the rocks associated with coal deposits in all the continents of Gondwanaland. The present specimen is from Satnavari of Permian beds of Kamthi stage. It shows its close affinities with the *Glossopteris* leaf but differs from its species. Hence it is described under a new specific name *Glossopteris acutensis*. The specific name is after the acute apex of the leaf.

Key Words: *Glossopteris*, Permian, Permian, Satnavari, Gondwanaland

INTRODUCTION

The lower Gondwana flora was highly diversified and abundant with a wide distribution in peninsular and part of extra-peninsular India. Adolf Brogniart (1828), the French Palaeobotanist discovered Gondwana flora. The flora is believed to have emerged either during the extensive permocarboniferous glaciation or soon thereafter. The *Glossopteris* proved to be an important and dominant genus and hence the lower Gondwana flora is also known as *Glossopteris* flora. The name *Glossopteris* was proposed by Brogniart in 1822 but Sternberg gave it a generic status. In 1828, Brogniart describe *G. browniana* Var. *indica* and *G. browniana* Var. *australia* from India and Australia respectively. The first Indian species of *Glossopteris* which Schimper (1869) changed into separate species *G. indica*.

The flora of Kamthi formation was earlier studied by Bunbury (1861), Oldham and Feistmantel (1881). Bunbury (1861) described three species of *Glossopteris* from Kamthi and Silewada, Nagpur which are *G. musaeifolia*, *G. stricta*, *G. damudica* and *G. leptoneura*. In 1881 Feistmantel described *G. damudica*, *G. communis*, *G. musaeifolia*, *G. stricta*, *G. indica* and *G. angustifolia* from Wardha Godavari valley of Kamthi group. Jacob (1950) reported *G. Indica* from Kawadsi, Khan (1969) reported seven species of *Glossopteris* from Kamthi stage and these are *G. angustifolia*, *G. browniana*, and *G. communis*. *G. conspicua*, *G. damudica*, *G. indica* and *G. retifera*. Shaila Chandra and M.N.V. Prasad (1981) recorded *G. arberi* (Shrivastava 1956), *G. musaeifolia* (Bunbury 1861), and *G. mohudensis* (Chandra and Surange 1979) from Bazargaon. From India, several workers have described different *Glossopteris* species on the basis of morphological as well as cuticular characters from various localities. The present chapter is an additional contribution to the Gondwana species.

MATERIALS AND METHODS

The specimen for present study is collected from Satnavari, Madhya Pradesh, India. The material is preserved as impression in brownish white coloured shale. The description of present specimen is based on many fragmentary specimens and one complete specimen preserved in the same shale. The specimens are studied with the help of different magnifying lenses and binocular research microscope.

Description

The preserved leaf is of smaller size, longer than broad. The length of lamina is 11.5 cm. At the apex and

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base, leaf is not well preserved but rough outline about the shape is studied (Figure1). It is 2 cm broad in the middle, at the apex it is slightly narrow and measures 0.8 mm broad with acute apex. Towards base it becomes narrower and at extreme base it is 0.5 mm broad. The base is normally acute. It is lanceolate in shape. Mid vein is prominent and narrow and gradually tapers towards the apex. The L/B ratio is 5:1. In the middle of the lamina it is 1 mm broad and at apex it is very thin. Venation is dense, reticulate, lateral veins arise at angle of 30° to 40° and anastomose to form long narrow polygonal meshes of sizes 0.5 to 1 x 2.5 to 4.5 mm. (Figure I-Figure 2 and Text Figure 2)

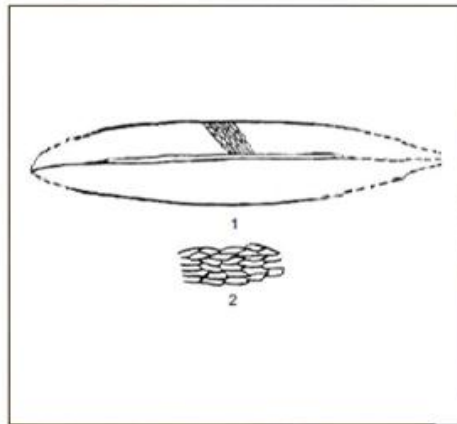


Figure 1: Explanation of text figure, 1. Leaf impression of *G. acutensis* showing lanceolate shape and angle of divergence of secondary vein. XN. 2. A magnified views of *G. acutensis* showing venation pattern X2.

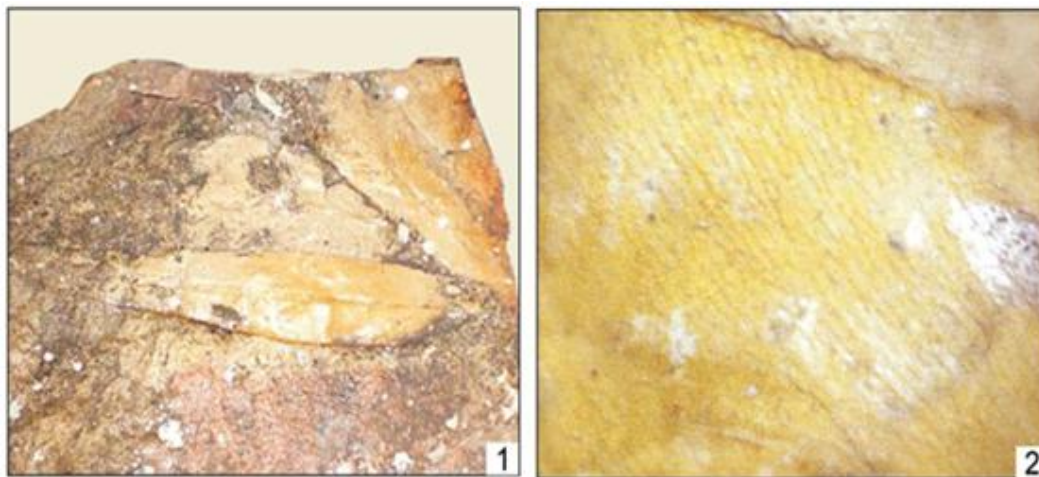


Figure 2: Explanation of Figure, 1. Leaf impression of *G. acutensis* showing lanceolate shape and angle of divergence of secondary vein. XN.2. a magnified views of *G. acutensis* showing venation pattern. X2.

Identification

The leaf shows important morphological characters such as. The apex and the base are acute, Lanceolate shape, Entire margin and mid vein prominent, L/B ratio is 5:1, Lateral veins angle formation at 30° to 40° and Long narrow polygonal meshes of sizes 0.5 to 1 x 2.5 to 4.5 mm.

Comparison

The present specimen can be compared with *G. indica* (Feistmantel 1882) in acute apex. But mid vein is wide, meshes are very long, lateral veins takes graceful curve.

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The leaf agrees with *G. stricta* in shape and apex (Bunbury 1861) but *G. stricta* shows broad midrib and lateral vein arises at an angle of little less than 90. These characters do not match with the present specimen.

In apex the present specimen resembles with *G. raniganjensis* (Surange and Shaila Chandra 1979). However, *G. raniganjensis* is narrowing elliptic with L/B ratio 4:1, base acute cunate and midrib is very wide occupying $\frac{3}{4}$ width of lamina.

It can also compare with *G. tenuifolia* (Pant and Gupta 1968). However, *G. tenuifolia* is linear lorate with L/B ratio 8:1 as well as meshes are very long while the present specimen is lanceolate with L/B ratio 5:1 and meshes are somewhat shorter than *G. tenuifolia*.

The present leaf agrees with *G. decipiens* (Feistmatel 1879) in having acute apex and length into breath ratio 5:1, but differs a lot in shape narrow elliptic, base hastate and lateral veins arise at an angle of much less than 45°.

The present leaf resembles *G. satnawarensis* (Talwankar 2001), in number of character such as leaf lanceolate longer than broad, L/B ratio 5:1; base acute normal, midvein narrow tapering towards apex, venation reticulate. But differs in apex and angle formation. In present specimen, it is acute and lateral vein arise at an angle of 30° to 40°.

Thus, present specimen differs from earlier reported species of *Glossopteris* in one or other character hence is described under a new specific name, *Glossopteris acutensis*. The specific name is after the acute apex of the leaf.

Diagnosis

Leaf lanceolate, longer than broad, L/B ratio 5:1, apex acute, base normal acute, midvein narrow tapering toward apex, venation, reticulate, lateral vein arises at an angle for 30° to 40° and anastomise to form long narrow meshes.

Holotype	:	AMY. /G-1. Department of Botany, Institute of Science, Nagpur.
Locality	:	Satnavari, Dist. Nagpur, Maharashtra, India.
Horizon	:	Lower Gondwana of India.
Age	:	Permotriassic.

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