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Advance in Cretaceous bennettitalean trunk from China

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The extinct Bennettitales, as an important group of Cycadophyte in geological record, were most prosperous in the Jurassic period, and began to decline and finally became extinct from early to late Cretaceous. Some groups of Bennettitales were once considered as the ancestors of angiosperms mainly because of their bisexual reproductive organs, thus fossils of these groups have attracted extensive attention for paleobotany research. So far, rich fossil leaves of Bennettitales have been recognized from the strata of Mesozoic worldwide, such as from North America, Britain in Europe, India, Japan and China in Asia [1-3]. Meanwhile, relatively rare fossil root, spore and flowers have also been reported as well [4, 5].

In China, the Mesozoic megafossil records of Bennettitales are mainly fossil leaves. The fossils are found in the strata of Triassic to Cretaceous principally from Anhui, Gansu, Heilongjiang, Hubei, and Liaoning Provinces in China, and including *Anomozamites*, *Neozamites*, *Otozamites*, *Nilssoniopteris*, *Pseudocycas*, *Pterophyllum*, *Ptilophyllum*, *Tyrmia*, *Zamiophyllum*, *Zamites*, etc [1, 6-9]. In addition, a few fossils of the reproductive organs of Bennettitales have also been reported.

The anatomically well preserved fossil stem of Bennettitales are crucial evidence for understanding questions in regard to structural evolution of the Cycadales groups. Some of fossil stems of Bennettitales have already been found in the Mesozoic strata from North America, Britain and Spain in Europe, India and Japan in Asia, etc. [3, 10-13]. However, previous rare discovery of Bennettitales stems from China has been reported.

A well preserved big Bennettitalean trunk has been found from the Cretaceous strata at Darhan Muminggan Joint Banner, Baotou City, Inner Mongolia Autonomous Region, northern China. The fossil was exposed at the surface of pastoral area, together with some fragments of petrified woods. The external shape and internal structure of the fossil trunk are very similar to the stem of modern Cycads, while the reproductive structure at the petiole bases of the fossil is quite different from modern cycads. Further detailed anatomical study of the specimen will provide important evidence for understanding biogeography and evolutionary of Bennettitales.

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