A New Carcharodontosaurian Theropod (Dinosauria; Saurischia) from the Lower Cretaceous Khok Krut Formation of Nakhon Ratchasima, Thailand

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The Khok Krut Formation is the uppermost of the non-marine Mesozoic Khorat Group of northeastern Thailand, whose age has been referred to the Aptian age based on palynological data and other fossil occurrences. Nevertheless, dinosaur remains from the Khok Krut Formation have hitherto been scarce, and only iguanodontian ornithopods have been described based on isolated remains.

A new theropod taxon is here described based on isolated cranial and postcranial skeleton remains collected in this Lower Cretaceous formation. Detailed observations support the establishment of this new allosauroid taxon, proposing a series of autapomorphic characters as jugal with straight ventral margin and dorsoventrally deep anterior process below the orbit; surangular with a deep oval concavity at the posterior end of the lateral shelf and four posterior surangular foramina; long and narrow groove along the suture between surangular and prearticular; articular with a foramen at the notch of the suture with prearticular; anterior cervical vertebra with a pleurocoel excavating parapophysis; and cervical and posterior dorsal vertebrae penetrated by a pair of small foramina bilaterally at the base of neural spine. In addition to these diagnostic features, the presence of a huge number of camerae and pneumatosores in cranial and axial elements reveals a remarkable skeletal pneumatic system in this Khok Krut Formation taxon, comparable to that observed in other allosauroids. The phylogenetic analyses revealed that this new taxon is a basal Carcharodontosauria, involving new sight of the paleobiogeographical context of this worldwide distributed group. These findings show the best-preserved carcharodontosaurian theropod in Southeast Asia and sheds new light to resolve the early evolutionary history of Carcharodontosauria.

Keywords: Allosauroidia, Southern Asia, Aptian, pneumatism, phylogeny;