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A new specimen of the theropod dinosaur *Baryonyx* from the early Cretaceous of Portugal and taxonomic validity of *Suchosaurus*

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Abstract

Although the Late Jurassic of Portugal has provided abundant dinosaur fossils, material from the Early Cretaceous is scarce. This paper reports new cranial and postcranial material of the theropod dinosaur *Baryonyx walkeri* found in the Barremian (Papo Seco Formation) of Portugal. This specimen, found at Praia das Aguncheiras, Cabo Espichel, consists of a partial dentary, isolated teeth, pedal ungual, two calcanea, presacral and caudal vertebrae, fragmentary pubis, scapula, and rib fragments. It represents the most complete spinosaurid yet discovered in the Iberian Peninsula and the most complete dinosaur from the Early Cretaceous of Portugal. This specimen is confidently identified as a member of Baryonychinae due to the presence of conical teeth with flutes and denticles in a dentary rosette. The specimen ML1190 shares the following characteristics with *Baryonyx walkeri*: enamel surface with small (nearly vertical) wrinkles, variable denticle size along the carinae, 6–7 denticles per mm, wrinkles forming a 45 degree angle near the carinae, and tooth root longer than crown. In addition, dubious taxa based on teeth morphology such as *Suchosaurus cultridens* (Owen, 1840–1845), and *Suchosaurus girardi* (Sauvage 1897–98; Antunes & Mateus 2003) are discussed, based on comparisons with well-known material such as *Baryonyx walkeri* Charig & Milner, 1986. *Suchosaurus cultridens* and *S. girardi* are considered as nomina dubia due to the lack of diagnostic apomorphies, but both specimens are referred to Baryonychinae incertae sedis.

Key words: Theropod dinosaurs, Spinosauridae, *Baryonyx*, early Cretaceous, Portugal

Introduction

Spinosauridae is a group of theropod dinosaurs with snout and tooth morphology convergent with that of crocodiles (Sereno *et al*. 1998; Rayfield *et al*. 2007). The group is placed as part of spinosauroid (Sereno *et al*. 1998, Rauhut 2003), or megalosauroid (Benson 2010), tetanurans, and divided into Baryonychinae (with *Baryonyx walkeri* Charig & Milner, 1986 and *Suchomimus tenerensis* Sereno *et al*., 1998, and possibly also *Cristatusaurus lapparenti* Taquet & Russell, 1998 pending verification of its synonymy with *S. tenerensis*) and Spinosaurinae (with *Spinosaurus aegyptiacus* Stromer, 1915 and *Irritator challengeri* Martill *et al*., 1996) (Charig & Milner 1986, 1997; Sereno *et al*. 1998; Sues *et al*. 2002). The Thai form *Siamosaurus suteethorni* Buffetaut & Ingavat, 1986 also seems to belong to Spinosauridae (Buffetaut *et al*. 2008).

Although dinosaur bones and tracks from the Late Jurassic of Portugal are well known (Mateus & Antunes 2000, 2003; Ricqlès *et al*. 2001; Antunes & Mateus 2003; Mateus 2006; Mateus & Milàn 2008), Lower Cretaceous fossils are rare, and are restricted to isolated teeth and bone remains (Sauvage 1897–98; Antunes & Mateus 2003) and tracks (Mateus & Antunes 2003, and references therein). The only genera reported are *Iguanodon* and a possible basal macronarian sauropod attributed to the dubious taxa '*Astrodon*' or '*Pleurocoelous*' (Sauvage 1897–98), and 'Megalosaurus'. Sauvage (1897–1898) erected the new species *Suchosaurus girardi* based on two dentary fragments with teeth (specimen MG324, reported by Sauvage 1897–98 as specimens 29A, 29B; a third dentary

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