

HISTOLOGY OF OSSIFIED EPAXIAL TENDONS IN *GASPARINISAURA CINCOSALTENSIS* (ORNITHISCHIA: ORNITHOPODA)

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The presence of ossified tendons along the vertebral column is a synapomorphy of Ornithischia. In ornithopod dinosaurs, basal iguanodontians (e.g., *Tenontosaurus*) have ossified tendons arranged in long bundles down the back and out along the tail vertebrae. These tendons parallel the vertebral column. On the other hand, more derived iguanodontians (such as hadrosaurs) have ossified tendons arranged in a crisscrossing trellis-like configuration down the back and tail. Although the microstructure of ossified tendons in derived iguanodontians has been well studied, studies in more basal forms are rather scarce. In the present work the microstructure of the ossified tendons of the basal ornithopod *Gasparinisaura cincosaltensis* is studied. The sample consists of several tendons from the caudal region of a specimen (MCSPv 111) collected from the Cinco Saltos locality (Northern Patagonia), in outcrops of the Anacleto Formation (Late Cretaceous). Ossified tendons consist of a homogeneous matrix composed of coarse mineralized collagenous fibers oriented along the tendon main axis. Bone cell lacunae are abundant and they are oriented following the fiber arrangement. The vascularization is low and consists of simple vascular canals and primary osteons. No lines of arrested growth and periosteal bone remodeling are observed. The low degree of secondary remodeling in the sampled bones of *Gasparinisaura* suggests an early growth stage in this specimen, similar to the reported in ossified tendons of juvenile hadrosaurs. The nature of the primary bone matrix in the ossified tendons of *Gasparinisaura* indicates that these structures mainly originated through direct mineralization (metaplasia) of tendinous structures. This mechanism has been previously proposed for the origin of ossified tendons in other ornithischians and in cervical ribs in sauropod dinosaurs.

