ACTA PALAEONTOLOGICA POLONICA

Dermal armor histology of *Saltasaurus loricatus*, an Upper Cretaceous sauropod dinosaur from Northwest Argentina

Ignacio A. Cerda and Jaime E. Powell
Acta Palaeontologica Polonica 55 (3), 2010: 389-398 doi: http://dx.doi.org/10.4202/app.2009.1101

The first unambiguous evidence of the presence of osteoderms in sauropod dinosaurs came from the discovery of *Saltasaurus loricatus*, a titanosaur from the Upper Cretaceous of Argentina. The dermal armor of *Saltasaurus* is composed of bony plates and small dermal ossicles. Here, we analyze the bone microstructure of these elements and provide information regarding its origin and development. The bony plates are composed almost entirely of reconstructed cancellous bone. Remains of primary bone consist of coarse bundles of mineralized collagenous fibers towards the external surface. Also, woven fibered bone tissue appears in the basal and lateral regions. Dermal ossicles lack secondary remodeling, and their matrix is formed by three orthogonal systems of collagenous fiber bundles. Growth lines are present in both bony plates and ossicles. Bone histology reveals that osteoderms mainly originated through direct mineralization (metaplasia) of the dermis, although other mechanisms are also involved (at least in the origin of dermal plates). The common features of development and integumental location of the osteoderms of *Saltasaurus* and other non–related vertebrates (e.g., lepidosaurs, crocodylomorphs) are linked to the intrinsic skeletogenic properties of the dermis.

Key words: Sauropoda, Titanosauria, osteohistology, osteoderms, dermal ossicles, metaplasia, Argentina.

Ignacio A. Cerda [nachocerda6@yahoo.com.ar], CONICET-INIBIOMA, Museo Universidad Nacional del Comahue, Buenos Aires 1400, (8300) Neuquén, Argentina; Jaime E. Powell [jpowell@csnat.unt.edu.ar], CONICET- Facultad de Ciencias Naturales - Universidad Nacional de Tucumán - Miguel Lillo 205, (4000) Tucumán, Argentina.

This is an open-access article distributed under the terms of the Creative Commons Attribution License (for details please see creativecommons.org), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.


Full text (833.6 kB)