EVIDENCE OF SEDIMENTARY REMODEL OF JURASSIC THEROPOD EGG CLUTCHES (LOURINHÃ, PORTUGAL)

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The “Paimogo nest” (Lourinhã, Portugal) is an assemblage of up to 100 eggs of a theropod dinosaur and three eggs of an undetermined crocodylomorph, including the oldest embryonic bones of a theropod dinosaur, most probably the allosauroid *Lourinhanosaurus*. The clutch was found in reddish paleosoils of the Lourinhã Formation (Late Kimmeridgian, Lusitanian Basin), representing fluvial floodplains.

The theropod eggs, attributed to the oogenus *Preprismatoolithus,* are larger (13x10 cm) and have angustiprismatic eggshells. The crocodylomorph eggs represent the holotype of the oospecies *Krokolithes dinophilus*; these are smaller (7x4 cm) and show crocodyloid eggshell. The high number of eggs and the presence of two oogenera suggest a coalesce of biological and geological events in the assemblage formation. We approached the problem using a multidisciplinary study. Geochemical analysis group the theropod eggs in two classes, suggesting at least two independent origins. Analysis of the sedimentary structures, coupled with a study of the Anisotropy of Magnetic Susceptibility (AMS) indicate the eggs were accumulated by a low-energy sedimentary process. However, the oological features show intact eggs, crushed due to lithological pressure being the only taphonomic alteration. Thus, two females laid the eggs in different clutches or a single female laid at least two non-synchronic clutches, which were later reworked by the floodplain dynamic. Our results suggest that the presence of complete, highly packed eggs, even those bearing embryos, is

not sufficient for assuming a clutch or a nest. Detailed sedimentological and taphonomic studies are needed before inferring the biology of the egg laying species.

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