ESR dating of teeth of Smilodon populator from Toca de Cima do Pilão, Piauí, Brazil

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Study Goal: The objective of this study was to date a tooth of Smilodon populator found in Toca de Cima do Pilão, Piauí, Brazil.

Abstract: Smilodon is a genus of big cats that had an area of occurrence from North America and Mexico to South America. According to the evidence they lived during the middle and lower Pleistocene(1). Although the records of fossil “Saber-toothed tiger” are very irregular, some taxa are shown to be quite abundant in certain regions (2). In Brazil Smilodon populator Lund, 1842 is a species quite well known and found in several locations. This species has multiple records for the region of the Serra da Capivara National Park.(1). Recognized by UNESCO as Cultural Heritage of Humanity, the area of Serra da Capivara National Park is located in southeastern Piauí, Brazil and presents the largest concentration of archaeological sites currently known in the Americas. Also it presents a rich fauna of the Pleistocene and/or Holocene, particularly including many mammals (3). This paper reports the dating carried out by Electron Spin Resonance of a Smilodon populator tooth found in “Toca de Cima do Pilão” in the surrounding area of the Serra da Capivara National Park. After cleaning and proper preparation, the enamel was divided into several aliquots and irradiated at different doses up to 3kGy for construction dose-response curve. The equivalent dose found after exponential fitting is (2.7±0.3).102Gy. The concentration of radioisotopes present in the sample and in the soil was determined by Neutron Activation Analysis to calculate the internal and external dose rates and age. The age obtained is in the range of 80±7 ka, considering the Combination Uptake Model (ROSY)(4), which reinforces the presence of this species in the Pleistocene era in this region.

4- Brennan BJ, Rink WJ, Rule EM, Schwarcz HP, Prestwich W V. Anc TL. 1999;17:9

Conclusion: The ESR dating resulted in an age in the range of 80±7 ka for the Smilodon populator tooth sample found in Toca do Cima do Pilão, Piauí, Brazil.

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