

Preliminary report on stable isotope analysis on fossil mammal tooth of Late Miocene in Khorat, Northeastern Thailand

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Hominoid fossils (Ponginae), with many late Miocene mammals, have been reported from Tha Chang sandpits along the Mun River, Nakhon Ratchasima Province (Khorat), northeastern Thailand. The paleoenvironmental reconstruction is important to reveal the evolutionary process of Asian great apes, including orangutans, in the late Miocene. The purpose of this study is to reveal the habitat of the late Miocene hominoid and other mammals, based on carbon and oxygen isotope analysis.

The material is tooth enamel of mammalian fossils collected from the late Miocene deposits on some sandpits in Takut Khon and Phraput areas in Amphoe Chaloem Phra Kiat. Samples (3mg) for isotope analysis were taken from tooth enamel using dental drill. The samples were washed with buffered acetic acid (0.1N, 30min), and then dried. The carbon and oxygen isotope ratios were measured using the GasBenchIII preparation system and isotope ratio mass spectrometer (IRMS).

The results of carbon isotope ratios revealed that most of taxa consumed C₃ terrestrial plants. However, hippopotamids and one taxon of proboscideans presented mixed C₃/C₄ diet. Oxygen isotope ratios of hippopotamids showed lower values, indicating semiaquatic ecology. These results suggest that most of the areas were occupied by forests, and C₄ plants (grasslands) existed along river basins in this area during the late Miocene.

Keywords: Stable isotope, Mammal, Fossil, Miocene