INFLUENCE OF THE GEOLOGICAL SETTING ON THE GEOCHEMISTRY OF PEDOGENIC CALCRETES IN THE CONTINENTAL RIFT OF SOUTHEASTERN BRAZIL

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The sedimentary filling of the Continental Rift of Southeastern Brazil is mainly represented by Eocene-Oligocene mudstones (smectitic clayey matrix containing variable proportions of quartz and feldspar) of alluvial fans of the Itaboraí (in the homonymos basin), Resende (Taubaté, Resende and São Paulo basins) and Guabirotuba (Curitiba basin) formations. These stratigraphic units have mainly Precambrian gneisses in their basement; in the Itaboraí Formation there are Paleocene basal travertines formed in hot springs and derived from Precambrian marbles of the basement. The Eocene-Oligocene mudstones are closely associated with nodular pedogenic calcretes. The nodules (2 -10 cm in diameter) consist of dense, red luminescent micritic to microsparitic calcitic matrix, containing floating, etched grains, as well as yellow luminescent sparry calcite-filled cristallarias and microfractures. The matrix of nodules from Itaboraí Formation are enriched in strontium and depleted in Fe, Mn, Zn, when compared with carbonate nodules from Resende and Guabirotuba formations. Stable isotope data obtained for the matrix also showed heavier dC13 (~ -3.5‰ PDB) values for nodules from Itaboraí Formation than that ones of nodules from Resende and Guabirotuba formations (dC13PDB values between -10.73 and -7.49‰). Despite the fact that these nodular calcretes have similar petrographic characteristics, host materials (smectitic mudstones) and origin (pedogenic process in the vadose zone), they show geochemical differences which are attributed to the influence of geological setting. In the case of Itaboraí Formation, nodular calcretes have trace elements contents and isotope signature inherited from basal trevertines.