

ABSTRACT

Together 10 profiles in clastic cave sediments have been documented and studied by mineralogical and geochemical methods in the middle level of Koněprusy Caves, about 30km SW of Prague. The study was focused especially on cave sediments without paleontological content (i.e., without bones of Vertebrata), which are in some cave sections overlain by bone-rich layers, studied in detail in the past. Except of middle level of the Koněprusy Show Caves, some other adjacent caves have been included in the study, too. Small number of samples was also derived from upper and lower level of the Koněprusy Caves.

Except famous bone-rich sediments of the Koněprusy caves, dated paleontologically to Lower, Middle and Upper Pleistocene, paleontologically sterile clastic sediments with variable grain size, petrographic composition, and origin can be found as well. These sediments are mostly older than bone-rich layers.

Carbonate sands recognized in one of studied profiles was originated by selective corrosion of Devonian limestone on the walls of cavities. This process most probably occurred during the development and enlarging of cavities, when calcite grains (and small Devonian fossils, usually crinoids) were released and deposited on the cavity bottom. Laminated clays with good size sorting, formed by sedimentation from muddy waters under phreatic regime, have been found in several profiles. These clays are frequently influenced by post-sedimentary compaction and slope movements. Fragments of such clays were also frequently redeposited during younger evolution of the caves. Mineral composition of these clays is dominated by quartz, kaolinite and illite/muscovite, with colors being derived from admixture of secondary iron minerals (goethite was identified). This mineralogical composition indicates, that these clays probably do not represent residual clays of limestone weathering, and were derived from allochthonous rivers. Black, Mn-rich layers were studied in one profile, where they are dominated by ranciéite.

Quartz sands indicating more quick water flow are less common within the caves. Quartz grains are well rounded and identified heavy minerals (zircon, andalusite, kyanite, sillimanite, staurolite, turmaline, rutile, ilmenite) correspond to redeposition of sandy material either from marine sandstones of Cretaceous age, or from river sands of Tertiary rivers. Heavy minerals typical for Pleistocene river terraces or Pleistocene wind-blown sediments (loess) have been not found.

Clastic sediments with bad size sorting deposited by gravitational movements or by periodic water flows already under vadose regime are common and contain Vertebrata bones on numerous locations. These sediments have been studied in detail in the past and were not included in this diploma work. Similarly, earlier defined 5 types of speleothems were not included. Within the studied clastic sediments there have been found traces of minor speleothem generation, which is relatively older than the five types identified earlier.

The study was also focused on processes of formation of calcite septarian concretions, which occur in cave clay sediments. Calcite carbon and oxygen isotope data indicate that these concretions were not formed in relation to water evaporation and sediment drying, as have been sometimes interpreted in the past. Instead, the concretions were more probably formed during cold periods of Quaternary.