
Sedimentary events at the Jurassic/Cretaceous boundary interval in the Slovenian Basin and Transdanubian Mts (Hungary): evidences from terrigenous input and trace metal enrichments

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Abstract

The Jurassic/Cretaceous boundary interval (upper Tithonian – lower Berriasian) in the Transdanubian Mts (NW Hungary) was intensively studied throughout last decade (e.g. Fözy et al. 2022). The succession is typically developed in Ammonitico Rosso and Biancone facies, and is comprehensively dated using calpionellids, calcareous nannofossils, ammonites and magnetic stratigraphy (Szives & Fözy 2022; Lodowski et al. 2022). First-order sedimentary trends (terrigenous input, redox proxies) are characterized on the basis of elemental chemostratigraphy and carbon isotope stratigraphy (Grabowski et al. 2017; Lodowski et al. 2022).

The coeval succession in the Slovenian Basin is not as well investigated. The new results are presented from the Petrovo Brdo (PB) section, covering lower Tithonian to upper Berriasian (ca. 40 m). At 5 m of the section a sharp transition is observed between clay rich radiolarian cherts of Tolmin Fm. and calpionellid limestones of Biancone Limestone Fm. Calpionellid associations poorly preserved, therefore only rough biostratigraphic dating is possible. Crascolaria Zone (upper Tithonian) was documented between 8 and 13 m of the section, while the beginning of the Calpionella alpina Subzone (present day J/K boundary) is situated at ca. 20 m. Transition between Tolmin and Maiolica Fm. falls in the UAZ 12 radiolarian Zone which is close to the lower/upper Tithonian boundary.

Despite only rough biostratigraphic dating and unsuccessful magnetostratigraphic attempt in PB section, it turned out that the section might be quite precisely correlated with Hungarian sections (Lókút and Harskút) using magnetic susceptibility and elemental chemostratigraphy. The terrigenous proxies in both areas reveal high values in the lower Tithonian,

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decreasing trend throughout the upper Tithonian – lower Berriasian and again rising values in the upper Berriasian. The trace metal (Ba, Cu, Pb, Zn) enrichments occur exactly opposite, with sharp increase and highest values in the upper Tithonian and lower Berriasian, and low values in the lower Tithonian and upper Berriasian.

The similarity of events indicates their large regional significance in the Western Tethys and potential for correlation of distant sections from different basins.

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