Integrated stratigraphy (from radiolarians, conodonts, palynomorphs, ammonoids, ostracods) of the Early Carnian deepening upward sequence (the Huglu Unit) within the tectonic slices/blocks of the Mersin Mélange, southern Turkey: biochronologies and paleogeographic implications

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Abstract

The Mersin Ophiolitic Complex in southern Turkey includes two different units as the Mersin Mélange (MM) and Mersin Ophiolite with metamorphic sole and is situated to the north and northwest of Mersin City, southern Turkey. The MM is a typical sedimentary mélange and contains slide blocks of oceanic and continental origin in a sheared and deformed olistostromal matrix of Late Cretaceous age. It has clear affinity to the allochthonous units (the Beysehir-Hoyran Nappes) originated from northern branch of Neo-Tethys. Two different blocks (the Tavuscayiri and the Kocatabur) are widely-exposed to the northern part of the MM.

Based on detail studies on the Tavuscayiri Block, samples along the Kilek Section have been investigated and they indicate that it contains two different parts. Lower part of the section characterized the Tavuscayiri Formation is represented by an alternation of conglomerates and sandstones at the basal part and followed respectively by sandy limestones, thick-bedded to massive limestones. This succession is interpreted as deeping upward sequence from fluvial / esturaine to marine conditions. Conglomeratic Sandstones at the base of sequence yielded palynomorphs indicating basal Julian age. Due to successive drowning of platform to the top of the Tavuscayiri Formation, red pelagic limestones with ammonoid remains appear. By correlating this part to the covealant beds with abundant ammonoid taxa around the Killik Hill, its age can be assigned that late Early Carnian.

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Higher up-section follow the Huglu Tuffites which are carbonate-poor except for the uppermost part. Cherty limestones at the top of the exposed Huglu Tuffites include rich and diverse radiolarian fauna. Radiolarian fauna clearly reveals the late Early Carnian age corresponding to the *Tetraporobrachia haeckeli* Zone. This age assignment has also been confirmed by dating of associated fauna (conodont and ostracoda) obtained from adjacent beds.
We interpret the marked changes in the sedimentary environment as rapid prograding deepening in a back-arc basin setting of the Izmir-Ankara Ocean culminated in the high volcanic activity of the Huglu Tuffites.

Keywords: integrated stratigraphy, biochronology, Carnian, Mersin Melange