New biostratigraphical and geochemical data from the mélange complexes of the Meliata Unit s.s., Čoltovo village (Western Carpathians, Slovakia)

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The surrounding of the Čoltovo village is a well-known location related to the Meliata Superunit (especially Meliata Unit s.s.). The Meliata Unit is represented by intricate mélange complexes linked to the closure of the ancient Meliata Ocean, as a significant part of the Western Carpathians geological story. In general, Meliata complexes are divided into HP/LT Permian to Jurassic metamorphosed clastic sediments, carbonates and basic volcanics (Bôrka Nappe) and complexes of "mixed chaos" of the Jurassic low grade shales with huge Triassic olistostrome bodies (Meliata Unit s.s.), the latter being the main subject of this work. Outcrops near the village of Čoltovo along the slopes of the W–E trend on the Slaná River bank provided limited information only. Therefore, new parts were excavated in March/2022. After removal of debris, the very complex internal structure of the mélange can be clearly detectable. This new section is composed of six individual outcrops (ČLP1 to ČLP6 from left to right) and consists of two contrasting lithological parts. The eastern part is mainly characterized by strongly weathered gray fine-grained shales and tuffs containing blocks of lithologically variable rocks. These are mainly represented by basic volcanics and dark coarse-grained Jurassic crinoidal limestones. The western part of the section consists of red and white fine-grained siliciclastics with basic volcanic material, and blocks of dark red, green and purple radiolarites. In the upper parts of the outcrops, layers of dark crinoidal limestones, shales and conglomerates of the Jurassic age are present. The connection between these beds and the mélange is documented by their presence as blocks in the left part of the section. The mélange complexes are overstepped by the Lower Miocene organodetritic limestones, sandstones and breccias (Bretka Beds). Three samples from the western part of the new outcrops gave identifiable Middle Triassic radiolarians. In addition, an old outcrop to the east of the newly excavated section, provided a productive sample with Upper Triassic radiolarian microfauna. Our research was also focused on geochemical analyses of radiolaria-bearing siliciclastics and basic volcanics, aiming at understanding the palaeoenvironment of the Meliata Ocean. All of the sediment samples gave similar results, which point to shallow marine environment, close to the continental margin. The geochemical data indicate a mature continental sedimentary provenance. Based on these data, we interpret the source of the samples located to the north of the Meliata Ocean (possibly Permian clastics of the Gemer Unit). Basic volcanics sample from the right side of the section confirms basalt/basaltic andesite composition. From the study of the Čoltovo section it seems the sedimentary matrix of the olistostrome probably originated from a passive continental margin and it is mixed with advanced ophiolite-bearing nappes within a Jurassic accretionary mélange (Meliata Unit s.s.).

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