

COVERED EOCENE-OLIGOCENE VOLCANIC ROCKS IN THE ZALA BASIN (WESTERN HUNGARY): CONTRIBUTION TO THE ALPINE MAGMATIC ACTIVITY IN THE PALAEOGENE TIME

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In the Zala Basin Palaeogene calc-alkaline igneous rocks are covered by thick Neogene sediments and located along the Balaton Line which is the eastern continuation of the Periadriatic Lineament (PAL) system. Along this tectonic line several igneous bodies occur with age of around 30 Ma. Models describing the petrogenesis of the whole igneous series (extension-related, subduction-related, slab break off, etc.) are highly debated. Three volcanic rock types can be distinguished in the Zala Basin in distinct spatial distribution: 1) northern andesitic suite, 2) southern tonalitic suite, and 3) dacitic suite in the transitional zone. These calc-alkaline rocks show K-Ar ages between 30-35 M. Based on our petrographic and geochemical study, small mafic amphibole and plagioclase-bearing enclaves represent the most primitive magma which occur in each rock type. It is highly likely that the magma chamber beneath the Zala Basin was deep seated and the remnants of the relatively high-pressure igneous minerals such as garnets are present in some mafic andesitic rocks. The composition of these andesites indicate high-Al content of the magma which might have been generated by partial fusion of subducted slab. A major process which played significant roles in formation of the Zala Basin igneous rocks could be the fractional crystallization. It is also thought that there was a strong interaction between the ascending mafic melt and the lower crust. The presence of subvolcanic tonalite bodies suggest compressional tectonic environment during magmatic activity. In summary, the bimodal Palaeogene igneous activity of the Zala Basin took place under compressional tectonic condition as a consequence of partial melting of subducted slab and the overlying lithospheric mantle and the continental crust.