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MANTLE SOURCE CHARACTERISTICS OF THE PALEOGENE MAFIC ALKALINE ROCKS OF THE EAST SERBIAN CARPATHO-BALKANIDES

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East Serbian Paleocene/Eocene mafic alkaline rocks (ESPEMAR) occur along the western margin of the East Serbian Carpatho-Balkanides, extending roughly subparallel to the Banatite-Timok-Srednjegorje Magmatic and Metallogenic belt. A single analogous occurrence in Romania is at Poiana Rusca, whereas no such occurrences in Bulgaria are known. The ESPEMAR appear as relicts of small volcanoes and are ne- and ol-normative, varying from primitive basanite to more evolved tephrite and tephriphonolite. They show geochemical characteristics similar to alkaline rocks of the widespread Cenozoic European Volcanic Province, e.g. high Nb (40-100 ppm), low LILE/Nb, coupled with low Sr (0.7029-0.7047) and high Nd (0.5127-0.5129) isotope ratios. Here a new set of 30 whole-rock ICPMS trace element analyses are discussed, while a Sr/Nd/Pb isotope study is in progress. Two ESPEMAR groups can be distinguished: a low- and high-K ESPEMAR one. The low-K ESPEMAR are olivine-, rarely clinopyroxene-phyric, often with glassy groundmass. They are mantle xenolith-bearing and fairly primitive (Ni>250 ppm, Cr>350 ppm, poor corelation of all incompatible elements with index of fractionation), with very low LILE/HFSE ratios. On the other hand high-K ESPEMAR are more evolved and show characteristics of olivine and clinopyroxene fractionation, e.g. decreasing Ni, CaO/Al_2O_3 and Sc with increasing MgO. They also have higher LILE/HFSE ratios than the low-K group. Both groups lack evidence of significant crustal contamination. In addition, there are trace element ratios that are constant in both groups or show only slight differences, such as Zr/Nb (2.44±0.26), La/Nb (0.77±0.09), Ba/Nb (12.04±2.41), Ba/Th (72.48±18.14), Ba/La (15.6±2.14), and La/Ce (0.54±0.02). These values suggest that a HIMU-like asthenospheric source was dominant in ESPEMAR petrogenesis and confirms that the composition of primary magmas was not changed by crustal contamination. Partial melting modelling based on trace element contents and ratios in most primitive ESPEMAR imply 5-10 % of melting of a garnet-bearing enriched mantle, which corresponds to a MORB source enriched by 8% of melts formed by extraction of 0.3 % of fractional melting of the same source. The presence of such metasomatized lithospheric domains is also inferred by metasomatic assemblages (Ti-Al-rich clinopyroxene, Fe-Ti-rich spinel, ilmenite, apatite, carbonate ± relicts of phlogopite) found in East Serbian mantle xenoliths. The principal difference between the low- and high-K types can be attributed to various proportions of individual mineral phases in the source residua or/and their relative contribution in the melting assemblage. Hence, the contribution of a K- and Rb-bearing phase was apparently more important in the formation of primary melts of the high-K ESPEMAR.