

**Petrogenetic Implications of
Yörükaraçören Sub-Volcanic Rocks
(Eskişehir-TURKEY)**

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Yörükaraçören subvolcanic rocks are located in Northwestern Anatolia, 15km North East of the city of Eskişehir. Sub-volcanic rocks are composed of medium to fine grain size in the compositions of granodiorite porphyry and diorite porphyry. In terms of mineralogical composition, the granodiorite porphyry is consisting of quartz, orthoclase, plagioclase, biotite, amphibole, ± opaque mineral, ± titanite and ± apatite, whereas diorite porphyry is plagioclase, amphibole, ± pyroxene, ± opaque mineral, ± titanite, ± quartz.

The results of geochemical analysis, sub-volcanic rocks are subalkaline in nature. On the AFM diagram, they plot in the calc-alkaline field, which is relatively evolved from iron enrichment. Samples are of a medium-K calc-alkaline characteristic according to the %K₂O versus silica diagram. MgO versus main element oxides show a regular change. This regular change shows that sub-volcanic rocks are differentiated by the crystallization of similar magma within the host magma. The results of the rare earth element analysis of the Yörükaraçören subvolcanics revealed that, the REE distributions of the samples are identical to each other. The normalized diagram of the chondrite show a enrichment with the Light Rare Earth elements (LREE) and depletion with the Heavy Rare Earth elements (HREE). These patterns of REE can explained by upper mantle nature magma with the enrichment by the continental crust products during the influx of the magma within the Anatolian block. The Sr isotope ratio (average Sr⁸⁷/Sr⁸⁶: 0,706022) of the subvolcanic rocks show that these products are derived from a magma which have a crustal pollution ranging from 40% up to 60%.

The petrochemical results reveal that the Yörükaraçören subvolcanic rocks are apophysis of the Topkaya Pluton in the same region and may represent the partial melting products of a subcontinent-like material reflecting the volcanic arc in nature.

Keywords: Apophysis, Sub-volcanic rocks, Crustal contamination.

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