UPPER CRETACEOUS–PALEOGENE DACITIC DYKES FROM IARA VALLEY (NORTH APUSENI MOUNTAINS, ROMANIA)

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Upper Cretaceous–Paleogene magmatic rocks on the Romanian territory are located in two distinctive areas as the ophiolitic suture of the Apuseni Mountains: in Banat and in northern Apuseni Mountains. In the northern part of the Apuseni Mts., calc-alkaline plutonic and subvolcanic bodies, as well as volcanics, occur in different areas, as Bihor Mts., Vlădeasa Mts., Gilău Mts., Mezeş Mts., Chioarului Valley, etc. (ŞTEFAN *et al.,* 1988, 1992). In Apuseni Mts., the magmatic activity was the result of westward subduction of the oceanic lithospheric plate from the western Tethys Basin beneath Preapulian Craton during Mesozoic time, into an active continental margin tectonic setting (SĂNDULESCU, 1984; HAR, 2001).

The studied intrusive magmatic bodies mostly dacites, occurring as dykes up to 5–6 m in width located in the Iara Valley (Gilău Mts.). Under the microscope they show a porphyritic texture with microgranular groundmass. Mineralogically, they consist of quartz, plagioclase feldspar, biotite and hornblende as primary minerals. They are intensively altered (except quartz) and secondary phases as chlorite, sericite, epidote and clay minerals are present in secondary assemblages replacing the primary minerals.

Seven samples of volcanics were analyzed for major, trace and rare earth elements. Silica (SiO_2) content ranges from 53.1–64.9 wt%, the most weathered sample having the lowest value. An intense hydrothermal alteration resulted very elevated LOI values (1.80–8.48 wt%). The MgO content is low and varies between 1.64–4.60 wt%, while the Al_2O_3 content ranges from 14.66–16.28 wt%. According to the total-alkali vs. SiO_2 classification, six of the analyzed samples are dacite while one is trachyandesite. The trachyandesite composition could be either the result of fractional crystallization trend or of the alteration processes. The calculated AFM parameters show a typical calc-alkaline trend of the magmatic rocks from Iara Valley (Fig. 1a).

A chondrite-normalized trace elements diagram (Fig. 1b) shows a negative Nb anomaly relatively to the U and La, a feature of subduction-related magmas. A similar tectonic setting is indicated by the enrichment of the large ions lithophile (Rb, Ba, Sr), while Th/Hf and Ta/Hf values are typical for active continental margins. Chondrite-normalized REE patterns of the analyzed samples are very similar, with enrichment of the LREE as compared with HREE, suggesting that magmas proceeded from a primary source affected by a low degree of partial melting.

References

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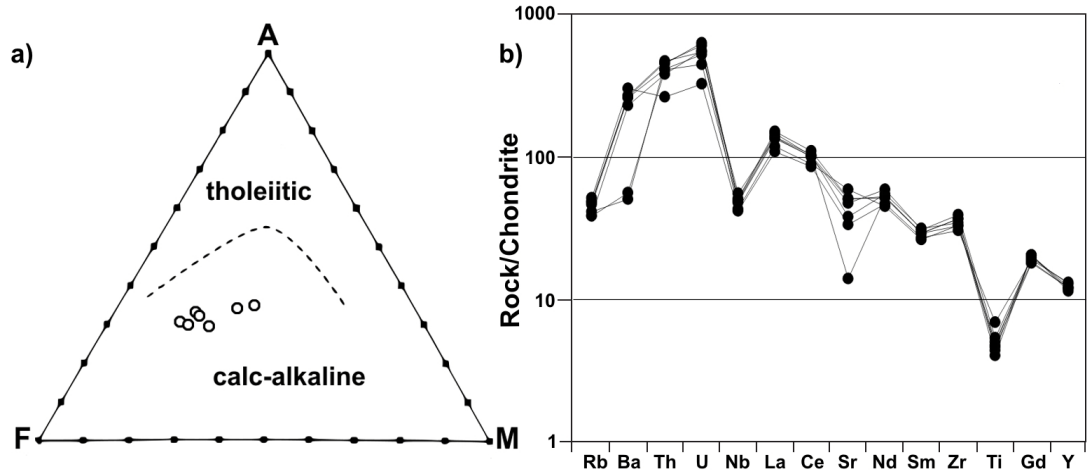

Fig. 1. a) *Calc-alkaline features in AFM diagrams (IRVINE & BARAGAR, 1971) and* ***b)*** *Chondrite-normalized trace elements diagram of the dacitic dykes from Iara Valley.*