



## **Geochemical characteristics of Tertiary subvolcanic rocks from southern Central Alborz Mountains, north of Tehran**

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Tertiary subvolcanic igneous rocks are found as sills, dykes and stocks in the southern Central Alborz Mountains, in the north of Tehran. The igneous rocks have intruded sedimentary, volcanosedimentary and volcanic rocks of Eocene age. The igneous rocks demonstrate a variety of textures including intergranular, intersertal, ophitic, subophitic and porphyritic. Petrographically, their composition ranges from gabbro to monzogabbro and monzodiorite. The major minerals include plagioclase, augite and opaque. In addition to the aforementioned minerals, chlorites and alkali feldspars are found in the rocks. Chlorites are the products of alteration and are also found as pseudomorphs after olivine, pyroxene and amphibole. Textures of the rocks suggest a shallow level of intrusion.

In the literature the magmatic activity of southern Central Alborz Mountains has been alternatively attributed to orogenic or extensional regimes. Major part of this contradiction raised from the lack of a comprehensive geochemical data base. Investigation, in this study, of geochemical analysis of major oxides for 34 samples and a vast range of trace elements for 22 samples show that geochemical characteristics of these rocks have great similarities with those of volcanic arcs in the destructive plate margins. Enrichment in alkaline, alkaline earth elements, and Th with respect to N-MORB and depletion in HFSE (Ta, Nb, Zr, and Hf) relative to LREE are characteristics of the igneous rocks from the study area.

During Tertiary to Quaternary times, convergence between Eurasia and southern plates like Africa and Arabia resulted in a variety of collisional orogens and different styles of subduction in the southern margins of Eurasia. This convergence is the cause of Tertiary magmatic activity in southern Central Alborz.