Petrography and geochemistry of magmatic rocks in north of Kalate Shab area (East of Sarbisheh), Eastern Iran

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Abstract: The study area is located about 105 kilometers east of Sarbisheh in Southern Khorasan and in the Sistan suture zone. The magmatic rocks of this area are exposed as intrusive and subvolcanic including diorite, quartz diorite, porphyry quartz diorite and porphyry diorite with Oligocene-Miocene age. These rocks have granular, porphyry with fine-grained matrix, ophitic, intergranular and glomerular porphyry textures. The minerals that form the investigated rocks include plagioclase, hornblende, quartz, biotite, clinopyroxene, apatite, zircon and sphene. The magmas that form these rocks are of low calc-alkaline and meta-alumina nature. The samples show relative enrichment of light Rare Earth Elements (LREE) and Heavy Rare Earth Elements (HREE). The negative anomaly of P, Nb and Ti elements and the positive anomaly of K and Cs in these samples indicate their similarity with the volcanic arc magmatism. The enrichment of LILE elements relative to HFSE indicates subduction-related magmas.

Keywords: Porphyry quartz diorite; Kalate Shab; Oligo Miocene; Sistan Suture Zone.

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