

## Petrogenesis of Plio-Quaternary post-collisional adakitic rocks in northwest Marand

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**Abstract:** In northwest of Marand northern part of Urumieh Dokhtar Magmatic Arc (UDMA) a set of volcanic rocks crop out with composition of andesite, dacite, and sodic, potassic and ultrapotassic alkaline basalts with Upper Miocene until Plio-Quaternary in age. This paper report the andesitic and dacitic lavas erupted within pyroclastic rocks. These rocks have porphyritic texture and consist of plagioclase, hornblende, pyroxene and a minor biotite phenocrysts. Based on geochemical study, these rocks have SiO<sub>2</sub> in rang of 57.5-65.2, high Al<sub>2</sub>O<sub>3</sub> (14.5-16.2) and Sr (557-1185), high Sr/Y (30.7-84.46), La/Yb (13.27-67.36) ratios, and low Y (11.2-20.2) that show adakitic characteristic for the parent magmas. On the base of geochemical characters, these rocks are high- SiO<sub>2</sub> adakites which is considered to represent subducted basaltic slab-melts that have reacted with peridotite during ascent through mantle wedge. Also these samples are enriched in LILEs and LREEs and are depleted in some HFSEs like Ta, Nb, and Ti. Intensive fractionated pattern of REEs and low quantities of HREEs and Y may prove existence of garnet or amphibole in the residua of melt. High Sr and negative anomalies of Ta, Nb, and Ti may be resulted from lack of plagioclase and having iron and titanium oxides in the residua phase. Breaking of oceanic slab during subduction and melting of this slab product adakitic magmatism in NW of Marand. High Mg<sup>#</sup>, Cr, and Ni in rocks indicate metasomatism of melt with mantle wedge. High Ba, Rb, and K<sub>2</sub>O contents of studied rocks indicate assimilation of magma with crust during rising of magma.

**Keywords:** Adakite, Neotethys, subduction, Urumieh Dokhtar Magmatic Arc, Northwest Iran.

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