



Geochemistry and Tectonic Setting of Eocene Volcanic in Shirinsu Area

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Shirinsu area in West Alborz consists of large volume of Eocene volcanics. These volcanic are mainly composed of basaltic lavas, andesitic- trachyandesitic lavas and dacitic- rhyodacitic ignimbrites. Basalts are related to alkaline series with high potassium contents, whereas intermediate and acidic rocks show calc-alkaline characteristics. Geochemical features of basalts such as high enrichments of LREE and LIL incompatible elements against the low abundances of HREE and HFS elements in chondrite-normalized spider diagrams similar to those of oceanic island basalts and their alkaline characteristics show that these basalts are derived from enriched mantle source with low degrees of partial melting. Based on major and trace elements data andesites and trachyandesites are consequence of fractional crystallization in basaltic magma. This fractionated magma also strongly affected by chemical mixing processes with basaltic melt. Other characters such as high abundances of mobile LIL elements and negative anomaly of Nb show that these rocks are also contaminated with crustal materials. These phenomena are obviously confirmed by petrography observations. Some scatter trends in variation diagrams related to dacite-rhyodacite samples, high concentrations of LIL elements similar to upper crust values, marked through at Nb and very large volume of ignimbrites suggest that acidic rocks in this area have a different source from basic and intermediate terms and it appears to be result of partial melting of upper crust due to charging of hot basaltic liquid into the crust. High alkalinity of parent magma, astenospheric source of magma, similarity of incompatible trace elements patterns to those of extensional environments, along with crustal contamination evidences and presence of basic feeder dikes in this area, all of them, indicate that basaltic rocks are erupted in a continental intraplate extensional setting.

Key words: Eocene volcanic, partial melting, fractional crystallization, crustal contamination, extensional setting