

Investigation of geochemical and isotopic characteristics of volcanic rocks in Kalınçam, Tonya-Trabzon, NE Turkey

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The volcanic rocks around Kalınçam (Tonya, Trabzon) and in the Eastern Black Sea Region is of Late Cretaceous age. Basalts, andesites and their pyroclastics forming the Çatak Formation at the basement have vesicular, microgranular porphyric, cavity and breccia textures ⁽¹⁾. Plagioclase is mostly found in basalt as mineralogical components, whereas in andesite, plagioclase and at lesser amounts of amphibole minerals are seen. Over these comes microgranular porphyritic and hyalo porphyritic- textured dacite, rhyodacite and pyroclastics of Kızılkaya Formation and they mainly composed of plagioclase, quartz and hornblende minerals. The andesite and pyroclasts of subsequent Çağlayan Formation have hyalo-microlitic-porphyritic textures and consist of only plagioclase and hornblende.

The volcanic rocks have calc-alkali characteristics and they reflect geochemical features of subduction related rocks, owing to their high LILE and low HFSE contents and high LILE/HFSE ratios. The negative anomalies of Nb, Sr, P and Ti in volcanics are characteristics of island arc volcanics ^(2 and 3). This also points out fractionation of hornblende, Fe-Ti oxides and apatite minerals during initial magma formation processes of volcanics. The Chondrite normalized NTE patterns ($La_N/Lu_N=3.11-13.10$) of Kalınçam volcanics indicate a moderate enrichment pointing the similar source. The $^{87}Sr/^{86}Sr_{(i)}$ values changes between 0.70752 and 0.70779, and yet the values of $^{143}Nd/^{144}Nd_{(i)}$ changes between 0.512318 and 0.512656.

All data support the idea that Kalınçam volcanics might have formed by a fractional crystallization process from a subducting source enriched with fluids.