

Geochemical and Isotopic Features of Çaykara (Trabzon, NE Turkey) Intrusive Complex

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Çaykara (Trabzon) Intrusive Complex is located at the eastern part of the Kaçkar Batholith. In the complex, Gündoğdu-Boğalı Plutons is Upper Cretaceous in aged, and Uzundere and Eğerler Plutons are Eocene in aged. Gündoğdu-Boğalı Plutons crop out around Araklı-Bahçecik villages, and are represented by the granitic to granodioritic rocks in composition showing porphyritic-granular texture. These rocks contain dark coloured, semi-rounded to rounded, wedged, fine-grained diorite and monzodiorite enclaves. Uzuntarla Pluton extends at E-W from Köknar-Karaçam-Uzuntarla sub-districts to south of Çaykara towards Bahçecik sub-district of Araklı. The rocks of the Uzuntarla Pluton are generally diorite to granodiorite in composition with porphyritic in texture. Eğerler Pluton exposes at southern of the Çaykara Intrusive Complex. Its mineralogical composition is changing from diorite to granite with medium-coarse grain granular texture.

The Upper Cretaceous plutonic rocks are characterized by $\epsilon\text{Nd}(i)$ values range from -1.5 to -9.7, whereas $87\text{Sr}/86\text{Sr}(i)$ values range from 0.7052 to 0.7119. Nd model ages are between 0.94 and 1.52 Ga. $206\text{Pb}/204\text{Pb}(i)$, $207\text{Pb}/204\text{Pb}(i)$ and $208\text{Pb}/204\text{Pb}(i)$ contents of samples change from 18.24 to 18.72, 15.59 to 15.66 and 37.93-38.64, respectively. The $\delta^{18}\text{O}$ values in the investigated samples range from 4.0 ‰ to 6.7 ‰ and have similar ratios to I-type granitoides. The Eocene plutonic rocks are characterized by $\epsilon\text{Nd}(i)$ values range from -0.4 to -6.0, whereas $87\text{Sr}/86\text{Sr}(i)$ values range from 0.7050 to 0.7143. Nd model ages are between 0.81 and 1.32 Ga. $206\text{Pb}/204\text{Pb}(i)$, $207\text{Pb}/204\text{Pb}(i)$ and $208\text{Pb}/204\text{Pb}(i)$ contents of samples change from 18.24 to 18.57, 15.58 to 15.63 and 38.22-38.92, respectively. The $\delta^{18}\text{O}$ values in the investigated samples range from 5.8 ‰ to 7.1 ‰ and have similar ratios to I-type granitoides.

Upper Cretaceous and Eocene aged Plutons in the study area are high-K calc-alkaline in composition and display metaluminous to peraluminous characteristics. The primitive mantle normalized multi-element variation diagrams of the studied samples show enrichment in LILE relative to HFSE and also negative Nb, Ta, P, Ti and positive Pb anomalies. Chondrite-normalized rare earth element (REE) patterns are [(La/Lu)_{N=8-10}] and display negative Eu anomalies. When obtained initial data is plotted on tectonic discrimination diagram, as expected the tectonic setting of the plutons in subject was observed representing island arc environment.

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