



## **Investigation of Helium Isotope Variations of Alkaline Volcanic Rocks in Kutahya Region**

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The noble gases, in particular helium isotopes, provide valuable information on the mantle source of recent basaltic volcanism, especially when linked to trace elements and radiogenic isotopes. Although the alkaline volcanics in the Kütahya region have been studied in detail by several works by means of trace element variations, radiogenic dating and isotope systematics, noble gas isotope compositions that could significantly contribute to dynamics of volcanism have not been investigated yet. In this study which aims to fill the deficiency of such data, helium isotope compositions of olivine-basalts in Kütahya region are measured.

In this study we report helium isotope compositions of olivine from basalts. In olivine-basalts in alkaline volcanic rocks from the Kütahya region, western Turkey, are investigated.  $^3\text{He}/^4\text{He}$  range from 3.0 to 5.19  $R_a$ . These low helium isotope values are most probably indicative of a lithospheric mantle source. Kütahya alkaline volcanics are enriched in incompatible elements and show prominent negative Ti, Nd and Ta anomaly. Primitive mantle normalized trace element concentration patterns clearly display continental crustal contamination. Chemical compositions and helium isotope systematics imply contribution of a lithospheric mantle source and contamination of continental crust in the genesis of the Kütahya alkaline lavas.

**Keywords:** Kütahya alkaline rocks, olivine, helium isotope, crust-mantle interaction

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