

The Role of Asthenospheric Mantle in the Generation of Tertiary Basaltic Alkaline Volcanism in the Polatli-Ankara Region, Central Anatolia, Turkey: Constraints from Major-element, Trace-element and Sr-Nd Isotopes

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Basaltic alkaline volcanic activity in the Polatli-Ankara region, Central Anatolia, Turkey, occurred during Eocene/Miocene time (from 49.7 Ma to 14.6 Ma). These alkalic volcanic rocks are basalts, potassic trachybasalts, hawaiites, mugearites and shoshonites in composition, and their SiO₂ contents range from 44.71 to 51.22 wt.%. These rocks have olivine, andesine-bytownite (An 33-86), augite, diopside (Wo 53-41), oxide phenocrysts. All the samples are LREE-enriched relative to the HREE. MORB-normalised multi-element

diagram and Th/Y (0.04-0.21), Nb/Y (0.59-2.04), Ba/Nb (6.55-22.94), La/Nb (0.62-1.64), Th/Nb (0.06-0.20), Rb/Nb (0.23-1.32) ratios are similar to those of oceanic-island basalts (OIB) type basic volcanic rocks. ⁸⁷Sr/⁸⁶Sr and ¹⁴³Nd/¹⁴⁴Nd isotopic compositions of these volcanic rock change between 0.703498-0.704662 and 0.512980-0.512775. Major and trace element data (i.e. Ce/Pb; Nb/U) with isotopes suggest that these magmas were derived by the mixing of an OIB like asthenospheric mantle with crustal components.