



U-Pb Geochronology and Sr-Nd Isotopic composition of collision related granites in NW Anatolia: Contrasting Petrogenic evolution of the magmatic suites

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The northern part of the Anatolide-Tauride platform developed at a site of pronounced E-W trending felsic magmatic activity during the late Oligocene-Miocene. These widespread magmatic rocks intruded into the Anatolide-Tauride Block in the south, the Sakarya Continent in the north, and different slices of this collision zone.

New geochronological and Sr-Nd isotopic data from the magmatic rocks reveal two groups of associations. The first group represents gneisses and younger metagranites of the Menderes Massif that form the crystalline part of the Anatolide-Tauride Block in western Anatolia. The second group comprises the undeformed Alaçam, Eğrigöz and Koyunoba granites representing young granitic bodies of the northern Menderes Massif.

$^{207}\text{Pb}/^{206}\text{Pb}$ evaporation ages between 607-551 Ma and a U-Pb zircon age of 30.04 ± 0.56 Ma were obtained from the Menderes gneisses and metagranites, respectively. U-Pb zircon ages yield crystallization ages of 20.7 ± 1.1 Ma for Alaçam granite, 19.4 ± 4.4 Ma for the Eğrigöz granite and 21.7 ± 1.0 Ma for the Koyunoba granite. In addition to the field observations, the geochronological data clearly show a significant age difference (11-10 Ma) between the metagranites of the Menderes Massif and the Miocene undeformed granitoid belt. The metagranites have been previously described as the tectonic equivalents of the undeformed granitoids emplaced along a crustal-scale detachment zone.

The undeformed granitoids give $^{87}\text{Sr}/^{86}\text{Sr}$ ratios in the range 0.70805-0.710546 and Nd(t) values between -5.8 and -6.0. According to the Nd-Sr systematics, trace and rare earth compositions, the Miocene granites of this collisional belt derived from crustal protoliths of the northern Menderes Massif and display similar isotopic characteristics. Besides, geochronological data, isotopic characteristics of the early Miocene granites in the northern Menderes Massif show close similarities with other Oligo-Miocene granitoids in northwestern Anatolia. All data from these granitoids indicate that they were formed along a NW-SE trending regional magmatic belt in a compressional regime rather than being individual bodies related to local, north-dipping, low angle detachment faults.