

Mineralogical and Geochemical Characteristics of Çayırhan Volcano-Sedimentary Units, Beypazarı, Ankara, Turkey

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Beypazarı-Çayırhan volcano-sedimentary basin is located at northwest of Ankara, Central Anatolia, Turkey. Basement rocks formed by the Pre-Neogene aged units such as metamorphics, ophiolites, granites and limestones. Paleocene aged Kızılbaş Formation rests upon the basement unconformably and the Miocene lacustrine sequence overlies it. The sedimentary units consist of Miocene aged Çoraklar, Hırka, Karadoruk, Akpınar, Bozçayır, Acısu, Kırmızıtepe Formations and Pliocene aged Softa Formation.

The mineralogical composition of the 137 samples were determined by X-ray diffraction. Whole rock mineralogical compositions of formations are formed by analcime, clinoptilolite, feldspar, quartz, Opal-CT, calcite, dolomite, magnesite, gypsum, mica and clay minerals. Clay mineral fractions of 75 samples are composed of illite, smectite, sepiolite, kaolinite and chlorite.

Geochemical analysis indicate that the samples were not derived from a homogeneous source. The elemental composition ratios, spider diagram patterns and Eu anomalies imply that provenance of the sediments are dominantly felsic and rarely intermediate origin. Beypazarı Granitoid is thought to be the source of these sediments. Th-Sc-Zr/10 tectonic discrimination diagram shows that the great majority of the samples are originated from continental environment.

U/Th and Ni/Co element ratios of the most of the units suggest the oxic paleo-environment conditions, however Çoraklar and Hırka Formations display the suboxic and anoxic conditions which are supported by the coal seams and the bituminous shale deposits.