



Geodynamics evolution of Ultramafics of Southern Rajasthan, India

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The Aravalli craton of northwestern Indian shield evolved through a complex crustal evolution process. The basement constitutes Banded Gneissic Complex (BGC) comprising granitoids, metasediments and green stone belts of 3300 Ma age. Early Proterozoic rocks of Aravalli Supergroup unconformably overlie basement rocks in the southern Rajasthan. The Aravalli basin opening marks with basal volcanics, viz-basalt, boninite, amphibolite and komatitic volcanic rocks; followed by deposition of sand, shale, carbonate metasediments. These can be divided into shallow and deep-sea sedimentary facies associations. The linear ultramafic intrusive body, named as Rakhabdev lineament, roughly divides shallow water and deep-sea sedimentary facies associations of Aravalli rocks. Another ultramafic body outcrops from Bagdunda-Jharol belt and considered as part of Kaliguman lineament.

The ultramafic rocks show intrusive relationship with Aravalli metasediments and altered to serpentine, talc and talc carbonates. The green schist mineral assemblages are present in the altered ultramafic rocks. Various scientists interpret these as product of ophiolite, mantle plume, subduction and simple intrusion in the end of Aravalli orogeny. In absence of well-constrained geochronological data, the geodynamic evolution model becomes much speculative. The central tectonic linear position of ultramafics in Aravalli basin signifies presence of deep crustal fracture in the region. This crustal fracture facilitated mantle derived ultramafic melt. The intrusive relationship of ultramafic with Aravalli metasediments indicates extension tectonics, resulting deep fractures in the region. However, it requires more geochemical, structural and isotope

data to understand geodynamics of southern Rajasthan.