PETROGRAPHY AND GEOCHEMISTRY OF PART OF THE MANSEHRA GRANITE, KHYBER PAKHTOONKHWA PAKISTAN

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ABSTRACT

The igneous rocks from Mansehra Granitic Complex are studied for their petrographic and geochemical characteristics. On the basis of outcrop relationships and petrographic analyses, the rocks are divided into three categories; granites, doleritic dykes and metamorphosed volcanic rocks (andesite). Mansehra granite has typical mega-porphyritic texture with both fine grained and foliated varieties. During petrographic analysis it was observed that essential minerals of granites are quartz, perthitic and microcline alkali feldspar and plagioclase. It constitute the part of both phenocrysts and ground mass for other minerals like biotite, muscovite, tourmaline, quartz, apophyllite, apatite, monazite, andualsite, epidote, zircon, titanite, clay and ore mineral (s). The doleritic dykes display sub-ophitic to ophitic texture and essentially comprised of plagioclase and clinopyroxene while the metamorphosed volcanic rocks have foliated and fine grained texture and comprised of amphibole, quartz and plagioclase. On the basis of detailed geochemical analysis, the Mansehra granites are strongly per-aluminous and calc-alkaline. The per-aluminous property confirms its formation as S-type and collisional granite. These granites are derived from plagioclase poor and clay rich sedimentary melt. The modal mineralogy of dykes indicates its alkaline nature. The foliated texture of above mentioned rocks represents low to medium grade metamorphism in these rocks. The comparison of Mansehra granites with Utla and Ambela granites indicates it's more resemblance with Utla granites rather than Ambela granites. Both these granites share same type of texture, modal mineralogy, geochemical characteristics and petrogenesis.

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