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Giant Plagioclase Basalts from Northeastern Deccan Volcanic Province, India: Implications for Their Origin and Petrogenetic Significance

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ABSTRACT

The giant plagioclase basalts (GPBs) with plagioclase phenocrysts that reach up to 3 cm in length are found near Jabalpur in the northeastern part of the Deccan Volcanic Province (DVP). The thickness of the basalt flow (flow 6) that contains the GPBs is ~ 20 m. Plagioclase phenocysts (An_{58} - An_{64}) in the GPBs display many features of magma mixing (e.g., resorption, reverse zoning). Of the nine flows in the Jabalpur section, the GPBs (flow 6) with lowest Mg#s (38 - 43) and MgO (4.16 - 5.08 wt%), Ni and Cr abundances are the most evolved compositions. In addition, these GPBs have highest abundances of incompatible elements (TiO_2, P_2O_5, Nb, Zr, Sr and Ba). The GPBs are compositionally similar to the well-studied Mahabaleshwar lavas of the western DVP. This new occurrence of GPBs has implications for existence of local crustal magma chambers, feeders and vents in the northeastern part of the DVP.

KEYWORDS

Giant Plagioclase Basalt; Crustal Magma Chamber; Jabalpur; Deccan Volcanic Province; India

Cite this paper

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