GEOCHEMISTRY AND Sr-Nd-Pb ISOTOPES OF ALKALINE DYKES FROM THE PONTA GROSSA ARCH, RIBEIRA RIVER VALLEY (S-SE BRAZIL)

Almeida, V. V.[1,2], Janasi, V.A.[1], Faleiros, F.M[1]
[1]Instituto de Geociências, Universidade de São Paulo; [2]Serviço Geológico do Brasil, Superintendência Regional de São Paulo (SUREG/SP)

RESUMO: The portion of the Ponta Grossa Arch that outcrops at the Ribeira River Valley, southern and southeastern Brazil, shows close spatial relationship between Early Cretaceous tholeiitic magmatism of the Paraná-Etendeka Igneous Province (PEIP), represented by the prominent Ponta Grossa Dyke Swarm (PGDS) and coeval alkaline intrusions (e.g., Jacupiranga and Juquiá). Associated alkaline dykes have been studied in the region, however, there are scarce studied lamprophyre dykes. In this work we describe petrography, whole-rock major and trace element data obtained by X-ray fluorescence and ICP-MS analyses along with Sr-Nd-Pb isotopic data from basanite, tephrite and phonotephrite dykes in order to constrain the diversity of mantle sources involved in the generation of Mesozoic alkaline magmatism. The studied dykes are located between the Guapiara lineament (near the Jacupiranga Alkaline Complex) and the São Jerônimo-Curiúva lineament (near the Bairro da Cruz Alkaline Complex). The samples are essentially porphyritic with brownish euhedral to subeuhedral clinopyroxene and subordinately olivine phenocrysts and/or antecrysts embedded in a fine-grained matrix with clinopyroxene, opaque minerals (oxides and sulfides) and albite, analcime and apatite present in interstices. Some dykes located close to the São Jerônimo-Curiúva lineament can be petrographically classified as lamprophyres composed by milimetric to centimetric phlogopite and kaesurtite phenocrysts/antecrysts. The samples show SiO_2, MgO, Na_2O and K_2O contents ranging from 43.2 to 48.8 wt%, 5.2 to 9.5 wt%, 1.8 to 3.5 wt% and 2 to 5.2 wt%, respectively. All values are on the anhydrous basis. The samples show an enrichment of light rare earth elements with $(La/Yb)_N$ from 22 to 49. Ba, Sr and Nb contents range from 1350 to 2741 ppm, 885 to 1409 ppm and 54 to 86 ppm, respectively. Normative nepheline are observed in the samples near the São Jerônimo-Curiúva lineament. Initial $^{87}Sr/^{86}Sr$ and $^{143}Nd/^{144}Nd$ ratios calculated for 134 Ma range from 0.70556 to 0.7090 and 0.51220 to 0.51246, respectively, with εNd from -5.1 to -0.18. Initial $^{206}Pb/^{204}Pb$, $^{207}Pb/^{204}Pb$ and $^{208}Pb/^{204}Pb$ are in the following ranges: from 17.865 to 17.898, 15.519 to 15.531 and 38.377 to 38.407, respectively. Sr and Nd isotopic signatures can be related to the presence of a crustal component and/or distinct enriched/metasomatized mantle sources. This work was funded by grant 2012/06082-6, São Paulo Research Foundation (FAPESP).

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