

GEOCHRONOLOGY OF CALC-ALKALINE AND THOLEIITIC DYKE SWARMS OF TANDILIA, RIO DE LA PLATA CRATON, AND THEIR ROLE IN THE PALEOPROTEROZOIC TECTONICS

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Two distinct, unmetamorphosed dyke swarms intrude the Paleoproterozoic Tandilia Orogenic System: *i*) intermediate (I) and acid (A); *ii*) basic (B₁ and B₂). The latter dykes are composed of tholeiites, whereas the (I) and (A) dykes show a contrasting calc-alkaline signature (e.g., higher SiO₂, K₂O and Ba contents).

The calc-alkaline dykes yielded ⁴⁰Ar/³⁹Ar plateau ages of 2,020 ± 24 Ma and 2,007 ± 24 Ma for their emplacement, in agreement with a Rb-Sr errorchron of 1,956 ± 110 Ma (initial ⁸⁷Sr/⁸⁶Sr = 0.7038 ± 0.0025). The (B₁) dykes erupted at 1,588 ± 11 Ma (upper intercept U-Pb age; two baddeleyites). The lower intercept of 644 ± 170 Ma reveals an episodic Pb loss, probably induced by the adjacent Neoproterozoic Dom Feliciano belt. This is consistent with K-Ar whole rock ages (B₁ and B₂ dykes) from 803 ± 14 to 1,193 ± 18 Ma and a ⁴⁰Ar/³⁹Ar plagioclase plateau age of 811 ± 36 Ma.

The calc-alkaline dykes were emplaced during the transtensional stage of the Transamazonian orogeny when the Tandilia granitoids were formed. Such a scenario has similarities with the Eburnean evolution of the Richtersveld plutonic arc of the Southern African subcontinent. The Tandilia tholeiites (1.59 Ga) were emplaced under an extensional regime, in agreement with geodynamic conditions of continental crust at the Paleo- Mesoproterozoic boundary during which basin tectonics and associated anorogenic igneous activities took place worldwide.