

GEOCHEMISTRY AND STRUCTURE OF FELSIC DYKES, POLANCO, URUGUAY: CORRELATIONS AND IMPLICANCES

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ABSTRACT: Several felsic dykes crosscut the low-grade metacarbonatic succession that largely outcrops on the Polanco region. The dykes have a variable attitude between N140° and N-S and a distal position to the main intrusive bodies recognized on the region, between 4 and 8 km away from them. They have 2-10m thickness and 0.3-2km length, and are formed by light-colored and fine-grained lithologies. These rocks have a matrix composed mainly of feldspar and little quartz, with phenocrysts of biotite (partly chloritized) and amphibole. The main accessories are muscovite and opaque minerals. They develop a contact metamorphism in the carbonatic host rocks, generating decussated talc crystals. Two samples were selected for geochemical analysis at ACME - Bureau Veritas Laboratories (Vancouver, Canada) following the LF-200 Litho-Research package methodology. Major and minor elements were determined by inductively coupled plasma emission spectrometry (ICP-ES). Trace-elements (including REE) were determined by inductively coupled plasma-mass spectrometry (ICP-MS). The analyzed rocks have a calc-alkaline, metaluminous nature and plot as tonalite-granodiorite on the classification diagrams. When normalized to chondrite they show high enrichment in LREE ((La / Yb)_N = 22,76 - 46,47). Analyzed samples have slightly negative or absent Eu anomaly ((Eu/Eu*)_N = 0.84-1.03). When normalized to ORG they show positive Ba and Ce anomalies, as well negative Ta, Y, Yb. On geotectonic classification diagrams they plot as VAG granites with a post-collision uplift character. When these results are compared with the geochemical results of the Polanco Granitic Complex a good coincidence could be observed with the hornblende-biotite facies of the complex. They both plot as tonalite-granodiorite on the classification diagrams, have calc-alkaline and metaluminous nature, with a post-collisional uplift character. The dykes share the evolutionary trends of the granitic complex in major and LIL elements, as well the high Ba-Sr nature, but the correlation in HFS elements it's poorer. They share the LREE enrichment when normalized to chondrite, with a slightly or absent Eu Anomaly, the high Ba, Rb, Ce and low Ta, Y and Yb, but the positive Ba anomaly it's more pronounced on the dykes. These geochemical features allow the correlation of the dykes with the hornblende-biotite facies of the Polanco Granitic Complex, as a distal occurrence of it. The geometries of the bodies and dykes, that cross cut the structure of the supracrustal low-grade succession with well defined boundaries indicate a ductile intrusion-brittle host rock system suggesting that this region were operating as a low-strain domain at the moment of the intrusion of the granitic complex, fact that constrain the regional metamorphism and deformation age of the supracrustal rocks below the known ages for the intrusive bodies (ca. 610-585 Ma). In summary, these geochemical features in addition with the structural evidence show that these granitic occurrences correspond to post collision magmatism, associated with the final stages of the Brasiliano Orogenic Cycle.

Keywords: GRANITE, DYKES, POST-COLLISION