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ELEMENTAL AND ISOTOPE CHARACTERISTICS OF THE SUBALKALINE INTERMEDIATE AND ACID DYKES FROM THE SERRA DO MAR SWARM.

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Elemental and isotope (Sr, Nd and Pb) characteristics of the subalkaline dykes from the Serra do Mar Swarm (ESM) are presented, specially focusing on the differentiated bodies, whose outcrops are relatively scarce. The ESM is located at the coast of São Paulo and Rio de Janeiro states, spreading to the Rio Paraíba Valley with dykes mainly composed by tholeiites ($\text{SiO}_2 < 55 \text{ wt. } \%$; $\text{MgO} > 3 \text{ wt. } \%$) with high contents of $\text{TiO}_2 (> 3 \text{ wt. } \%)$. The ESM dykes intruded mainly at about 130 Ma and their origin is commonly associated with the last stages of the huge volcanism of the Paraná Magmatic Province (PMP). Only in the São Sebastião Island, and nearby coastal area, occur a small number of dykes that present high contents of $\text{SiO}_2 (58-68 \text{ wt. } \%)$. These intermediate and acid rocks as well as some selected basic dykes of the ESM were investigated by using X-ray fluorescence (24 samples), neutron activation analysis (24 samples), mass spectrometry with inductively coupled plasma (16 samples) and thermal ionization mass spectrometry (6 samples). The results show that the basic dykes are chemically represented by tholeiitic andesitic-basalts (ABT) and least evolved lati-andesites (LTA-1), whereas those differentiated are more evolved lati-andesites (LTA-2), dacites (DAC) and riodacites (RD). The LTA-1 have trace element characteristics and initial Nd isotope ratios similar to the basalt flows of Pitanga type from northern PMP, although presenting more radiogenic initial Sr and Pb isotope ratios ($^{87}\text{Sr}/^{86}\text{Sr}_i: \sim 0.7064$; $^{143}\text{Nd}/^{144}\text{Nd}_i: \sim 0.5123$; $^{206}\text{Pb}/^{204}\text{Pb}_i: \sim 18.17$). On the other hand, the LTA-2 dykes are enriched in incompatible trace elements, as well as Na_2O and K_2O , evidencing a slight alkaline tendency and precluding their genesis by fractional crystallization of Pitanga magma-type. The $^{87}\text{Sr}/^{86}\text{Sr}_i (0.707 - 0.708)$ of the LTA-2, DAC and RD dykes are higher, whereas $^{143}\text{Nd}/^{144}\text{Nd}_i (0.5121-0.5122)$ and $^{206}\text{Pb}/^{204}\text{Pb}_i (17.89-18.12)$ ratios are lower than those of the LTA-1. The initial Sr, Nd and Pb isotope ratios of the basic dykes from the ESM investigated in this study, along with literature data, suggest generation by melting of a metasomatized subcontinental lithospheric mantle source, due to ancient subduction processes, as also proposed for the high-Ti Mesozoic dykes from the Espinhaço Meridional (São Francisco Craton), whose isotope ratios are very similar. The existence of a compositional gap between the LTA, and the DAC and RC dykes is not compatible with evolution by fractional crystallization or even assimilation fractional crystallization processes. The trace element signatures of the DAC and RC dykes resemble those of the Chapecó-Ourinhos acid volcanic rocks from northern PMP, suggesting similar genesis, with melting of basalt material trapped in the crust-mantle discontinuity. The differentiated magmas generated by such process would be affected by crustal contamination during their ascent, as also suggested by the Sr, Nd and Pb isotope compositions, requiring, however, contaminant(s) with very specific characteristics. This research was supported by FAPESP, CNPq and CAPES.