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RELATIONSHIPS AMONG CHARNOCKITES AND ASSOCIATED GRANITES, COSTEIRO COMPLEX, CENTRAL BIBEIRA BELT (SÃO PAULO, BRAZIL)

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Charnockites cut by aplite veins are closely associated with granites along the SE coast of São Paulo state, Brazil. They are part of the high-grade metamorphic Costeiro Complex, outcropping in the central part of the Neoproterozoic Ribeira Belt. The charnockites are composed mainly by quartz, mesoperthitic orthoclase, plagioclase, orthopyroxene, amphibole, clinopyroxene, biotite and opaque minerals, while the associated hornblende-biotite granite show very similar mineralogy except for the absence of pyroxene. Petrographic and geochemical data indicate primary igneous origin for the charnockites. Isotopic studies were carried out in order to characterize the petrogenetic relationships between the charnockites, aplites and the granitoids. The samples analyzed were collected near Paraibuna and Ubatuba localities. The whole-rock Rb-Sr isochron for the granitoids, defines an age of 583 ± 5 Ma with an Sr initial ratio of 0.7120 ± 0.0006 (MSWD=1). The charnockites and charnockites plus aplites yielded respectively ages of 497 ± 12 Ma and 497 ± 9 Ma with Sr initial ratios of 0.7117 ± 0.0003 (MSWD=10) and 0.7122 ± 0.0002 (MSWD=13). The Sr initial ratios for both granitoids and charnockites, suggest their derivation by anatexis of upper crust materials and/or from underthrusting slabs of Rb-enriched lower continental crust. The similarities in terms of major, trace and isotope compositions of these rocks, and the fact that the charnockite formation took place 80 Ma after the granitoid magmatism suggest that the granites were the protolith of the charnockites. Their formation could have been occurred in the lower part of a duplicated continental crust in a post collisional scenario in the area. In such environment the granites should have suffered dehydration processes forming the charnockites and the associated aplites. This research is supported by the project ICCTI-CAPES 042-99, and by the FAPESP grants 95/4652-2, and 97/00640-5.

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