

CARBON AND OXYGEN ISOTOPES IN CARBONACEOUS MATTER AND CARBONATES FROM CRIXÁS GREENSTONE BELT GOLD DEPOSITS, CENTRAL BRAZIL

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The Crixás greenstone belt (2.7-2.8 Gy), Central Brazil, consists of a metamorphosed and deformed volcanosedimentary sequence that has been largely explored for gold. Three important gold mines, named Mina III, Mina Nova and Mina Inglesa, occur in this area. Carbon and Oxygen isotopic composition of carbonaceous matter and carbonates from these gold mines were determined in order to better understand the origin of the mineralization. Organic carbon from carbonaceous schists from Mina Inglesa presents $\delta^{13}\text{C(PDB)}$ values ranging between -29.7 and -32.8‰, while similar rocks from Mina III and Mina Nova present much higher values ($\delta^{13}\text{C(PDB)}$ = -16.1 to -19.9‰). There is no systematic correlation between total organic carbon and the carbon isotopic composition. Carbonate carbon isotopic composition from these areas is also very variable, with values ranging from -11.6 to 12.8‰. The highest $\delta^{13}\text{C(PDB)}$ values are related to massive marbles from Mina III. The high $\delta^{13}\text{C(PDB)}$ values of organic matter and carbonates from Mina III cannot be explained only by diagenetic and/or metamorphic processes, once all three areas have been affected by the same metamorphic conditions. We suggest that these high $\delta^{13}\text{C(PDB)}$ values represent a primary anomaly, considering that the organic and the inorganic carbon reservoirs were affected simultaneously. In fact, this anomaly also occurs in greenstone belts to the South of Crixás, indicating that it may represent a regional scale phenomena.