CHEMOSTRATIGRAPHY OF MICROBIALITES AND CLUMPED ISOTOPES THERMOMETRY OF CAPIRU FORMATION, SOUTHERN RIBEIRA BELT – BRAZIL

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The Capiru Formation is a metassedimentary sequence composed of carbonates and siliciclastic rocks, embedded in the Curitiba Terrain supracrustal record, related to neoproterozoic collisions of the Southern Ribeira Belt – South Brazil. Metamorphic and deformation records are marked by zones with incomplete paragenesis of greenschist facies (chlorite zone), tectonically interbbeded with strata displaying preserved primary structures, indicative of a shallow marine environment deposition. A variety of stromatolitic morphological features were observed along the zones where sedimentary structures were preserved such as columnar, club-shaped, conophyton, pseudocolumnar, parallel-branching, divergent-branching and delicate-branching, in addition to lamina and thrombolytic morphologies. Environment deposition is associated with a shallow sea in a regressive trend. Deformation segments are characterized by massive, venular or brecciated aspetcs. Single-isotope data define patterns for distinct microbial facies, with a more particular trend in stromatolite (-1.57 to -0.40‰ $\delta^{13}C$ and -8.21 to -3.94‰ $\delta^{18}O$) and lamina facies (-1.89 to 1.29‰ $\delta^{13}C$ and -7.32 to -3.55‰ $\delta^{18}O$). Isotopic signature in recrystallized facies is different from microbial facies, retaining the most depleted values (-2.16‰ $\delta^{13}C$ and -14.02‰ $\delta^{18}O$). Chemostratigraphic profiles of stable isotopes are separated into two major intervals. Located at the botton of the profile, the first interval does not exhibit a specific isotopic trend and is further subdivided into three smaller units by facies associations. Unit I has a broad range for both isotopes (-1.75 to 0.40 $\delta^{13}C$ and -2.34 to -8.16 $\delta^{18}O$), reflecting post deformational signatures associated to venulation, which is developed heterogeneously. Unit II is characterized by thrombolythics signals spanning between -6.35 and -4.11‰ for $\delta^{18}O$ and -1.43 to 0.40‰ for $\delta^{13}C$; the last unit is marked by a wide variation of facies, mainly supratidal, and isotope signals display values of -1.89 to 1.29‰ for $\delta^{13}C$, and -7.32 to -3.31‰ for $\delta^{18}O$. Upwads in the profile, the second interval is exclusively associated to microbial facies, displaying more uniforme signatures with depleted values of $\delta^{13}C$ and $\delta^{18}O$ and a slight enrichment indicating the change of intratidal and supratidal environments (Unit IV -1.32 to -0.81‰ $\delta^{13}C$ and -8.17 to -6.25‰ $\delta^{18}O$) to supratidal lagoons (Unit V -1,35 to -0,41‰ $\delta^{13}C$ and -8,20 to -5,49‰ $\delta^{18}O$). Clumped isotope thermometry temperatures for microbial facies range between 206.07 up to 307.58°C , expressing low-grade regional metamorphism. Recrystallized facies exhibit a lower formation temperature (122.29 ± 7.07°C), developed, therefore, in a late restricted tectono-thermal event.

KEY-WORDS: METADOLOMITE; PRECAMBRIAN MICROBIALITES; CLUMPED ISOTOPES