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NEW INSIGHTS ON ASSOCIATED PALEOZOIC TO CENOZOIC FLORAS AND PALYNOFLORAS FROM GONDWANA

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First palynological information of the upper Teresina Formation (Guadalupian) bearing *Krauselcladus* remains, Santa Catarina, Brazil

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The well-known Canoinhas outcrop bearing conifer *Krauselcladus canoinhensis* Yoshida from the upper Teresina Formation (probably early Guadalupian in age), located at the homonymous municipality, in Santa Catarina, South Brazil, was the first time investigated for palynology. This conifer is represented by distinct branch orders densely covered by decurrent, linear and lobed leaves which cuticles were usually preserved, and it has been recovered into a single fine sandstone (greenish grey) massive bed found in the basal portion of the exposed section in that outcrop. A sample of the rock from the same bed that contains the *K. canoinhensis* remains was processed for palynology after the standard methodology (HCl, HF). The organic residue obtained was sieved with a 25 µm mesh, and several slides mounted with jelly glycerin. The productive residue yielded amorphous organic matter and abundant palynomorphs, mainly bisaccate striated and non-striated pollen grains, and subordinated monolete and trilete spores. Some specimens are pyritized. The frequent species identified that are well represented in the *Lueckisporites virkkiae* Zone (mid Cisuralian-Guadalupian), belong to the genera *Striatopodocarpites* (*S. cancellatus*, *S. pantii*) and *Lunatisporites* (*L. variesectus*, *L. pellucidus*), and others less abundant to scarce in this sample, such as *Lueckisporites virkkiae*, *Marsupipollenites striatus*, *Vittatina saccata*, *Vitreisporites pallidus*, *Protohaploxypinus limpidus*, *Chordasporites australiensis*, *Pteruchipollenites indarraensis*, *Alisporites australis*, *Limitisporites rectus*, and the spores, *Cristatisporites* sp., *Laevigatosporites vulgaris*, *Lundbladispora braziliensis*, *Polypodiisporites mutabilis*, *Polypodiites secoensis*. This result differs substantially from those obtained in core samples from the Teresina Formation, where the spores were predominant within the palynological associations. The present association reflects better taxa (i.e. bisaccate pollen grains) representing forests mainly of conifers (among other gymnosperms), and pteridophytes from humid understory places whilst glossopterids and lycophytes derived from not so distant lowlands. It is quite likely that this predominance of pollen grains here is directly related to the sedimentation process that allowed the input of massive amount of conifer remains in the water body, which would have promoted the carrying and the preservation of associated sporomorphs. In this sense, some of the dominant grains in the association have a high probability of belonging to *K. canoinhensis*, mainly because they are known to be linked to the conifer clade. Also, the presence of pyrite in palynomorphs and AOM suggest anoxic bottom waters in a shallow aquatic paleoenvironment, which would have facilitated the fossilization of plants remains and sporomorphs.

Keywords: Palynomorphs, conifer *Krauselcladus*, Teresina Formation, Paraná Basin, Guadalupian.