**LONG-LASTING EFFECTS OF ASPICILIOID LICHENS ON THE BIORECEPTIVITY OF CARBONATE SUBSTRATES**

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Aspicilioid lichens have been indicated for the biodeterioration activity on stone cultural heritage, mostly because of secretion of oxalic acid and formation of calcium oxalates. However, the involvement of their patterns of metabolites in biogeochemical and other interactions on the carbonate substrates has not been fully clarified. In this study, we examined the still present *Circinaria* gr. *calcarea* and its past probable tracks occurring on marbles in the Garden of a 17th century Residence of the Royal House of Savoy (Villa della Regina, UNESCO-WHS 823bis, Torino, NW-Italy). The marble balustrades, after their restoration ended in early 2000s, display a widespread recolonization by a black biofilm of cyanobacteria and microcolonial fungi, and a lichen community including *C. calcarea*, but they also remarkably show several clearly defined, centimetric, circular areas unaffected by the recolonization dynamics. We aimed to verify if these areas may be the tracks of the lichen colonization preceding the last restoration and, in particular, of *C. calcarea* thalli, resulting compatible in shape and size. Beneath scraped thalli of *C. calcarea*, X-ray diffraction patterns of calcite showed a remarkable stability of crystallographic planes which are known to be enhanced in presence of organic substance, in particular of chelating agents. The same pattern was recognized in correspondence of the uncolonized circular areas, but not where the black biofilm spread. UV observations (365 nm) also showed similar signals beneath the thalli and in the uncolonized areas. Moreover, Raman spectra obtained from methanol- and acetone-extracted thalli and the marble powder gently scraped from the uncolonized areas displayed similar patterns, compatible with lichen metabolites. Such findings suggest a durable effect of lichen colonization on the bioreceptivity of the marble. Both the entrapment of metabolites with allelopathic functions and changes in the rock microstructural properties due to biomineralization appear potential causative factors.