

Microbial Deterioration of Some Different Archaeological Objects Made from Cellulose by Bacillus Group

Authors : Mohammad Abdel Fattah Mohammad Kewisha

Abstract : Microbial deterioration of ancient materials became one of the biggest problems facing the workers in the field of cultural heritage protection because the microbial deterioration of artifacts causes detrimental effects on the aesthetic value of the monuments due to colonization, whether they are made of inorganic materials such as stone or organic like wood, textiles, wall paintings, and paper. So, the early identification of the bacterial strains that caused deterioration is the most important point for the protection of monument objects. The present study focuses on the Bacillus spp. group, which was isolated from some biodeterioration monuments from different areas of Egypt. The investigated objects in this study were made from organic materials (cellulose), paper, textile, and wood. Isolated strains were identified up to the species level biochemically. Eleven bacterial isolates were obtained from collected samples. They were taken from different archaeological objects, four microbicides, cetrimonium bromide, sodium azide, tetraethyl ammonium bromide, and dichloroxylenol, at various concentrations ranging from 25 ppm to 500 ppm. They were screened for their antibacterial activity against the Bacillus spp. isolates, and detection of Minimum inhibitory concentration (MIC). It was also necessary to indicate the ideal Minimum inhibitory concentration for each strain for the purpose of biotreatment of the infected monuments with less damaging effect on monument materials.

Keywords : microbial deterioration, ancient materials, heritage protection, protection of monuments, biodeteriorative monuments

Conference Title : ICMHC 2023 : International Conference on Museums Heritage Conservation

Conference Location : New York, United States

Conference Dates : October 09-10, 2023