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Microbial deterioration of limestone of Sultan Hassan mosque, Cairo- Egypt and suggested treatment

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Abstract: Sultan Hassan Mosque is one of the most important mosques in Egypt and the Islamic world because of its special architectural style. However, many causes of its limestone deteriorations were found. Moreover, it is exposed to the influence of ground water caused by sewage. Therefore, the study examines the environmental factors. Chemical analyses by X-ray diffraction and X-ray fluorescence and scanning electron microscope were also conducted.
Microbial deterioration of limestone was studied on samples taken from Sultan Hassan mosque, the Islamic monument located in Cairo, Egypt. Stone samples were collected by non-destructive methods from outdoor and indoor of the mosque and were tested for inhabitance by microflora (bacteria and fungi), outdoor and indoor airospora was also investigated. Gram positive and Gram negative bacteria were isolated of which *Baillus* was dominant genus recovered from all samples, where *Aspergillus* was the most prevalent among fungi. Only *Bacillus* had shown the ability to dissolve calcium carbonate unlike other tested bacteria or fungi. Fucidic acid concidered an accurate antibiotic against most bacterial isolates where fluconazole was slightly more effective than sodium azide on fungi.
Keywords: Sultan Hassan mosque- limestone- *Bacillus- Aspergillus*- antimicrobial.

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