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## Self-healing Mortar Using Microbiologically Induced Calcite Precipitation

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*Self-healing concrete is an advanced technology that allows intrinsic repair of open micro-cracks. Bacteria-based self-healing mortar has shown promising results regarding the crack healing. Microbiologically Induced Calcite Precipitation (MICP), amorphous calcite precipitation is formed due to microbial activities of the bacteria, which seal the cracks in the concrete structure. The goal of this study is to show potential application of bacteria to affect mechanical properties of concrete. Two Egyptian isolates of bacteria, namely *Bacillus subtilis* (Bs) and *Bacillus megaterium* (Bm) were used in this study. *Bacillus sphaericus* (Bsph) and *Bacillus pasteurii* (Bp) were also used in this research. They were obtained from the Microbiological Resources Centre (Cairo MIRCEN). All four types of bacteria were added to mortar with two ratios (0.25% and 0.5%) of cement weight. Calcium lactate was used as bacteria nutrition. Control and bacterial mortar were cast. Compressive strength test was performed at the age of 3, 7, 28, 90 and 120 days. Flexural strength test was performed at the age of 28, 90 and 120 days to study the influence of adding bacteria to mortar mixes. Adding *Bacillus megaterium* or *Bacillus pasteurii* bacteria by 0.25% improved the compressive strength by 122% of control mix at the age 28days. Adding *Bacillus sphaericus* or *Bacillus pasteurii* bacteria improved the compressive strength 153-165% of control mix at the age.*