

**THE EFFECT OF DIFFERENT CONCENTRATION OF SIMULATED
BODY FLUID (SBF) ON COMMERCIAL PORTLAND CEMENT
SCAFFOLD**

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ABSTRACT

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Calcium silicate based cements have been used widely in endodontic and tissue engineering because their ability to induce bone-like formation in human body. Commercial Portland cement which normally used as material in construction was studied to form a bioactive material. Apatite is a calcium phosphate which deposited on surface of bioactive material once immersed in physiological fluid. In this experiment, Simulated Body Fluid (SBF) was used as a tool to test bioactivity of Portland cement. SBF is a solution which the ion concentration almost equal to human blood. This experiment conducted by immersing cement paste in SBF for 1, 3 7 and 14 days in water bath shaker at 37°C. Cements were refreshed for every 3 days. A comparison between SBF and 1.5 SBF have been made to analyze cement bioactivity. Mass loss, pH and FTIR are the parameters. From the results, it can be concluded that cements possessed high possibility in inducing apatite in both SBF solutions based on the band at 1400 cm^{-1} (CO_3^{2-}), 572 cm^{-1} (P-O) and 602 cm^{-1} (P-O) on FT-IR spectra. Those functional groups are the part of components for formation of apatite.

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