Streptococcus mutans form biofilms on polymeric surfaces of appliances introduced into the oral cavity. In this study the effect of Zingiber officinale essential oil on biofilm that was produced by S. mutans on polymethylmethacrylate (PMMA) blocks was investigated.

Heat-cured PMMA blocks were conditioned with 500ml of saliva at 37°C for 60 min, and then washed twice with PBS. PMMA blocks were placed in a 12-well polystyrene culture plate and inoculated with S.mutans (106 cells/ml) and one of the two protocols were applied.

In the first protocol, the PMMA blocks were incubated for 24 hours (37°C) after bacterial contamination. Then, 20 ml Z.officinale essential oil was added to media that containing the blocks. In the second protocol, PMMA Blocks were contaminated with bacteria and 20 ml Z.officinale essential oil were added at the same time. In both protocols, after 24 hours (37°C) incubation of the plates, at the end of the incubation growth medium was removed and PMMA blocks were washed twice with PBS to remove non-adherent cells. PMMA blocks were evaluated by spectrophotometry (OD 620 nm) and number of bacteria was counted. PMMA blocks were examined with scanning electron microscopy.