

ABSTRACT

Biofilm mode of life in bacteria enhances bacterial virulence and the potential hazards to human health and economy. Flagellum is highly assembled and organized apparatus in bacteria that is involved in bacterial motility. This study was conducted to find out the possible role of flagellar motility in biofilm formation of the environmental bacterial isolates. Morphological and chemical characterization was done for all these 10 isolates. Two motile strains were further characterized physiologically and genetically. The genetic characterization revealed that the strains were *Bacillus cereus* and *Yersinia enterocolitica*. These identified environmental isolates were tested for biofilm formation using Congo red assay, Test tube assay and Liquid-interface coverslip assay. Both strains produced significant biofilm by all three above mentioned methods. Three sets of these identified strains were individually exposed to physical blending under controlled sterilized conditions for variable time periods i.e. 5 minutes, 10 minutes and 15 minutes. A motility test of these physically disrupted variants was again performed; partial leading to completely diminished motility was observed in strains with increased blending time. This indicated that blending induces physical disruption leading to bacterial de-flagellation. Biofilm quantification assays were performed again and a considerable reduction in biofilm quantities were observed in these physically disrupted variants. This study suggested that blending induces physical disruption in bacteria. This leads to the removal of flagella hence diminishing bacterial motility. These bacteria with removed flagellar motility loose their biofilm formation ability. This indicates the immense role of flagellar motility in biofilm formation of environmentally isolated bacteria