

## ABSTRACT

The synthetic compound Salicylidene acylhydrazide causes strong inhibition of flagellar motility and biofilm formation by obligate anaerobic bacteria *D. vulgaris*. The growth of *D. vulgaris* causes massive loss to the petroleum industry. Hence the aim of this study was to assess and control the flagellar motility and biofilm forming capacity of mutant and wild type strains by using the synthetic compound Salicylidene acylhydrazide. Ten samples were collected from different sites of Lahore and screened morphologically and biochemically. Only one strain DUV<sub>1</sub> was identified by 16S rRNA gene sequencing and genetic analysis revealed that the strain was *Desulfovibrio vulgaris* (accession number.KY698020). It showed maximum growth at 37°C temperature and pH 7. Growth curve indicated that it has 1 hour lag phase, 71 hours log phase and then 96 hours stationary phase. Strong and significant biofilm formation (52%; p<0.05) was observed by test tube method compared to liquid interface coverslip assay (35%) and congo red assay (13%). Mutants were constructed by treatment of strain *D. vulgaris* with different concentrations (5µM, 40µM, 80µM and 100 µM) of Salicylidene acylhydrazide combine with Gallium. Its effects were checked by comparing the biofilms formed by wild type bacteria and mutant bacteria. Concentration dependent decrease was observed after 72 hours in biofilm formation of *D. vulgaris* upto 80 µm treatment with salicylidene acylhydrazide. Mutants showed reduced biofilm formation and flagellar motility than wild types. This research indicates that inhibitory compound disrupt the protein filament which leads to the failure of flagellar motility, hence biofilm formation is reduced.