ABSTRACT

Water contamination is a global health issue. According to world health organization (WHO), at least 1.7biillion people worldwide rely on contaminated drinking water. It is estimated to cause approximately 505,000 diarrheal deaths each year. In Pakistan, water resources are vastly polluted in which both underground and surface water is contaminated by human pathogenic microorganisms such as *Salmonella, Escherichia coli, Vibrio cholerae, Staphylococcus aureus*. Isolating bacteria from shrimp is a promising approach, to treat water borne diseases. These beneficial bacteria, can help to control pathogenic microorganisms, improve health, and enhance water quality. The purpose of this study is to isolate bacteria from the gut of white shrimp *(Penaeus vannamei)*, and to identify the potential bioactive compounds in extracellular metabolites(ECMs) and whole cell metabolites (WCMs) extracted from microbes via LCMS. Check the antibacterial, antibiofilm and biofilm dispersal activity of these metabolites (ECM and WCM) against waterborne pathogens. The current study was planned to isolate bacteria from the gut ofPacific white shrimp (*P. vannamei*.).Total 15strains were isolated and five were selected to check antibacterial activity. Out of 5 strains only 2 bacteria show antibacterial activity. These two strains show clear zone of inhibition ZI against *E.coli,Staphylococcus aureus* and *Aeromonas veronii* .IQ1 show zone of inhibition ZI 10.33±0.33,8.33±0.33and10.33±0.33 against*E.coli,Staphylococcus aureus* and*Aeromonas veronii.*IQ12 show zone of inhibition ZI 10.67±0.67,11±0.57 and 13.67±0.67 against*E.coli,Staphylococcus aureus* and*Aeromonas veronii.*These two bacterial strains were sensitive against Penicillin and Norfloxacin. The strain were identified up to species level using 16S rRNA gene sequencing and identified as *Bacillus liceniformis*and *Bacillus sp.*Time kinetics was used to check the biofilm forming ability of two bacterial strains at 72h,120h and 168h.Maximum biofilm formation was observed at 168h for all the strains. Extracellular metabolites (ECM) and whole cell metabolites (WCM) extracted from these bacteria IQ1 and IQ12 were subjected to antibacterial test.The antibacterial activity of these metabolites was evaluated by agar well diffusion method.IQ1 ECM show Zone of inhibition ZI6.33±0.33,5.33±0.33 and 5.67±0.67 against *E. coli,S. aureusA. veronii.*IQ1 WCM show ZI 7.33±0.33 and 6.67±0.33 against *E.coli and A.veronii.*IQ12 ECM show ZI 5.66±0.33 and XVIII

6.33±0.33 against *E.coli*and *A.veronii.*IQ12 WCM show ZI 6.33±0.33 and 5.67±5.67against *E.coli*and *A.veronii.*The results