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BIOTECHNOLOGICAL PROSPECTS OF MICROBIAL COMMUNITY IN WAHAVA HOT SPRINGS IN SRI LANKA

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Chemical waste generated by industries containing excessive amounts of chemical catalysts drastically affects the diversity of flora and fauna in the ecosystem. To minimize the discharge of chemical catalysts into the ecosystem, thermophilic bacteria inhabitants in hot springs could be a useful substitution. The extremozymes produced by Thermophilic bacteria can tolerate extreme chemical and physical conditions pertinent to industrial settings. The present study was focused on Wahava hot springs in Sri Lanka to identify and characterize industrially important extremophilic microbes in the microbial community in the hot springs. The Bacteria and Archaea diversity of artesian tube well and dug well at Wahava hot spring site were analyzed using 16S amplicon sequencing on Illumina MiSeq platform. Temperature, conductivity, pH, and dissolved oxygen (DO) were measured at the site. The temperature of the Wahava artesian tube well and dug well springs vary from 42.1 - 42.8 ^{o}C. The conductivity, pH, and DO ranges between 1,378 - 1,474 μS cm^{-1}, 7.91 - 7.97, and 3.50 - 1.05 mg L^{-1}, respectively. *Proteobacteria, Firmicutes* and *Deinococcus-thermus* were recorded in the artesian tube well, while *Proteobacteria, Firmicutes, Actinobacteria, Chloroflexi* and *Bacteroidetes* were found as the major bacteria groups in the dug well. Furthermore, Archaea percentage of the microbial community in artesian tube well and dug well were 0.004% and 0.03%, respectively. In both hot springs, 0.57% of each bacterial community belongs to *Deinococcus-thermus,* a group which is highly resistant to environmental hazards (extreme pH, extereme temperatures, xenobiotics, etc.). Thus, Wahava hot springs were identified as a rich source of thermophilic microbial community which can be used for the biotechnological prospects and further studies in this regard is being investigated.

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