



## ABSTRACT

The current research was directed to examine the fermentative production and characterization of levan, an exopolysaccharide, using *Bacillus subtilis* NRRL B-941. In present investigation, *Bacillus subtilis* was found to be the prospective and promising aspirant for enhanced levan production among four different species of the genus *Bacillus*. The enhanced production of levan was achieved utilizing 200 g/L sucrose, at 37°C, pH 6.5 and 200 rpm. The 4 % (v/v) of 24 h old culture of bacteria served as the best inoculum to accomplish highest yield of levan. Maximum amount of levan ( $23.04 \pm 0.24$  g/L) was obtained at 24 h of fermentation. After the paramount production of levan under optimum conditions, levan was precipitated with absolute ethanol for purification. Purified levan was further analyzed to characterize the product. TLC analysis revealed that it comprised of fructose subunits. Viscosity of levan was found to be 574.55 cP. The compositional analysis of purified levan was analyzed by Fourier Transform Infrared spectrum which indicated the presence of -CH, C=O and pyran ring and therefore, confirmed that the purified product was levan. The thermal behavior of levan was studied by TGA and DSC analysis. Glass transition temperature ( $T_g$ ) was found to be 74°C. Temperature of onset of thermal degradation ( $T_o$ ) of levan was observed at 200°C. Melting transition ( $T_m$ ) was seen at 225°C. Maximum weight loss ( $T_p$ ) occurred in range of 400-450°C.