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Activity of Malate Dehydrogenase in Cell Free Extracts from S. proteamaculans, A. hydrophila, and K. pneumoniae

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Abstract : Three bacterial species were isolated from the River Wye (Derbyshire, England) and identified using 16S rRNA gene sequencing as Serratia proteamaculans, Aeromonas hydrophila and Klebsiella pneumoniae. Respiration rates of the strains were measured in order to determine the metabolic activity under salt stress. The highest respiration rates of all three strains were found at 0.17 M and 0.5 M NaCl and then the respiration rate decreased with increasing concentrations of NaCl. In addition, the effect of increasing concentrations of NaCl on malate dehydrogenase activity was determined using cell-free extracts of the three strains. Malate dehydrogenase activity was stimulated at NaCl concentrations up to 0.5 M, and a small level of activity remained even at 3.5 M NaCl. The pH optimum of the malate dehydrogenase in cell-free extracts of all strains was higher than pH 7.5.

Keywords : fresh water, halotolerant pathogenic bacteria, 16S rRNA gene, cell-free extracts, respiration rates, malate dehydrogenase
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