

Physiological studies of acidophilic and salt tolerant green alga II. Its growth characteristics and metal tolerance.

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Summary

The effect of pH on the growth of an acidophilic and salt tolerant green alga, Chlamydomonas sp. isolated from acidic saline lake in South Australia, was studied. The specific growth rates (μ) ranged from 0.1 to 0.2 per day at $166 \mu\text{E m}^{-2} \text{s}^{-1}$ in the synthetic media containing 15% NaCl and 0.05 M buffer. Buffers were glycine- H_2SO_4 , glycyglycine- H_2SO_4 , and phthalate- H_2SO_4 . The highest value of μ was obtained around pH 3.5.

Chlamydomonas sp. has tolerance to certain heavy metals. An extract from cells induced by $100 \mu\text{M}$ CdSO_4 was assayed by gel filtration to investigate mechanisms of metal tolerance. Chlamydomonas sp. produced two Cd-containing peaks that might correspond to the HMW (high molecular weight) and LMW phytochelatin-Cd complexes recently observed in extracts from yeast, wild mustard and tomato. We examined the purification and characterization of two peaks. HMW fraction was lost by NaCl treatment for application to anion exchanging chromatography.