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Assessment of metal (Pb^{2+}) stress recovery of *Spirulina platensis*, an edible cyanobacterium

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Spirulina platensis is a well known source of protein comprising all the essential amino acids. As metal toxicity is becoming a matter of great concern, the present study focused on the metal stress

recovery of *S. platensis*. The species was grown in Zarrouk liquid medium adjusted to pH 7.0 at 25 ^{0}C. At the exponential growth phase, algal mass was harvested and resuspended in fresh medium to be used in metal treatments. Algal suspensions were treated with various initial Pb^{2+} concentrations (1, 5, 10, 25 and 50 μg/mL) and incubated for 10 days. The algal cells without Pb^{2+} in the medium served as the control. The growth was monitored by measuring the optical density at 560 nm. At day 10, the algal cells were separated, washed and resuspended in fresh Zarrouk medium (free from Pb^{2+}) to assess metal stress recovery. Experiments were conducted in triplicate and repeated twice to confirm the reproducibility of the results.

Exogenous addition of lead showed varying toxicity to *S. platensis*. At a low concentration (1 μg/mL), Pb^{2+} possitively influenced the growth by 2.6 %. However, at higher concentrations, the growth was adversly affected and the extent of toxicity increased with increasing Pb^{2+} concentration in the medium. The inhibitions at 10 d were 5, 40, 49 and 78 % respectively for 5, 10, 25 and 50 μg/mL of Pb^{2+}. Once introduced to the Pb^{2+} free medium, all the cultures were found to grow well irrespective of the severity of the initial stress. However, cultures treated with high concentrations of Pb^{2+} were slow to recover from the transferring shock. Results could be concluded that *S. platensis* is quick to recover from the initial metal stress.

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