

Development of Low Cost Mass Culture Media for *Spirulina platensis*

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Spirulina platensis is an algae popular as a food supplement with high protein content. The pure cultures of *Spirulina* are maintained using Zarrouk medium, which cannot be used for mass culture as the medium is highly expensive. The present study aims to develop a low cost mass culture media suitable for commercial scale culture of *S. platensis* in Sri Lanka. Three culture media [T1 (w/w)-NaHCO₃:73.68%, NaCl:8.77%, Urea :10.96%, Albert solution:4.38%, T2 (w/w)-NaHCO₃:75.4%, NaCl:7.18%, Muriate of Potash:4.39%, Triple Super Phosphate:1.79%, Urea:11.22%, T3 (w/w) -Triple Super Phosphate:0.95%, NaNO₃:7.18%, Muriate of Potash:4.96%, NaCl:47.91%, MgSO₄ :0.71%, CaCl₂:0.19%, NaHCO₃:38.33%] were formulated by incorporating selected fertilizers and other cost-effective alternative chemicals, while Zarrouk medium was used as the control. Three media were tested in triplicates for growth performance of *Spirulina*. One-unit volume was used from a pure culture with 1100 cells ml⁻¹ and inoculated in to all the treatments. Cultures were initiated in an axenic batch culture method in the formulated media and maintained under the illumination of 4000 lux and at 35°C temperature. The growth rate of culture was measured by counting the number of cells under light microscope and cell ratio was calculated. Data were collected once in three days for 15 days and data were statistically analyzed by one-way analysis of variance (ANOVA) Results revealed the significantly high numbers of cells (186.24±25.76 cells ml⁻¹) in T3 followed by control 123.21±3.10 cells ml⁻¹, T1 114.80±27.97 cells ml⁻¹, T2 96.92±3.69 cells ml⁻¹ (P<0.05). Hence, T3 medium was identified as the most favorable media for the growth of *S. platensis*. The highest growth rate was also observed in T3 medium during the 15 days culture period. According to the cost analysis, T3 medium was three times cheaper than the Zarrouk's medium and can be recommended for initiating mass culture of *S. platensis* in Sri Lanka.

Keywords: Spirulina platensis, Growth, Zarrouk medium, Mass culture media