

EFFECTS OF DIFFERENT GOAT URINE CONCENTRATIONS IN THE CULTURE MEDIUMS ON GROWTH RATE OF *spirulina (arthrospira platensis)*.

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The mass and small scale production of *Spirulina (Arthrospira platensis)* is increasing locally and globally due to its high-valued protein, essential amino acids, and vitamins, etc. with the global demand of good protein and vitamin sources. This primitive blue green algae can be used as a supplementary feed for human and other farmed organisms and as well as used as a medicine. The main aim of this study was to produce a cost effective medium which can be formulated within the farms that without high cost chemicals for small scale to medium scale production. This study was implemented to check whether the nutritional requirement of these blue green algae could be substituted by treated Goat urine which was not done so far in Srilanka. The cost effective medium contains treated goat urine (source of nitrogenous, non-nitrogenous and carbon components), distilled water/ Chlorine free water, common backing soda (NaHCO_3) and vitamin B_{12} . As the growth parameter, specific growth rates (μ_1 , μ_2 , μ_3) were observed for different goat urine concentrations. The algae were grown within indoor condition for 21 days at $27 \pm 2^\circ\text{C}$, $\text{pH } 9 \pm 1$, 3.5 k lux white illumination. Significant differences in the growth parameters were obtained by two samples T-test for the different urine concentrations. The results revealed that *S. platensis* $\mu_1 = 0.041 \times 10^6$ cells/day, $\mu_2 = -0.12 \times 10^6$ cells/day. (μ_1 – specific growth rate in 1% urine medium, μ_2 – specific growth rate in 10% urine medium) μ_3 – the specific growth rate in 50% urine medium was 0. The mean cell concentrations in three differently concentrated (1%, 10%, 50%) urine medium were respectively $20.1 \pm 06.07 \times 10^6$ cells/ml, $7.09 \pm 4.28 \times 10^6$ cells/ml and 0 cells/ml. According to the observation of this study & the results of two samples T-test; the 1% treated urine medium is more suitable medium for the cultivation of *Arthrospira platensis* and the more nitrogen concentration destroy the cells within several hours ($\mu_3 = 0$). This medium can be used in livestock culture farms and the cultured *Spirulina* can be used as a supplementary feed for their animals and fish.

Keywords: *Arthrospira platensis (Spirulina)*, Cost effective medium, Specific growth rates (μ), Zarouk's medium, Treated Goat urine medium