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Impact of varying Phosphate concentration on some local isolates of Cyanobacteria

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ABSTRACT

Three isolates, *Phormidium mucicola, Lyngbya limnetica, Anabaena circinalis* were collected from wetland area of Saharsa district. Axenic culture of each isolate was prepared. Effect of different concentration of Phosphate was observed on 3rd, 6th, 9th, 12th and 15th day on each isolate. The phosphate concentration were prepared from K2HPO4.3H2O and the concentrations were 0.5%, 2.5%, 4.5% and 6.5%. Maximum growth was observed at a concentration of 2.5% and minimum of 0.5% concentration. In each concentration, growth increased gradually.

Key Words - Axenic culture, *Phormidium mucicola, Lyngbya limnetica, Anabaena circinalis.*

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INTRODUCTION

Cyanobacteria are the most common attenders in bloom formation. High nutrient level, particularly Nitrogen and Phosphorus concentration promotes reproduction in Cyanobacteria and formation of dense water bloom. Much information is available regarding the role of phosphorus in bloom formation by species of Cyanobacteria (Khalid *et al.* 2010). The ration of Nitrogen and Phosphorus is the key role in growth and reproduction in Cyanobacteria. Variation in Nitrogen and Phosphorus ratio control the growth of particular species and limited growth of other species. It is known fact that growth of Cyanobacteria proliferate in phosphorus rich water. Some Cyanobacteria are capable to store large amount of Phosphorus intracellularly which is utilized in phosphorus limited condition.

MATERIAL & METHOD

Locally collected three isolates of Cyanobacteria were cultured in BGA11 medium. Each isolate was identified on the basis of their morphology as described in Cyanophyta (Desikachary T.V.-1959). Axenic culture was prepared from each isolate to show the effect of phosphorus concentration and each isolate was inoculated in the same medium supplemented with different concentration of $K_2HPO_4.3H_2O$. Following concentration of K2HPO4.3H2O in culture medium was prepared- 0.5%, 2.5%, 4.5% and 6.5%. Growth of each isolate was measured in each concentration on 3rd, 6th, 9th, 12th and 15th Day.

RESULT

Maximum growth was recorded in 2.5% concentration of phosphate for all isolates. In 4.5% concentration, the growth gradually increased in time duration but the growth was lower in comparison to growth in 2.5% concentration. At a concentration 0.5%, growth was poor in comparison to growth in all other concentrations. The result is mentioned in Table No. 01.

Table 1- Growth of different isolates in mg/L

Isolates	Concentration	Days				
		3rd	6th	9th	12th	15th
Phormidium mucicola	0.5%	42	48	74	110	120
	2.5%	85	110	140	185	215
	4.5%	70	94	115	150	165
	6.5%	50	63	78	105	125
Lyngbya limnetica	0.5%	50	58	78	115	130
	2.5%	88	115	143	192	216
	4.5%	72	95	118	154	170
	6.5%	55	70	85	110	130
Anabaena circinalis	0.5%	52	60	85	118	135
	2.5%	90	120	148	195	220
	4.5%	75	100	120	160	175
	6.5%	58	75	90	112	135

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