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"Effect of Lower Concentration Aqueous Extracts *of Enteromorpha Flexusa* on Germination and Seedling Growth of Test Plant *Solanum Melongena* L. Var. Panchaganga "

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Abstract

In Indian after independence modern techniques were used for the progress of the nation and much emphasis has been given on agricultural and industrial production. Today we are one of the well-industrialized nations of the world. To fulfill the demands of ever increasing population Indian agriculture become highly mechanized and intensive which is highly dependent on fossil fuels, synthetic fertilizers and pesticides. In this competition we came far away from the nature. After few years of modernization of agriculture we came to know about decreasing soil productivity and profitability, destruction of natural ecosystems which leads to the environmental problems and ultimately to human health hazards. Since we did not think about imbalance of nature, we have created a huge problem of pollution and eco degradation around us. A resource goes on decreasing as population increases which also threatens the economic status of the nation. So it is the time to think about sustainability in development, pollution control, conservation of natural resources like air, water, soil etc. To find out the effect of different concentration of fresh aqueous extract of an alga Enteromorpha flexusa extract of different concentration viz. 0.1, 0.01, 0.001, 0.0001 % increased the root growth, shoot growth, and total seedling growth of the test plant Solanum melongena L. var. Panchaganga seedling growth promotion was co – related with extract concentration.

Keyword*: Enteromorpha flexusa, Solanum melongena L, modernization, ecosystems.*

1. Introduction

Freshwater algae are among the most diverse and ubiquitous organisms on the earth. They occupy an enormous range of ecological conditions from lakes and rivers to acidic peat swamps, inland saline lakes, snow and ice, damp soils, wetlands, desert soils, wastewater treatment plants and are symbionts in and on many fungi, plants and animals. They form the base of most aquatic food webs and are critical to studies of ecosystem health. Algae ecologist and taxonomists play an important role in the understanding of aquatic ecosystems, their biodiversity, productivity, interactions with other organisms and water quality.

There are about 3, 40,000 algal species (Subba Rao & Vaibhave 2006), many of which are highly nutritious and can be eaten, but there is a small number of algae, which are highly toxic when consumed. The abundance and diversity of algae have made them prime material for human use (Wandhare and salve 2007) About 213 species of algae are used as food in different countries of the world (Kiple , 2000).

Fertilizers are stimulating compounds given to plants with the intention of promoting growth; they are usually applied either via soil or by foliar spraying seaweeds have been reported from Roman times as a source of an agricultural fertilizer and are still used to day in some areas of the world. Their utility is no doubt due to organic nutrients and inorganic minerals.

Given their existences as aquatic organisms, algae draw a huge mineral wealth from the sea, which in turn, holds a great diversity, including mineral substances such as sodium, calcium, magnesium, potassium or phosphorus, together with such trace elements like iodine, iron, zinc, copper, selenium, fluorine or manganese. In short, no other products of nature are rich in minerals, trace elements, amino acids and vitamins as algae. Red, brown and green algae come with an average

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of 30 to 36 percent mineral content in their dry matter, in which far more than 80 different elements can be scientifically identified.

In comparison to the last few decades, one could see the many folds increase in grain production in India due to use of high yielding varieties with demand of high input chemical fertilizer. Application of fertilizers plays an important role in crop production. But the continuous use of inorganic chemical fertilizers makes the soil unfertile, besides eutrophication and contamination with nitrogen of sub – surface water (Sylvia *et al* 2005) thus, excessive irrigation and continuous use of chemical fertilizers create problem of soil deterioration and decrease in agricultural production. production. One of the more remarkable uses of seaweeds in agriculture is in the bleak, rocky, soil less Aran Island in Galway Bay on the West coast of Ireland where soil for farming is manufactured by composting seaweed and sand (Newton, 1951).

2. Materials and Method

*Enteromorpha flexusa*L. was collected from Konkan Harnai, Kolthare and Alibag growing in shallow tide pools and rock pools, attached to stones or rocks and even on open rock surfaces. The collected material was washed with tap water. Make extract *of Enteromorpha flexusa* with different lower concentration viz. 0.1, 0.01, 0.001, 0.0001%, were prepared in distilled water.

Seeds of test plants *Solanum melongena* L. var. Panchaganga procured from local market were surface sterilized with 0.1% mercuric chloride and washed thoroughly. 30 seeds were placed in three Petri dishes. Germinating paper was used 10 ml of aqueous extract *Enteromorpha flexusa* was added in every Petri plate. Seeds were allowed to geminate in the laboratory conditions. On 5th day measurements of seedling growth were taken. Percentage inhibition or stimulation over control and ANOVA variance was calculated.

% Inhibition or stimulation: (C-T /C) X100 (Where C: control, T: treatment).

Effect of lower concentration of aqueous extract *Enteromorpha flexusa* on germination and seedling growth of test crop plant *Solanum melongena* L. var. Panchaganga

Algal species	Growth Parameter	Control	Extract Concentration				P - Value
			0.1	0.01	0.001	0.0001	
Enteromorpha flexusa	Rg	2.06a	4.68b [127.18]	4.83c [134.46]	4.93d [139.32]	5e [142.71]	9.51E - 09
	Sg	1.85a	3.82b [106.48]	4.59c [148.1]	5.51d [197.83]	5.23e [182.7]	2.04 E - 12
	TSg	3.91a	8.51b [117.64]	9.41c [140.66]	10.47d [167.77]	10.22e [161.38]	2.41 E - 11
	Ger %	80	93.67 17.08	93.67 17.08	93.67 17.08	93.67 17.08	

Data presented are means of three replicates; values within the same row with different letters are significantly different at 0.05% P-level by Single factor ANOVA test followed by CD & Tukey's test.

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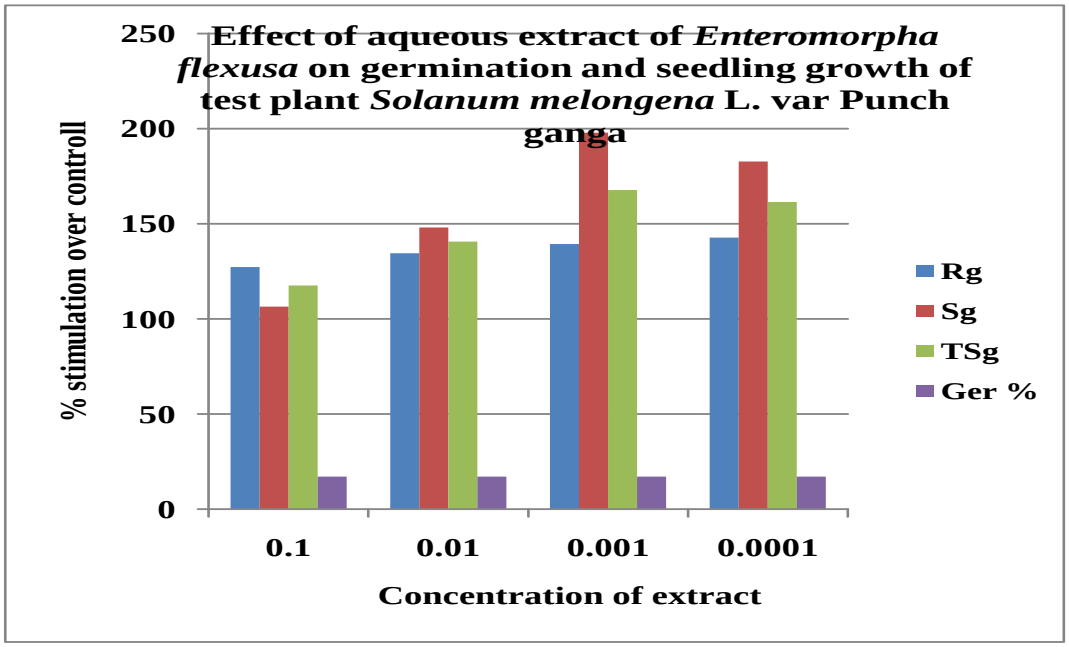

3. Reasult And Discusion

Aqueous extract of *Enteromorpha flexusa* was significantly promoted Rg, Sg, TSg of the test plant *Solanum melongena* L. var punch ganga in at 0.05% P – value and concentration correlated manner. Root growth was promoted minimally (127.18%) at 10^{-1} % concentration and maximally at 10^{-4} % concentration (142.71%) over control. Shoot growth (Sg) was promoted minimally (106.48%) at 10^{-1} % concentration and maximally at 10^{-4} concentration (182.7%) over control. Total seedling growth (TSg) was promoted minimally (117.64%) and maximally at 10^{-4} concentration(161.38%) over control. Germination percentage (Ger %) was promoted from lower concentration to the higher concentration (17.08%).

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