STUDY OF BINARY MIXTURE ON SEED GERMINATION

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Abstract: Laboratory tests to evaluate the effects of antibiotics on seed germination of three plants (rice, cucumber and sweet oat) were carried out using the filter paper method according to the International Seed Testing Association (ISTA) test protocols[16]. For each antibiotic compound, the filter papers in Petri dishes were treated with 5 mL of the antibiotic solution at different concentrations and covered before placing in an incubator. Seeds were germinated in the incubator under the conditions of 25^0C temperature, 80% humidity and darkness. The seed germination was evaluated using root length of seedlings as endpoint (primary root _5 mm) after 4–5 days[17].Effects of six selected antibiotics on plant growth and soil microbial and enzymatic activities[18].

Key Words: **Ce (III), Nd (III), Eu (III), Oil Seed, Ligands.**

I. INTRODUCTION:

The information about the role of metal complexes in biological systems, their concentration and presence in different equilibria[1] is of immense importance. The observations of antifungal and antibacterial activities of complexes show that they are more active as compared to free metals and ligand involved[2]. Biological activity of metal ions and ligand of Cu (II) complexes towards some fungi and bacteria was evaluated. Rare earth metal ions (lanthanides) are used as a probe in biochemistry of calcium. Birnhaum et al[3] showed that lanthanide ion could substitute the calcium ion to produce active enzyme system. Some bivalent metal ions have been reported to be useful in agriculture as plant growth regulators. Such a vast uses of lanthanide, necessitate concentrating on the study of lanthanides and ligands for studying the germination pattern. Effects of ten antibiotics on seed germination and root elongation in three plant species[4]. Plants provide a rich source of various biologically active compounds as well as proteins and peptides[5]. Antibiotics are specifically designed to control bacteria in human or animals and help to protect their health. After treatment, most antibiotics are excreted from the treated body, either unaltered or as metabolites, some of which are still bioactive[6].

II. MATERIAL AND METHODS

Metal ions used:

The solutions of Ce (III), Nd (III), Eu (III), of the concentration 0.01 N was prepared using doubly distilled water.

Oil Seed: Sunflower seed (Helianthus annus)

Ligands used:

The following ligands of the concentrations 0.01 N, prepared in dioxane were used –

i) Cefpodoxime (L7)
ii) Olmesartan (L8)
iii) Pantoprazole (L9)

All the weighing were made on Mechaniki Zaktady Precyzyjnej Gdansk Balance (±0.001gm).The test solutions were maintained at pH 4.0, 7.0 and 10.0 using ELICO-pH meter-L 1- 10 (accuracy ± 0.05 unit).

III. RESULTS AND DISCUSSION

These photosynthetic pigments were found affected in seed oil by the treatments. It can be seen from Table -1 that at pH 4.0, the total chlorophyll content of (L7), Ce (III) and significantly of (L8) was found to be decreased whereas in(L7), Nd (III) and Eu (III) the trend was reverse as compared to fresh water (control) irrigated plants. (L7) and (L8) follow the same trend at all pH. At pH 7.0, (L9), Ce(III) and (L7) show an increase but(L8), Nd (III) and Eu(III) show significant decrease in total chlorophyll content. At pH 10.0 except (L8), all the treated plants show an increase in the chlorophyll content over control. The chlorophyll a exhibited a decrease in (L8) at all pH. At pH 4.0 (L7) and (L8) show a decrease while the reverse trend was followed by all the other treated plants. Chlorophyll a has been decreased at pH 7.0 except in case of (L7) while it has been increased at pH 10.0 except in case of (L7) and (L8).The chlorophyll b of seedling has been decreased in case of (L8), Ce (III) [pH 4.0 and 10.0] (L8), Nd (III) [pH 7.0] and in all the other treatments, it shows an increase over control.

Table 1: Effect of Chlorophyll and Dry Matter Content for Control and oil seed Plants.

pH	Treatments	Chlorophyll- total (mg/lit)	Chlorophyll-a (mg/lit)	Chlorophyll-b (mg/lit)	Dry matter
4.0	Water	5.8093	2.9574	2.1211	2.94
	(L7)	5.3224	2.5681	2.1816	2.00
	(L8)	9.0184	3.1297	3.4895	4.68
	(L9)	0.4032	0.1528	0.0033	1.55
	Ce(III)	5.6871	3.2491	1.5614	3.60
	Nd(III)	10.5831	4.5522	5.1962	7.21
	Eu(III)	11.0110	5.4727	4.7040	9.51
7.0	Water	5.2761	3.0147	1.8917	3.00
	(L_7)	7.5132	2.9508	3.5365	6.51
	(L_8)	9.2738	3.8316	4.5373	4.96
	(L_9)	1.5626	0.8795	0.4141	1.93
	Ce(III)	6.07334	2.5781	2.4722	3.83
	Nd(III)	3.3720	1.6987	1.1698	5.21
	Eu(III)	1.8184	0.5563	0.8022	6.11
10.0	Water	4.7706	2.8845	3.2575	4.61
	(L_7)	6.7706	2.8845	3.2575	4.61
	(L_8)	10.0043	3.9133	5.2082	5.13
	(L_9)	3.3341	1.1530	1.9394	4.37
	Ce(III)	5.6958	3.0552	1.8794	4.37
	Nd(III)	15.0042	6.3866	7.3297	6.76
	Eu(III)	11.8010	7.6254	3.9252	6.53

IV. CONCLUSION

The changes in the growth pattern of root and shoot was studied by the proportionate growth in both. The root-shoot ratio reflects the same and represents the development in root and shoots simultaneously. Though the root and shoot length showed a decreasing pattern for treated plants, but the root shoot ratio in all the treated plants increases over control except for (L7) (pH 7.0 and 10.0), (L9)(pH 7.0 and 10.0), Ce (III) and Nd(III) (pH 7.0). This increase was observable in case of (L7) and Eu (III).

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VI. REFERENCES

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