

RRST-Biochemistry

Effect of Synthesized Chemical Compounds on Seed Germination

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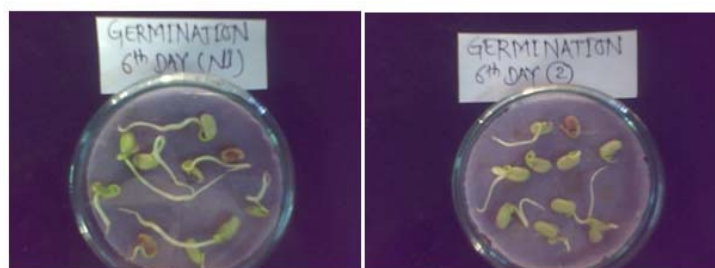
Article Info	Abstract
Article History <i>Received</i> : 12-01-2011 <i>Revised</i> : 17-05-2011 <i>Accepted</i> : 17-05-2011	The role of synthesized chemical compounds viz., Benzothiazolyl 3-methyl 1,2,4-1 H triazole, Benzothiazolyl 3-benzyl 1,2,4-1 H triazole, Benzothiazolyl p-nitro 1,2,4-1 H triazole, Benzothiazolyl pyridino 1,2,4-1 H triazole, 2-hydroxy 3-methoxy phenyl 4-thiazolidinone, Nickel complex with hydrazone, Gibberellins and Water. The compound, 2-hydroxy 3-methoxy phenyl 4-thiazolidinone and Nickel complex with hydrazone gave more germination as compared with standard Gibberellic acid and water as control. Other parameters like pH, protein content using Biuret test, carbohydrate content using Anthrone method, fresh weight, dry weight, were also studied. As concentration of the compound decreases the resulting germination increases with increase in protein and carbohydrate content also.
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Introduction

Growth is the fundamental property of all the living organisms. Plant growth includes variety of complex phenomena. It generally includes linear increase, gain in weight, and increase in dimensions, cell division, and cell enlargement, gain in biomass and so on [2]. The growth of all the cells is integrated to produce a whole plant [3]. Growth is influenced by several external and internal factors. Certain synthesized compounds behave as stimulators and these compounds play a vital role in germination and vigorous growth of a plant in the tender seedling stage [1].

Materials and methods

The synthesized compounds, I) Benzothiazolyl 3-methyl 1,2,4-1 H triazole, II) Benzothiazolyl 3-benzyl 1,2,4-1 H triazole, III) Benzothiazolyl p-nitro 1,2,4-1 H triazole, IV) Benzothiazolyl pyridino 1,2,4-1 H triazole, V) 2-hydroxy 3-methoxy phenyl 4-thiazolidinone, VI) Nickel complex with hydrazone, of 50 ppm, 25 ppm, 5 ppm were prepared while gibberellins and water were used as control. The seeds of Mung & Soybean were soaked in respective solution for two hours, later per Petri plate 20 seeds of mung & 20 seeds of soybean were kept in Petri plates containing germination paper and observations were recorded.



Plates showing germination on 6th day in Soybean



Plates showing germination on 6th day in Mung.

Results and Discussion

As per observation, on 6th day of germination compound no. V and VI showed maximum germination in Soybean and in Mung also. Concentration of protein shows maximum in compound VI; concentration of carbohydrate shows maximum in compound VI in Soybean and in Mung. So from the observation it is clear that the compound V i.e. 2-hydroxy,

3-methoxy phenyl 4-thiazolidinone and the compound no. VI i.e. Nickel complex with hydrazone shows the excellent results. The maximum fresh wt. & dry wt. shows in compound V and VI in Soybean and Mung also. The compound no VI shows maximum root length in Soybean and maximum shoot and root length in Mung. So these two compounds are useful as the growth regulators for agriculture purpose.

Table 1. Germination Percentage per day of soybean and Mung

		GERMINATION PERCENTAGE PER DAY OF SOYBEAN & MUNG											
Compounds	Concentration in ppm	1day		2day		3day		4day		5day		6day	
		S	M	S	M	S	M	S	M	S	M	S	M
I	50	-	-			35	30	50	50	60	75	75	80
	25	-	-			40	35	60	60	70	75	80	85
	5	-	-			60	50	70	70	75	80	85	85
II	50	-	-			25	30	40	50	60	75	80	80
	25	-	-			30	35	45	60	65	70	80	85
	5	-	-			40	50	60	75	70	80	80	85
III	50	-	-			20	25	30	35	45	50	60	65
	25	-	-			25	35	35	50	50	75	70	80
	5	-	-			30	40	40	60	60	80	80	80
IV	50	-	-			25	30	40	50	55	60	65	70
	25	-	-			30	40	50	50	65	70	75	75
	5	-	-			40	50	60	60	75	75	80	80
V	50	-	-			40	35	60	55	80	85	100	100
	25	-	-			50	45	65	70	85	85	100	100
	5	-	-			55	50	75	75	90	90	100	100
VI	50	-	-			40	45	60	60	85	80	100	100
	25	-	-			45	55	65	70	80	85	100	100
	5	-	-			40	45	60	75	80	100	100	100
VII		-	-			40	35	60	55	80	85	100	90
VIII		-	-			20	30	40	50	60	75	80	80

Where S stands for Soybean and M stands for Mung

Table 2. Fresh and dry weight of Soybean and Mung

Sample	Compound no.	Fresh weight	Dry weight	Sample	Compound no.	Fresh weight	Dry weight
Soybean	I	80 mg	32 mg	Mung	I	270 mg	14 mg
	II	590 mg	30 mg		II	280 mg	15 mg
	III	600 mg	30 mg		III	290 mg	13 mg
	IV	570 mg	31 mg		IV	270 mg	13 mg
	V	600 mg	30 mg		V	300 mg	14 mg
	VI	610 mg	33 mg		VI	300 mg	16 mg

References

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