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IN VITRO STUDY OF POTENTIZED HOMOEOPATHIC MEDICINE CARBO VEGETABILIS ON GROWTH ACTIVITY OF GLYCINE MAX SEEDS.

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ABSTRACT An in vitro experiment was conducted during rainy season of the year 2019, Pune, Maharashtra to evaluate the action of potentized homoeopathic medicine Carbo vegetabilis with its different potencies on soya bean (Glycine max) seeds infected by pathogenic fungi Rhizoctonia solani by measuring its growth parameters along with analysis of soil. This study involves observing plant self – defense mechanism against pathogenic fungi Rhizoctonia solani by treating the soya bean seeds by homoeopathic medicine Carbo vegetabilis potencies 3CH, 6CH, 12CH, 30CH, 200CH, 1M. The study showed the anti fungal action of potentised homoeopathic drug Carbo vegetabilis 3CH, 6CH, 12CH, 30CH, 200CH and 1M on the growth parameters like height and weight of shoot and root along with new number of pods of soya bean seeds against the pathogenic fungi. Observation showed that Carbo vegetabilis 30CH, 200CH and 1M showed significant germination of soya bean seeds infected by pathogenic fungi Rhizoctonia solani. The potentised homoeopathic medicine Thus result obtained from the study indicates that Carbo vegetabilis have anti fungal action against Rhizoctonia solani in high dilutions then lower dilution. Thus Homoeopathic medicine can be used as fertilizer for agriculture purpose.

KEYWORDS : Homoeopathic Medicines, Potentised Homoeopathic Medicine, Pathogenic Fungi, Plant Growth Parameters.

INTRODUCTION

Christian Friedrich Samuel Hahnemann (1755 to 1843), the founder of Homoeopathic, used for treating the human's sufferings has shown a positive result in curing. Hahnemann used to say that if that law of nature is true, then Homoeopathy can be apply to all living beings. Hahnemann found out that substance lost its toxic effect after series of dilutions and is capable of inducing cure, M. V.Toledo et al (2011).

In Agriculture research, Agrohomoeopathy is one of the new approaches. In recent years various scientific studies showed the effectiveness of Potentized Homoeopathic medicines which can alter physiological activities, Pearcy RW et al (2012) of plant, the rate of enzymatic activities, Burns RG et al (2001), total sugar protein, Morkunas I et al (2014 Jul 1; 36 (7); 1607-19) and chlorophyll , Von Wettstein D et al, (1955 Jul; 7(7): 1039) contents in plants. It also shows its effectiveness as an anti fungal and anti bacterial on crops been seen in studies.

Literature on Agrohomoeopathy by, Pawan et. all., (2014 p 667-70), suggests that Homoeopathy medicine is not only used for healing human beings but also used in Animal Husbandry and in Agriculture as Agrohomoeopathy. The Homoeopathy medicine use in agriculture is selected on the basis of their mode of action and simillinum of drug picture. Different Homoeopathy medicines is use to fight stress cause symptoms in different conditions with significant results. Improvement in germination and growth, in controlling pest, disease and viral infection, etc has been seen on various crop which is also been reported. As plants are essential and unique they need different approach, as the science of Homoeopath has great potential which will give new approach to researcher for alternative in agriculture.

Agrohomoeopathy is chemical free and non – toxic method for crop production. Study also showed the use of Ultra high dilution of Homoeopathic medicines, Tayyeba (2017 p. 21-25) for various purposes in agriculture. Proper selection of drug and its potency makes effective results. As compare to chemical fertilizer the Homeopathic drugs are more cost effective, Williams et al (1977 p.60-65) and it's required in very less amount. For that reason agrohomeopathy can be a good alternative to traditional agriculture and pest control methods in India. Agrohomeopathy can be practiced along with biofertilizers which reduces dependency of chemical fertilizers and pesticides (O'brien RD (2014) June, Sen S (2018). Different experiment done on agriculture with Homoeopathic showing positive result (Singh HN et al (2015), Panda S. et al (2013), A Hanif et al (2017), Edwin P et. al (2017) p. 53-58)

Thus in present in-vitro study the potentized homeopathic medicine namely Carbo vegetabilis (Homoeopathic Pharmacopoeia of India Vol I; Monograph 242, 252, 297) with potency 3CH, 6CH, 12CH, 30CH, 200 CH and 1M. (A textbook of Homoeopathic Pharmacy by Dr S. K Dubey, p 248- 255) is used (numbers indicate dilution of homeopathic remedy, C= Centesimal) to observe the effectiveness on the growth parameter and fungal activity of soya bean seeds. The fungus used in the study is Rhizoctonia solani. EL ZARKA AM (1965), Sinchair (1970), Weiss, F., (1953).

MATERIAL AND METHODS

Sample Selection

The seed of soya bean for was obtained from local market of Pune, Maharashtra. The malformed or damage seeds were discarded and the remaining healthy seeds were included. From the selected soya bean seeds 185 seeds are taken for experimental suppose, majorly divided into two set A and set B group with one original and two replicates for different potency of Carbo veg used in this research wherein 5 seeds are used for each set. Another group is the control group which consists of 5 seeds

Table No. 1 Sample Distribution

Group	Description	Treatment receive	N Number of seeds
1	Control	Water	5
2	Rhizoctonia solani	Hom.Medicine–Carboveg. 3CH,6CH,12CH,30CH,200, 1M (with their two replicates)	180

Collection Of Drug

Homoeopathic medicine Carbo vegetabilis with different potency i.e., 3CH, 6CH, 12CH, 30CH, 200, 1M was procure from Organon Homoeo Laboratory Pvt. Ltd.

Organism

The fungus that was used for this experiment was *Rhizoctonia solani* which was procure from (NFCCI) National Fungii Culture Collection of India with MCC No. 188.

Soil Properties

The soil used for experiment was taken from the experimental field. Thus the soil obtained was pass through sieves which discards the large pebbles. The soil used was sandy, loamy with pH (7.7 - 8.0%), moisture holding capacity (24.05%). The natural infestation of R. solani (5-10%) has been recorded, G. N. Odvody, et al (1979 December 20).

Seed Treatment With Homoeopathic Medicine

2% sodium hypochlorite solution is used for 5 minutes to sterilize seeds, washed twice in sterilized distilled water to remove all dust particles from seeds, Shahnaz Dawar et.al (2015). The washed seed were treated with suspension of homoeopathic drugs with different concentrations by keeping it overnight and then sown in the caret.

Preparation Of The Caret –

The carets used was washed under running water and dried. The caret is cover from inside with black pole thin plastic paper so that the soil is not washed off from the caret. The caret is divided into two part named as set A and set B. Further it is again divided into three small blocks. The partition was done by using plastic coated card board.

Estimation Of Growth Parameters

As this study is base on the estimation of the growth parameter of the soya bean (Glycine max) seeds the height, weight of shoot and root with number of pods is consider. These parameters were observed in three different stages of growth i.e., Vegetative stage - 12th day, Flowering stage – 3rd week (when there is one flower at any node on the main stem is open), Seed-forming stage – 10th week app (Phyllis Higley A Dissertation for the Degree of DOCTOR OF PHILOSOPHY p. 44 - 45).

Statistical Analysis-

The experiment was conducted in triplicate values were expressed as mean along with standard error mean of growth parameter using Graph Pad version 8.0.2 (Graph Pad Software, Inc, USA). The value shows significant value.

DISCUSSION AND RESULTS

The study conducted showed significant effects of Carbo vegetabilis as anti fungal on soya bean plant. The tables below give mean value of the medicines and control group. Where the mean value is zero indicates that there is no action over the seeds which includes Carbo vegetabilis potency 3CH, 6CH and 30CH and control group. The specific mean value in the table indicates that the medicine has successfully acted over the fungus with significant results. Carbo vegetabilis 12CH, 200CH, and 1M has shown action over the fungus. Thus the present results suggests that seed treatment with Carbo vegetabilis 12CH, 200CH and 1M showed better growth of plants.

Table No 2 - Shoot Height Ofsoya Bean Plant Infected With Rhizoctonia Solani.

Stage of growth	Hom.potency of Carbo veg	Shoot Height in centimeters cm±SD	
		Medicine	CONTROL
Vegetative stage	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	6.633±0.058	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	7.400±0.173	0.000±0.000
	1M	7.400±0.100	0.000±0.000
Flowering stage	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	62.167±1.041	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	109.733±3.573	0.000±0.000
	1M	112.333±6.429	0.000±0.000
Seed-forming	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	53.000±0.500	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	113.933±1.779	0.000±0.000
	1M	118.667±5.485	0.000±0.000

Table No 3 - Root Height Ofsoya Bean Plant Infected With Rhizoctonia Solani.

Stage of growth	Hom.potency of Carbo veg	Root Heightin cm±SD	
		Medicine	CONTROL
Vegetative stage	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	2.533±0.153	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	3.233±0.058	0.000±0.000
	1M	2.433±0.751	0.000±0.000
Flowering stage	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	62.167±1.041	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	87.633±7.433	0.000±0.000
	1M	91.833±1.607	0.000±0.000
Seed-forming	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	66.000±3.279	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	98.900±1.217	0.000±0.000
	1M	102.300±4.503	0.000±0.000

Table No 4 - Shoot Weight Ofsoya Bean Plant Infected With Rhizoctonia Solani.

Stage of growth	Hom. potency of Carbo veg	Shoot Weight in grams±SD	
		Medicine	CONTROL
Vegetative stage	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	62.000±1.000	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	118.667±6.506	0.000±0.000
	1M	126.500±16.256	0.000±0.000
Flowering stage	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	147.333±0.577	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	163.000±1.732	0.000±0.000
	1M	172.667±2.082	0.000±0.000
Seed-forming	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	525.667±1.155	0.000±0.000
	30CH	0.000±0.000	0.000±0.000

	200CH	740.000±8.660	0.000±0.000
	1M	851.000±1.732	0.000±0.000

Table No 5 - Root Weight Of Soya Bean Plant Infected With Rhizoctonia Solani.

Stage of growth	Hom.potency of Carbo veg	Root Weight in grams±SD	
		Medicine	CONTROL
Vegetative stage	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	0.717±0.006	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	0.413±0.422	0.000±0.000
	1M	1.553±0.516	0.000±0.000
Flowering stage	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	1.600±0.000	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	2.500±0.000	0.000±0.000
	1M	2.507±0.443	0.000±0.000
Seed-forming	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	2.887±0.085	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	2.957±0.051	0.000±0.000
	1M	3.917±0.072	0.000±0.000

Table No 6 - Number Of Pods In Flowering Stage And In Seed – Forming.

Stage of Growth	Hom.potency of carbo veg	Number of pods	
		Medicine	Control
Flowering stage	3CH	0	0
	6CH	0	0
	12CH	5	0
	30CH	0	0
	200CH	6	0
	1M	7	0
Seed-Forming	3CH	0	0
	6CH	0	0
	12CH	7	0
	30CH	0	0
	200CH	9	0
	1M	9	0

Table No 7 - Growth Of Pods (cm)

Stage of Growth	Hom.potency of carbo veg	Podssizeincm	
		Medicine	Control
Flowering stage	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	2.933±0.058	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	3.800±0.000	0.000±0.000
	1M	4.000±0.100	0.000±0.000
Seed-Forming	3CH	0.000±0.000	0.000±0.000
	6CH	0.000±0.000	0.000±0.000
	12CH	3.167±0.208	0.000±0.000
	30CH	0.000±0.000	0.000±0.000
	200CH	4.500±0.000	0.000±0.000
	1M	4.667±0.058	0.000±0.000

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