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# Phytotoxic effect of Trichodesma indicum (L)R.Br. on Cajanus cajan (L) Millsp.

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**Abstract**

Root and Shoot extract of Trichodesma indicum (L) R.Br. exhibited allelopathic effect on Red gram (Cajanus cajan(L)Millsp.). A significant reduction in the size of the root and hypocotyl size was observed when the seeds of Red gram were treated with root and shoot extracts of Trichodesma indicum. The effect of this treatment studied on the size of the hypocotyl, root, germination percentage, number of lateral roots. The root extract promoted the formation of more number of lateral roots, where as the stem extract was found to inhibitory in all the cases.

**Keywords:** Allelopathy, hypocotyl, germination percentage, stem extract, inhibitory effect.)

## INTRODUCTION:

Plants are chemical factories and some plants store and secrete chemicals that are harmful to other plants. These chemicals may be located in the leaves, stems and roots of plants. They may be secreted from roots into the soil environment, leached or washed from the surface of aerial plant parts, leached form dead plant parts lying on the soil surface or released from decaying vegetation incorporated in the soil.

Allelopathy is defined as the biochemical interaction between plants. Molisch (1937) coined this term it refers to all stimulatory and inhibitory biochemical interactions between the plants including microbes. It generally refers to the detrimental effects of

Plants of one species (donor) on the germination growth or development of another species (recipients). Allelopathic effects of some weeds on germination and growth of Chickpea was studied by Angiras et.al. Goel reported Allelopathic effect of weeds associated with gram. The present study deals with the Allelopathic effect of Trichodesma indicum on seed germination and growth of Red gram (Cajanus cajan).

## MATERIAL AND METHODS:

The germination test of Cajanus cajan was conducted in the laboratory using petridishes and filter paper pads. Different parts viz, root, stem and leaf of Trichodesma indicum were used in the present investigation.

To study the effect of plant extracts; 5g of fresh material of Trichodesma indicum root and shoot was ground to a fine paste diluted with distilled water and filtered through whattmann filter paper. The filtrate was made up to 100ml and it was used for experiments. Five ml of various extracts together with control were added for treatment in petridishes provided with filter paper pads having 50 seeds each of Cajanus cajan. The filter paper was moistened with the root and shoot extract as and when needed. Distilled water served as a control. The petridishes were kept under laboratory condition and the germination was recorded after 24 hours. The maximum and minimum temperatures during the course of study were $27.5 \pm 2^0$ C and $10.6 \pm 1^0$ C respectively. The germination percentage, length of root, length of hypocotyl, number of lateral roots was recorded on the $6^{th\ day}$ of germination.

## RESULT AND DISCUSSION:

The result of experiments has been presented in Table-1. The data reveals that the shoot and root extracts of Trichodesma indicum reduced the germination percentage of Red gram. The results of the present study shows that the root and hypocotyl length of Red gram was significantly reduced by the root and shoot extracts of Trichodesma indicum. The present study reveals that stem extract has more inhibitory effect on root length, hypocotyl length, and number of lateral roots. But the root extract has not shown significant effect.

**Tabel-1** Effect of root and shoot extract of Trichodesma indicum on the seed germination, root length, hypocotyls length, no. of lateral roots of Red gram. ( Three replicates were taken in the aforesaid study.)

| Treatment | Germination ( percentage) | Root length (cm) | Hypocotyl length (cm) | Total no. of lateral roots (No) |
|---|---|---|---|---|
| Control | 100% | 9.50 | 10.10 | 8.0 |
| Root | 87% | 6.68 | 7.50 | 11.0 |
| Stem | 86% | 5.20 | 5.42 | 6.0 |

Angiras et.al., have carried out the studies pertaining to the Allelopathic effect of some weeds on Germination and Growth of Chick pea ( Cicer arietinum L.). They reported that root length, shoot length and leaf development of chickpea were significantly reduced by boiled and un boiled extracts of all the weed species as compared to check at 10 days after sowing.

Mall, L.P and J.C.Dagar (1979) were studied the effect of Parthenium hysterophorus extracts on the germination and early seedling growth of three crops. Jeyarmurthy and Lakshmanachary (1989) have carried out the studies pertaining to the effect of root extract of Chloris barbata Sw and Digitaria griffithii. Stafp on the germination of Eleusine corancana ( L. ) Gaertn. They reported a significant inhibition of seed germination in both the treatments, however it was more pronounced in the case of former.

## CONCLUSION

Different parts of the plants contain varied type of chemicals and sometimes the same chemical may be contained in various parts of plants but their concentration may differ. For instance, the amount of Parthenin and alkaloid is more in stem trichomes and less in its pollens. In the present study the root extract of Trichodesma indicum has been found to promote the lateral root number (Table-1) indicating that there is some rooting hormone which favours these parameters. On the contrary the stem extract proved to be inhibitory in all the cases.

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