

Allelopathic effects of Batawali (*Tinospora tuberculata*) on germination and seedling growth of plants.

ABSTRACT

A study was undertaken to explore the effects of methanol extracts (100,50, 25, 12.5 and 6.25 g/l) from the dried powders of aerial parts of Batawali (*Tinospora tuberculata*) on emergence and initial growth of rice, radish, lettuce and carrot as represented by germination percentage, radical and hypocotyle length. Results indicated that both stem and leaves of Batawali markedly raised the suppression of germination and primary growth of all examined crops when plants were exposed to increasing the methanol extract concentrations from 6.25 to 100 g/l of distilled water. The half-inhibitory concentrations that inhibit germination (EC_{g50}), radicle (EC_{r50}) and hypocotyle (ECh₅₀) growth were determined for both the extracts. According to these values, an index (Re) was calculated in order to establish a ranking of the most sensitive plants and most effective extract. It was observed that the leaves extract was more active than the stem extract and caused the greatest negative effect on germination and early growth of plants. All tested plants differed in their sensitivity to *T. tuberculata* extracts. Higher reduction in plant growth parameters was observed in carrot. The tested extracts inhibited mainly the growth of radicle more than the growth of the hypocotyle and germination percentage in all examined crops, except carrot. According to the study, it could be concluded that *T. tuberculata* extracts had a significant herbicidal activity which depended on the extract concentrations, plant parts and the target crops.

Keyword: Allelopathy; Early seedling growth; Herbicidal activity; Inhibition; Methanol extract; *Tinospora tuberculata*.