

## Morphological and Elements Constituent Effects of Allelopathic Activity

**Authors :** Areej Ali Baeshen

**Abstract :** Allelopathy is a complex phenomenon that depends on the concentration of allelochemicals. It has both inhibitory and stimulatory effects, which may be decided by concentration of allelochemicals present in extraction. In the present study, the allelopathic effects of *Eruca sativa*, *Mentha peperina*, and *Coriandrum sativum* water extract prepared by grinding fresh leaves of the medicinal plants in distilled water and three concentrations were taken from the crude extracts (100%, 50% and 25% in addition to 0% as control), and were tested for their effects on seed germination and some growth parameters of *Zea mays*. The experiment was conducted in sterilized Petri dishes under the natural laboratory conditions at temperature of 25°C, with a 24 h, 48 h, 72 h, 96 h and 120 h time interval for seed germination and 24 h, 48 h and 72 h for radicle length. The effects of different concentrations of aqueous extract were compared to distilled water (control, 0%). In maize, germination percentage was suppressed when plants was treated with 100% extracts, however, 50% and 25% of *M. peperina* increased germination percentage by 4 times more than the control. Moreover, 50% and 25% extracts of *M. peperina* and 50% of *C. sativum* increased maize radicle and plumule length by 3 to 4 times that of the control. Results of plumule fresh and dry weights revealed that concentrations of water extracts of 100% and 50% *M. peperina*, *E. sativa* 100% and *E. sativa* 50% reported almost similar plumule fresh weight as in control plants. The most interesting finding is the reduction in harmful salts and TDS which could be a good factor in saline soils of Saudi Arabia.

**Keywords :** *Zea mays*, *Eruca sativa*, *Mentha peperina*, *Coriandrum sativum*, medicinal plants, allelochemicals, aqueous extract

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