

## Exploring 55 tropical medicinal plant species available in Bangladesh for their possible allelopathic potentiality

### ABSTRACT

The current research was conducted to investigate the allelopathic properties of 55 medicinal plant species of Bangladesh representing 32 different families. The aqueous leaves or whole plant extract of those plant species was diluted into four different concentrations viz., 1:5, 1:10, 1:15, 1:20 (w/v) and tested against the seedling growth of *Raphanus sativus*. A control (distilled water without extract) was also maintained in every cases and the bioassay experiment was replicated thrice. The aqueous extract of all these species inhibited both shoot and root length of *R. sativus* at concentration greater than 1:15 (w/v) except *Delonix regia* (Fabaceae) and *Leucas aspera* (Lamiaceae). The inhibitory activity was concentration dependent and root growth was more sensitive than their shoot. Among the plant species, *Citrus aurantifolia* (Rotaceae), *Moringa oleifera* (Moringaceae), *Annona muricata* (Annonaceae), *Aegle marmelos* (Rutaceae), *Cinnamomum tamala* (Lauraceae) and *Azadirachta indica* (Meliaceae) completely (100%) inhibited the shoot and root growth of *R. sativus* at concentration 1:5 (w/v). Other than this six plant species, 15 out of 49 medicinal plants showed more than 95% shoot and root growth inhibition at the same concentration. The least allelopathic potential plant was *Garcinia mangostana* (Clusiaceae) that showed on an average 36% growth inhibition followed by *Schleichera oleosa* (Sapindaceae). Based on these results it can be concluded that among the tested plant species, *C. aurantifolia*, *M. oleifera*, *A. muricata*, *A. marmelos*, *C. tamala*, and *A. indica* are strongly allelopathic and therefore, could be used as potential candidates for the development of eco-friendly natural herbicides.

**Keyword:** Medicinal plants; Tropical plants; Bio-herbicide; Eco-friendly; Sustainable agriculture