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Bio-Herbicidal potential of *Lantana camara* L. on the growth and physiological parameters of *Triticum aestivum* L. and its major weedsTauseef Anwar¹, Noshin Ilyas¹, Rahmatullah Qureshi¹, Muhammad Azeem Malik¹ and Maria Khan Panni²¹Pir Mehr Ali Shah - Arid Agriculture University, Pakistan²The University of Agriculture Peshawar, Pakistan

Statement of the problem: Plant species contain different allelochemicals that may have inhibitory effect against weeds” This research work carried out at Plant Physiology Laboratory, Department of Botany, Pir Mehr Ali Shah - Arid Agriculture University, Rawalpindi, Pakistan and at Bioactive Natural Products and Phytochemicals (BNPP) Laboratory, Department of Horticulture, Michigan State University, Michigan, USA to screen out *Lantana camara* for its allelopathic activity against major weeds viz. *Phalaris minor*, *Avena fatua*, *Chenopodium album*, *Euphorbia helioscopia* and *Rumex dentatus* of wheat crop. Preliminary screening of selected species was carried out in laboratory on filter paper, soil and agar by extraction method (aqueous, hexane and methanolic) and plant sandwich method. *L. camara* methanolic extract significantly suppressed germination percentage of *E. helioscopia*, *P. minor*, *R. dentatus* and *A. fatua* measuring 65%, 63%, 61% and 60% respectively, whereas no substantial effect on germination percentage of *T. aestivum* and *C. album*. *L. camara* significantly suppressed radical length (cm) of *A. fatua*, *P. minor* and *C. album* 54%, 53% and 52% respectively. There was no substantial effect on radical length (cm) of *T. aestivum*, *R. dentatus* and *E. helioscopia*. *L. camara* suggestively repressed plumule length (cm) of *E. helioscopia*, *C. album*, *R. dentatus* and *A. fatua* 56%, 55%, 53% and 53% respectively. Three fractions from *L. camara* leaf methanolic extract obtained by combiflash. Fraction 2 exhibited significant inhibitory potential against test weeds while wheat crop remains unaffected. Assessment of physiological effects on weed species by fraction 2 significantly suppressed chlorophyll, superoxide dismutase, peroxidase and protein contents of the entire weed. The GC-MS and NMR (Proton and Carbon) analysis of *L. camara* methanolic fraction 2 showed it possess four active compounds (Methyl linoleate, Methyl palmitate, Methyl stearate and Methyl oleate). This is the first report on the identification of potential allelopathic compounds from the active fraction against selected weeds of wheat crop. Allelopathic potential of these four active compounds was not reported previously against selected weeds of wheat crop.

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