Screening for natural inhibitors of germination and seedling growth in native plants from Central Argentina

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Resumen

Ethanol extracts obtained from aerial parts of 71 native plants from Central Argentina were tested for their herbicidal activity in germination assays on Avena sativa and Raphanus sativus. Extracts derived from Angelphytum aspilioides, Baccharis salicifolia, Cortaderia rudiuscula, Eupatorium hookerianum and Mandevilla laxa, showed 100% inhibition of the germination of A. sativa at 10mg/ml. In the case of R. sativus, extracts from Achyrocline tomentosa, Angelphytum aspilioides, B. salicifolia, Melissa officinalis, Minthostachys verticillata, Ophryosporus charua and Podranea ricasoliana, applied at 10mg/ml, showed 100% germination inhibition. For each extract, the mean effective concentrations that inhibit germination (ECg50), root (ECr50) and shoot (ECs50) growth were determined. According to these values and the extract yield, an index was calculated in order to establish a ranking of the most active plants. For inhibition of A. sativa, the ranking was B. salicifolia>A. aspilioides>C. rudiuscula>M. laxa>E. hookerianum. The ECg50, ECr50 and ECs50 of B. salicifolia against A. sativa were 0.36, 0.88 and 0.91mg/ml, respectively, showing more activity than that of 2,4-D as a germination inhibitor and 44 and 1.1 times less active than 2,4-D as a root and shoot inhibitor, respectively. The ranking for the inhibition of R. sativus was O. charua>A. aspilioides>P. ricasoliana>B. salicifolia>A. tomentosa>M. officinalis>M. verticillata. The O. charua extract presented ECg50, ECr50 and ECs50 of 1.04, 1.04 and 1.49mg/ml, respectively. According to the obtained results, the extracts of B. salicifolia and of A. aspilioides were the only ones capable of inhibiting the germination and growth of both test species.

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