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EFFECT OF HANDROANTHUS IMPETIGINOSUS EXTRACT AND FRACTIONS ON SEED GERMINATION AND SEEDLING DEVELOPMENT OF NICOTIANA TABACUM

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The increasing use of synthetic herbicides, exacerbated by a lack of regulation, poses serious environmental and human health risks. Therefore, natural alternatives, such as bioherbicides derived from secondary metabolites, are becoming increasingly attractive. The species *Handroanthus impetiginosus* (Mart. Ex Dc.) Mattos, known as purple ipê, is rich in compounds such as naphthoquinones, flavonoids, and tannins, and possesses diverse biological activities[1]. This study evaluated the effect of *H. impetiginosus* extract and fractions on the *in vitro* germination of seeds and development of *Nicotiana tabacum* (tobacco) seedlings. The methanol extract was prepared from *Handroanthus impetiginosus* seeds using a Soxhlet apparatus. Liquid-liquid extraction of the plant extract fraction yielded dichloromethane (DCM), acetoethyl (ACT), and hydromethanol (HID) fractions. Tobacco seed disinfection was performed using an ethanol/sterile water solution (7:3, v/v) for 1 min and a 2% NaOCl solution in sterile water plus a drop of TWEEN® 20 for 30 min under mechanical pressure. In a laminar flow chamber, one seed was placed in 15 mL of Murashige and Skoog (MS) medium, and the extract and fractions were added. The controls were gibberellin (positive) and MS medium supplemented with DMSO 1% (negative). After inoculation, the seeds were kept in the growth room for 30 days[2]. The parameters analyzed at the end of the test were germination, number of leaves, nodes and shoots, stem and root size for seedlings, and shoot and root dry weight. The results demonstrated an increase in the *in vitro* germination rate of *N. tabacum* seeds in the presence of EM and the HID fraction, and a reduction in the DCM fraction. The ACT fraction completely inhibited seed germination at higher concentrations. Samples of the extract and fractions of *H. impetiginosus* demonstrated an inhibitory effect on *Nicotiana tabacum* when compared to the positive control hormone gibberellin, with an action similar to that of bioherbicides.

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[2] Biocatalysis and Agricultural Biotechnology, 103523, 64 2025. https://doi.org/10.1016/j.bcab.2025.103523

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