

Allelopathic Effect of Maca



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Introduction

Lepidium meyenii Walp. (Maca), a cruciferous plant, is an important root vegetable (Fig.1) and medicinal herb (Fig.2), which is native to the high Andean Mountain of Bolivia and Peru. Seed germination is generally inhibited when it is planted after a production cycle of Maca. This may be attributed to the possible Maca allelopathic property.



Fig. 1. Morphology of Maca



Fig. 2. Maca root supplements

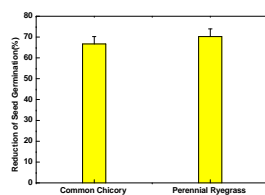


Fig. 3. Inhibitory role of Maca foliage extracts on seed germination of Common Chicory and Perennial Ryegrass

Materials and Methods

Maca foliage residue was incubated in hot water and then placed in room temperature for 24 hours. The solution was used to screen for its effect on seed germination of Common Chicory (*Cichorium intybus* L.) and Perennial Ryegrass (*Lolium perenne* Lam.). Three replicates with 50 seeds each were treated with the above extract solution.

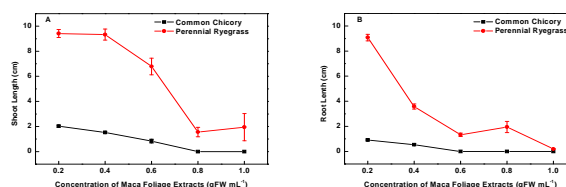
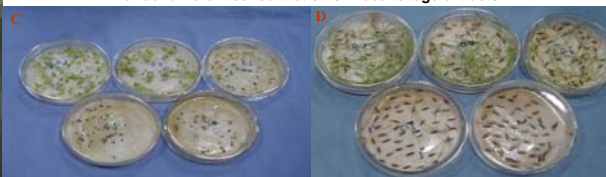


Fig. 4. Seedling growth (A, B) of Common Chicory (C) and Perennial Ryegrass (D) under different concentration of Maca foliage extracts



Results and Discussion

Compared with distilled water, Maca foliage extracts (0.2 gFW-mL⁻¹) significantly inhibited the seed germination by 66.7% for Common Chicory and 70.2% for Perennial Ryegrass (Fig.3). As the concentration of Maca foliage extracts increased from 0.2 and 0.6 gFW-mL⁻¹, shoot and root length of Common Chicory after 14 days of treatment decreased by 58.7% and 40.7%, respectively. For Perennial Ryegrass, a significant, negative linear correlation between the concentration of Maca foliage extracts (0.2 to 1.0 gFW-mL⁻¹) and its shoot and root growth had also been observed. Their shoot and root length decreased by 79.3% and 97.8%, respectively (Fig. 4).

Objective

To test Maca allelopathic effects on the seed germination and seedling growth.

Literature Cited

Thompson, A. C. 1984. The chemistry of allelopathy: biochemical interactions among plants. American Chemical Society, Washington, DC.

Conclusion

Allelopathy of Maca occurred in the field to inhibit seed germination and seedlings growth of other plants.