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Nematocidal Activity of *Allium hirtifolium* (Persian Shallot) Against *Rhabditis* sp.

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Abstract: The nematocidal activity of hydroalcoholic extract obtained from the bulbs of *A. hirtifolium* was investigated. Mortality average of *Rhabditis* sp. filariform larvae for concentrations 1.250, 0.312 and 0.075 mg mL^{-1} was 52.3, 47.6 and 35%, respectively. The extract showed anthelmintic activity against *Rhabditis* sp.

Key words: *Allium hirtifolium*, nematocide activity, *Rhabditis* sp., mortality, Iran

INTRODUCTION

Nematodes of the family Rhabditidae are abundant in soil and water. The nematodes of this family have free living and parasitic forms in their life cycles (Abolafia and Pena-Santiago, 2007). In this study, we used *Rhabditis* sp. as model for anthelmintic research at first time. Persian shallot or *Allium hirtifolium* is a species of the family Liliaceae, a native plant in Iran (Harris *et al*., 2001; Taran *et al*., 2006).Traditional medicine uses genus *Allium* plants such as *A. sativum, A. schoenoprasum, A. cepa* for treatment of infectous diseases such as bacterial, fungal, viral, protozoal and helminthic diseases (Harris *et al*., 2001; Taran *et al*., 2006). The aim of this study is to present anthelmintic activity of *A. hirtifolium* hydroalcoholic extract against *Rhabditis* sp.

MATERIALS AND METHODS

Plant materials: For preparation of *A. hirtifolium* hydroalcoholic extract, *A. hirtifolium* bulbs were collected from Khansar, Iran. Then, the small slices of *A. hirtifolium* bulbs were macerated in ethanol/water (50:50) for one month at 10°C and the filtrated extract air-dried in room temperature.

Nematode: For evaluation of nematocide activity of hydroalcoholic extract of *A. hirtifolium*, filariform larvae of *Rhabditis* sp. Prepared in Helminthology laboratory, Department of parasitology, Tehran University of medical sciences, Tehran, Iran.

Nematocide evaluation of hydroalcoholic extract obtained from *A. hertifolium*: Filariform larvae of *Rhabditis* sp. were collected from agar plate. Then, approximately 50 larvae added to each concentration of hydroalcoholic extract of *A. hertifolium*. nematocide activity for each concentration was tested three times. The larvae viability was determined by microscope.

RESULTS AND DISCUSSION

In this study, mortality average of *Rhabditis* sp. filariform larvae for concentrations 1.250, 0.312 and 0.075 mg mL^{-1} of hydroalcoholic extract was 52.3, 47.6 and 35%, respectively. *A. hirtifolium* killed larvae of *Rhabditis* sp. at high concentrations. Therefore, this plant has some nematocide components. The plants of genus *Allium* have parasitic agents such as allicin, ajoen and other organosulfide (Harris *et al*., 2001; Urbina *et al*., 1993). Parasitic cells are more sensitive than host cells to allicin and allicin-derived componenets(Urbina *et al*., 1993). The extracts of some species of genus *Allium* reduce growth of organisms by inhibition the synthesis of macromolecules and decreasing the oxygen uptake (Szymona, 1952; Adetumbi *et al*., 1986; Ghannoum, 1988; Harris *et al*., 2001).

CONCLUSION

In this study, hydroalcoholic extract of *A. hirtifolium* exhibits anthelmintic activity against filariform larvae of *Rhabditis* sp.

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