

***In vitro* studies on *Ambrosia maritima*: I-Morphogenic responses and algal toxins elicitation**

(Received: 12.08.2000)

Mahmoud M. Saker^{*}, Sanaa M. Shanab^{} and Mortda R. Khater^{***}**

^{*}Plant Cell & Tissue Culture Department, National Research Center, Giza, Egypt.

^{**}Botany Department, Faculty of Science, Cairo University, Giza, Egypt.

^{***}Horticulture Research Institute, Agricultural Research Center, Giza, Egypt.

ABSTRACT

The molluscicidal effect of sesquiterpene lactones of *Ambrosia maritima* on snails (intermediate vectors of *Schistosomia*) has been proven in Egypt. Here we present our results regarding establishment of tissue culture system for the production of active ingredients *in vitro*. Calli cultures were proliferated from leaf explants onto MS medium supplemented with 1 mg/l BA + 1 mg/l Kin + 0.1 mg/l NAA. The highest percentage of explants forming callus from leaf explants of *Ambrosia* (80%) was recorded onto MS medium supplemented with 1 mg/l BA + 1 mg/l Kin + 0.1 mg/l NAA. Shoot proliferation was restricted to MS medium contained 2 mg/l Kin + 0.5 mg/l NAA. The obtained data regarding the effect of increasing levels of toxic algal extracts (*Microcystis aeruginosa* and *Nodularia harveyana*) on damsine and ambrosine content of *Ambrosia* suspension cultures indicated that a maximum damsine and ambrosine yields can be achieved by adding either 10% of *Nodularia harveyana* extract or 20% of *Microcystis aeruginosa* extract. These results showed that high levels of damsine and ambrosine can be successfully produced from cell suspension cultures under standardized conditions.

Key words: *Ambrosia maritima*, tissue culture, biotic elicitors, algae.

INTRODUCTION

Ambrosia maritima L., locally known as damesisa, is a wild plant, native to Southern Europe and Africa, growing in the coastal areas near rivers, canals and rice fields and sometime, is reported as a weed in crop fields. Its medicinal interest is due to its molluscicidal activities. The lethal effect of sesquiterpene lactones of the plant on snails (intermediate vectors of *Schistosomia*) has been proven in Egypt (Sherif and El Sawy, 1962, 1977 and Abdel-Salam *et al.*, 1984). Damesisa is not toxic to non-target organisms (rats, rabbits, algae and daphnia (Geerts *et al.*, 1992, 1994). Nowadays, its used in some renal

tea due to its proved effect in renal colic and expel renal stones.

Depending on genetic and environmental factors, Egyptian Damesisa shows different morphology, higher efficiency and molluscicidal activity than the Senegalese species (Tрист *et al.*, 1989) and many trials have been done to cultivate *A. maritima* of Egypt for the replacement of *A. senegalensis* of Senegal (Vassiliades *et al.*, 1986). Accordingly, a great demand for Egyptian damesisa is raised. Due to insufficient wild plant material needed for local market and unavailability of agricultural lands and water resources for cultivation of damesisa, introduction of plant tissue culture is needed,