

***In vitro* studies on *Ambrosia maritima*:**

II-Fungal elicitor enhances sesquiterpene lactones accumulation

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ABSTRACT

Ambrosia maritima L. (compositae) is a perennial herbaceous plant, widely distributed through the Mediterranean region and is considered as promising molluscicide for the treatment of sites infected with aquatic snails, intermediate hosts of the tropical disease (Schistosomiasis). Here we present our results regarding the effect of *Aspergillus niger* extract, as a fungal elicitor on sesquiterpene lactones accumulation in suspension cultures. Suspension cultures of *Ambrosia* treated with increasing concentrations of fungal extract (0, 20, 40, 60 and 80%) accumulated relatively high levels of total sesquiterpene lactones. The maximum yield was recorded in culture medium contained 60% of fungal extract. HPLC analysis clearly indicated that the level of the four major sesquiterpene lactones identified (namely, ambrosin, damsine, neoambrosin and hymenin) were two times greater than their levels in control cultures.

Key words: *Ambrosia maritima*, tissue culture, biotic elicitor, HPLC.

INTRODUCTION

Sesquiterpene lactones of *Ambrosia maritima* L. (compositae) are important raw material for the treatment of sites infected with aquatic snails, intermediate hosts of the tropical disease (Schistosomiasis). However, no attempts have been made to produce such compounds in plant cell cultures. In a previous work, we optimized a tissue culture system for *Ambrosia maritima* endemic in Egypt and elicitation of sesquiterpene lactones in its suspension cultures; toxic algal crude extracts were investigated (Saker *et al.*, 2000). It has been demonstrated that fungal extract induced

abiotic stress of normal, intact plant tissues leads to the induction and accumulation of secondary phytochemicals (Dicosmo *et al.*, 1982). Moreover, the ability of cultured plant cells to produce certain stress-metabolites in response to fungal elicitor appears to be a very important phenomenon.

Extensive work on the effect of fungal elicitors on the accumulation of phytochemicals (phytoalexins) by cultured cells and tissues of other plants has been done. Tietjen and Matern (1981) were the first to induce unspecified polyacetylenic stress-metabolites in cell suspension of *Carthamus tinctorius* using cell wall material derived from *Alternaria tinctorius*. Also, it was found that