Effect of some amino acids and biotin on callus and proliferation of date palm (*Phoenix dactylifera* L.) Sewy cultiver

(Received: 20.06.2004; Accepted: 21.07.2004)

O.H., EL-Shiaty,[*] S.F. El-Sharabasy[**] and A.H. Abd El-Kareim[**]

*Ornamental Horticulture Department, Faculty of Agriculture, Cairo University, Giza, Egypt.

**Central Laboratory for Date Palm Research and Development, Agricultural Research Center, Giza, Egypt.

ABSTRACT

Organic nitrogen has been reported to be involved in the control of both growth and differentiation of cultured plant cells. To study the role of organic nitrogen on callus growth and somatic embryogenesis of date palm (Phoenix dactylifera L.) Sewy cultivar, the effect of five amino acids (arginine, metheonine, cysteine, glutamine, asparagine) and the vitamin (biotin) was investigated. All of amino acids were added at the concentrations of 0.1, 1.0, 10.0, 50.0 and 100.0 mg/l and biotin was added at the concentrations of 0.01, 0.10, 1.0, 5.0 and 10.0 mg/l to MS medium containing 3 mg/l 2iP and 10 mg/l 2,4-D. The most active medium for callus initiation and growth was MS medium supplemented with glutamine at 50 mg/l or biotin at 5 mg/l concentration. Supplementing culture media with glutamine at a high concentration (50 or 100 mg/l) gave the highest number of embryos and shoots. Organic nitrogen seems to be a limiting factor in date palm culture, and its addition as glutamine and biotin has a beneficial effect.

***Key words**: Phoenix dactylifera, tissue culture, amino acids, organic nitrogen.*

INTRODUCTION

Tissue culture technique in vegetatively propagated plants is an alterative method to obtain rapid clonal multiplication. Media components such as amino acids and vitamins have been found to exert a profound effect on tissue culture systems of certain species. Optimization of such compounds can stimulate regeneration in recalcitrant cultivars (Benson, 2000). The amino acid glutamine is beneficial for embryogenesis and embryogenic callus growth of date palm (Abo El-Nil and Al-Ghamdi, 1986). Thiamine (vitamin B1) is generally considered to be an essential ingredient for plant tissue culture and is usually added at 0.1-5.0 mg/l. Biotin (vitamin H) is less common in culture media and usually added at 0.01-1.0 mg/l (Bhojwani and Razdan, 1983). Also, Al-Khayri, (2001) stated that the optimum callus growth of date palm was obtained by using MS medium consisted of 0.5 mg/l thiamine and 2.0 mg/l biotin. Moreover, (Khlifi and Tremblay, 1995) reported that for conifers as well as other species, L-glutamine should be considered as a major component of the medium during maturation of somatic embryos. This study was carried out to investigate the effects of organic nitrogen, supplemented as amino acids and vitamins, on callus initiation, embryogenesis and proliferation of date palm (*Phoenix dactylifera* L.) Sewy cultivar.