شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

شبكة المعلومات الجامعية

جامعة عين شمس

التوثيق الالكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأفلام قد أعدت دون أية تغيرات

يجب أن

تحفظ هذه الأفلام بعيدا عن الغبار

في درجة حرارة من ١٥-٢٥ مئوية ورطوبة نسبية من ٢٠-٤٠%

To be Kept away from Dust in Dry Cool place of 15-25- c and relative humidity 20-40%

بعض الوثائق الاصلية تالفة

بالرسالة صفحات لم ترد بالاصل

STUDIES ON SOME VARIETIES OF GLOBE ARTICHOKE USING TISSUE CULTURE TECHNIQUES

BY

SHAWKY ABD-EL-HAMIED BEKHEET

B.Sc. Agric. Alex. Univ. 1982
M.Sc.Agric. (Vegetable Crops) Ain Shams Univ. 1992

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Abstract

Shawky Abd-El-Hamied Bekheet . Studies on some varieties of globe artichoke using tissue culture techniques . Unpublished Doctor of Philosphy of Agriculture Science , Ain Shams Univ ., Faculty of Agricultue , Horticulture Department , 1997 .

This study aimed to establish an effective method for callus induction,plant regeneration, improve the in vitro propagation as well as investigate the salt tolerance in tissue cultures of globe artichoke .

Three varieties, namely, Balady, Imperial star, and Green globe were used in this study . The following results were achieved for various traits .

I- Callus induction and plant regeneration :

Callus cultures were established from cotyledon, leaf and stem explants of the three varieties. The growth paramters of calli derived from cotyledon differed depending on genotype . While variety Balady gave the highest values of growth on medium contained 2mg / l BA + 0.5 mg /l 2,4-D, it was found that, variety Imperial star showed the highest values of growth on medium contained 2mg/l BA+ 5mg/l NAA. Regarding Green globe variety, it was recorded the highest values of growth on medium contained 10 mg/l BA+ 5 mg/l NAA+ 0.1 mg/l GA3 . A relatively similar trend was observed in case of leaf derived callus. On the other hand, calli derived from stem explants of the three varieties recorded the highest values of their growth on medium contained 10 mg/l BA+ 5 mg/l NAA+ 0.1 mg/l GA3 .

Morphogenic response as shoot organogenesis on the different types of calli was noticed when medium contained 5 mg/l BA+ 2 mg/l NAA was used. The ability of organogenesis or shoot frequency were varied depending on genotype and type of calli .

II- In vitro propagation :

An efficient method of the in vitro shoot multiplication as well as enhancement of their vegetative growth was developed . Among the different combinations of growth regulators used, it was found that, 2mg/l BA+0.1 mg/l NAA gave the highest number of shoots and leaves .However, the highest shoots were obtained when medium contained 5mg/l

kin + 0.5mg/l IAA was used. Addition of 100mg/l myo- inositol recorded the highest number of shoots and leaves . However, the highest shoots were observed when 200 mg/l of myo- inositol was used .

Supplementation of rooting medium (1/2 MS+ 2mg/l NAA) by three coneentrations (0.05,0.1 and 0.5mg/l) of kin obviously improved the vegetative growth of plantlets of the different varieties .

III - Salinity stress studies

Fresh weight , dry weight and toleronce ratio of calli derived from the three varieties were depressed as the salt mixture increased in culture media Dry matter content increased as the salt concentration incresaed till 6000 ppm then declined . Sodium and calcium content of all varieties were increased with the increasing of salt till 8000 ppm . A positive correlation between proline content and salt concentration was observed . On the other hand, calli of the three varieties registered decreasing in their potassium content by increasing the salt levels in culture medium .

Regarding salinity stress on shoot cultures , the maximum values of growth parameters presented as number of shoots and leaves, length of shoots, fresh and dry weights (subsequently , tolerance ratio) and dry matter content were recorded at 2000 ppm of salt mixture . Then the values of growth parameters were decreased as salt concentration increased . Sodium, calcium and proline contents were increased as salt level increased . However, potassium content took an opposite trend in where its percent was decreased as salt concentration increased .

Increasing of salt level in culture media generally caused reduction in vegetative growth of the selected shoots presented as number of proliferated shoots and leaves as well as length of shoots . Moreover, their growth dynamics presented as fresh and dry weights (subsequently, tolerance ratio) and dry matter content were depressed as salt concentration increased . At high salt levels, the tolerance ratio of selected- shoots were higher than non - selected shoots . A sharp increasing in sodium, calcium and proline accumulation was observed as salt mixture increased . However, a slight decreasing in potassium accumulation (Compared with non - selected shoots) was noticed when the salt mixture increased.

Key Words :
Globe artichoke, Micropropagation , Callus Induction , Plant regeneration, Salinity stress .

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