Erratum to:

The importance of apical domination and the size of foliar surface in the acclimatisation process of *Chrysanthemum* exvitroplantlets

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Unfortunately, the paper contains some translation and technical errors.
The modifications are:

I. *apical domination* with apical **dominance**
II. *size* with **area**

Pag.85:
Title:
The importance of apical dominance and the area of foliar surface in the acclimatisation process of *Chrysanthemum* exvitroplantlets

Abstract. In this experiment it was studied the effect of apical dominance….

Keywords: *apical dominance*…

Pag 87: The importance of apical dominance and the area of foliar surface ….

III. The name of species is *Chrysanthemum morifolium* Ramat var. Lamet, not *Chrysanthemum morifolium* Lamet var. Ramat
IV.….Murashige – Skoog (1962), modified by us…. , will become: … Murashige – Skoog (1962), modified as follows: without glycerin…..

Pag 86:
The vitroplantlets, which was used in this experiment, was obtained from *Chrysanthemum* apical minicuttings (*Chrysanthemum morifolium* Ramat var. Lamet) cultivated "in vitro" on medium base (MB) Murashige – Skoog (MS) (1962), modified as follows: without glycerin …..

Fig. 2. The survivor of *Chrysanthemum* exvitroplantlets (*Chrysanthemum morifolium* Ramat var. Lamet)……

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References:
Teixeira da Silva J.A., Shinoyama H., Aida R., Matsushita Y., Raj S.K., Chen F., (2013): *Chrysanthemum* biotechnology: Quo vadis? Critical Reviews in Plant Sciences, 32(1): 21-52.

The importance of apical domination and the size of foliar surface in the acclimatisation process of *Chrysanthemum* exvitroplantlets

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Abstract. In this experiment it was studied the effects of apical domination and foliar surface in *Chrysanthemum* exvitroplantlets surviving to normal condition of life. I found that the survivor of *Chrysanthemum* exvitroplantlets has depended of harming rate at which they were exposed.

Keywords: *apical domination, foliar surface, acclimatization, Chrysanthemum*

Introduction

Apex of stem contain primary meristems, apicals that by multiplication give birth to cells, which suffer a differentiation process as moving off from apex, and in the end definitive tissue are born.

Apical dominance exercised by apical bud, formed through phytohormonal messages, can be removed also mechanical, by sectioning, and by some treatments applied to exvitroplantlets and to the plants in their natural environment as well (Cachita & Sand 2000).

"In vitro", kinetin, - used in optimal concentrations – can inhibit apical dominance exercised by terminal bud, allowing for offshoots to grow (Maene & Debergh 1987). Axilar bud treated with citoquinine start an active growing, in competition with terminal bud, but – when the citoquinine is removed – their growth is diminished and stops, they re-entering under the phytohormonal incidence exercised by apical bud (Cachita 1987).

Deberegh (1983) has appreciated that the utilization in culture medium of higher mineral salts concentrations is useful, in that phase in which the vitroplantlets buds are removed from apical dominance, but this measure, inhibit the neoformation of new roots, during "ex vitro" culture is transferred. As the medium culture is private of mineral salts the "in vivo" rooting reach higher level as well.

In my experiment, beside the variant in which it was removed mechanical exvitroplantlets apexes, in the transferred moment of these in greenhouse, it was made lots at which has proceeded to remove one half of each foliar limbs, knowing that the vitroplantlets does not contain an functional stomatal apparatus and the most important and obvious negative consequence caused by the transfer stress is the fastest plantlets dehydration. This can happen with all the measurements, which have been taken care, such as: precincts humidification in which the plants are growing, to avoid the damage caused by evaporation and perspiration; sheltering the cultures by direct sunlight and so on (Cachita et al. 2004). As the foliar surface is bigger, as the evaporation and perspiration is more intense. Thus, when the "ex vitro" plantlets transferring is desired on aseptic medium, it is not necessary have in view, an growing of foliar surface, because this involve, most times, the inhibition of rhisogenessis, much more important, in the moment of acclimatization at septic environment being the stimulation of forming the root system.

At photoautotrophic vitrocultures, is a positive interrelation between stomata's aperture and the CO_2 concentration, which conducts to enlargement of foliar surface, this result can be identified in the increasing of photosynthesis activity (Kozai & Iwanami 1988; Pospišilová &Co 1992; Fournioux & Bessis 1993). This fact is favorable in the moment of transferring them "ex vitro", knowing that the vitroplantlets, usually, without special interventions, have a nutrition mode heterotrophic - mixotrophic.

Taylor & Co (1994) had the opinion that the foliar surface can grow as a direct consequence of increasing the CO_2 concentration, in the plants atmosphere, as it was indicated at "in vivo" plants species. By Santamaria & Davis (1994) stomas closing can be a respond reaction at a higher level of CO_2 concentration in atmosphere, but "in vitro" stomas density and osteols aperture is much higher than other plants cultivated in natural conditions.

An smaller increase, but significant, of multiplication rate of *Delphinium* "in vitro" cultures, with a higher rate of survivor after transferring them "ex vitro" it was observed in culture recipients with an better ventilation provided by an obstruction with an filter (Murphy 1997). In vitrocultures recipients with perforations has recorded a higher rate of water loosing, relative humidity being higher than 95% in both recipient types, both those intact and those with filter. Better results recorded at *Delphinium* vitroplantlets has resulted from increasing the evaporation and transpiration and implicitly of water circulation inside the plants. Therefore, in this case evapotranspiration was a favorable element. But, in "ex vitro" period an excessive evapotranspiration, in the fund of a relatively lower humidity, in the absence of an rooting system to absorb loused water conduct to exvitroplantlets withering, especially in first acclimatization days (Vancea et al. 2000).

Material and Method

The vitroplantlets, which was used in this experiment, was obtained from *Chrysanthemum* apical minicuttings (*Chrysanthemum morifolium* Lamet var. *Ramat*) cultivated "in vitro" on medium base (MB) Murashige – Skoog (MS) (1962), modified by us, without glycerin, with vitamins add on: tyamin HCl, pyridoxine HCl and nicotine acid, 1mg/l each instead 0,5 mg/l, respectively 0,1 mg/l, 20 g/l saccharose, instead 30g/l and 7g/l agar-agar, instead 10 g/l, medium being without growing regulators.

After inoculation the cultures were exposed at 22±2°C at day and 20±2°C at night and a photoperiod about 16/24 hours. Culture illumination was realized with fluorescent lighting tubes with white light and bright intensity at 1700 lx.

To study the influence exercised by apical dome, concerning the exvitroplantlets survivor during acclimatization at greenhouse conditions, in the moment of transferring them "ex vitro" were realized four experimental lots:

V_0 – those exvitroplantlets that did not suffer any modification (control);

V_1 – those exvitroplantlets whom which was removed apical dominance, by apex sectioning, under the first nod, at the middle of apical internodes;

V_2 – those exvitroplantlets with apical dominance which foliar limb was removed in proportion of ½;

V_3 – those exvitroplantlets whom was removed both apical dominance and ½ of foliar limb (Fig. 1 A).

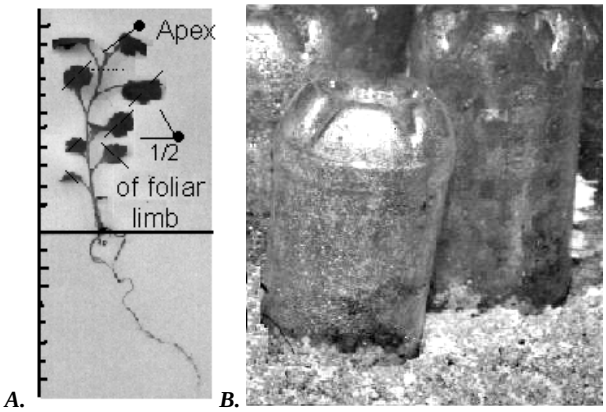

Fig. 1. Aspects of sectioning modes used at exvitroplantlets, in the moment of transferring them in greenhouse (A); acclimatization conditions (B)

At the moment of planting in greenhouse, it was respected a positioning of exvitroplantlets in perlite, at 5 cm distance one to another. The substratum was 10 cm high. To ensure an optimum humidity in the atmosphere surrounding plantlets and to avoid evapotranspiration, each exvitroplantlet was covered with a plastic glass care, colorless (Fig. 1 B), which – in the superior part – was pierce in four points, in diametric points, for obtain an good ventilation inside the glass care.

Exvitroplantlets were planted on parapets in greenhouse, in January, in a sort daytime period; the temperature was 22±2°C at day and 20±2°C at night, the illumination was naturally realized. In sunny days, between 11 – 14 hours, the exvitroplantlets were put in safe of sunlight's by covering them with a paper sheet.

At 7, 14, 21 and 30 days from transferring the exvitroplantlets "ex vitro" it was followed the percent of survivor rate.

Results and Discussions

In first 7 days from transfer the vitroplantlets in septic medium, they were withered in proportion of 10%, only those exvitroplantlets whom their foliar limb was diminished, but with an apical dominance (V_2) and those that the top was removed (V_3) (Fig. 2).

At 14 days for acclimatization the only withering – in 20% percentage – were registered at those whom were removed the apical dominance (V_3).

At 21 days after acclimatization, the exvitroplantlets whom was removed both apical top and ½ of foliar limbs and which were withered starting with 7 day after acclimatization, were totally destructed. Also at 21 days were withered 20% of those exvitroplantlets with apical dominance, but with those leaves that the foliar limb was diminished (V_2) (Fig. 2).

Paradoxically was the fact that the exvitroplantlets with no apical dominance and with intact foliar limbs (V_1) resisted in septic environment conditions, almost to the end of acclimatization period. They have resisted at critical period, which is in first acclimatization days, but at la 7 days of this period, one part of them has withered.

At 30 days from transferring the exvitroplantlets in greenhouse, the moment when there acclimatization were already totally realized (they had resisted in greenhouse conditions without being covered), the survival rate (Fig. 2) was 100% only on that lot which the exvitroplantlets had suffer no incision (control – V_0).

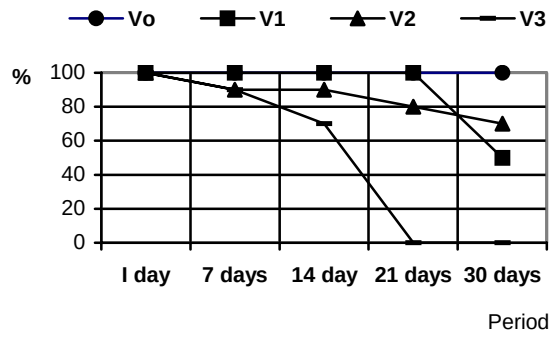

Fig. 2. The survivor of *Chrysanthemum* exvitroplantlets (*Chrysanthemum morifolium* Lamet var. *Ramat*) during their acclimatization period to greenhouse conditions: V_0 – those exvitroplantlets that did not suffer any modification (control); V_1 – those exvitroplantlets whom which was removed apical dominance, by apex sectioning, under the first nod, at the middle of apical internodes; V_2 – those exvitroplantlets with apical dominance which foliar limb was removed in proportion of ½; V_3 – those exvitroplantlets whom was removed both apical dominance and ½ of foliar limb.

Although, in last 9 days of acclimatization period, the exvitroplantlets whom – in the moment of placing them in perlite – was removed the apex (V_1), the apical dominance exercised by these implicitly, were withered to 50%, and those which had the top, but it was

removed ½ of each foliar limb (V_2) had presented an easily higher surviving rate.

Conclusions

1. *Chrysanthemum* exvitroplantlets which has not suffered modifications (control lot), had survived 100 % to acclimatization period to septic life environment, and those whom was removed the apical dominance by sectioning the top and it was half sectioned their foliar limbs has withered all. For this reason, we ca say that the survivor of *Chrysanthemum* exvitroplantlets – in ours experiments – has depended of harming rate at which they were exposed.

2. It seems that the presence of the apex have an positive part during chrysanthemum exvitroplantlets acclimatization, this fact is proved by higher acclimatization rate reached by these exvitroplantlets category which were not private of apical dominance, but whom was not diminished the foliar surface. Probably, the trauma shock at these exvitroplantlets is much higher than the case of cuttings propagation, when apex or foliar limb sectioning increase rhisogenessis process.

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