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# RESEARCH OF GROWTH ACCELERATION AND CALLUS DEVELOPMENT IN SOME POTATO LANDRACE EXPLANTS

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**Key words:** callusogenesis, potato landraces, inocula

**Abstract:** The low concentration of 2,4 - D in medium induced a low level of callus development. In these conditions, the callusogenesis process had a sporadic character in potato landrace explants.

## INTRODUCTION

A good callus development depends, first of all, on a normal concentration of 2,4-D in medium. On the other hand, a high level of callusogenesis is an undesirable situation for "in vitro" conservation of the plant genetic resources due to the genetic instability of callus. However, even in the absence of 2,4-D conditions, the callusogenesis process is moderately present.

## THE INVESTIGATIONS AIM

The purpose of this study was to analyse the behavior of the explants, belonging to some potato landraces of the Suceava Genebank collection, on a medium supplimented only with B.A. as cytokinin.

## MATERIALS AND METHODS

Buds belonging to 8 potato landraces, stored in Suceava Genebank, were surface - sterilized in an 0,1% $HgCl_2$ solution for 10 minutes, rinsed three times with sterile distiled water.

Table 1. Medium for incubation and growing

| Components | Amount (mg) | In medium (mg/l) |
|---|---|---|
| Mineral medium – MS | - | - |
| Thiamine Hcl | 200 | 2,0 |
| Myo-inositol | 12.000 | 120,0 |
| Saccharose | 30.000 | 300,0 |
| Gibberellic acid | 17 | 0,05 |
| Benzyl – adenine | 100 | 0,3 |
| Alfanaphtylacetic acid | 10 | 0,03 |

The inocula were explanted from apical meristem tips and placed on a Murashige - Skoog medium, supplimented with B.A., A.N.A. and $G.A_3$ as growth regulators (Table 1). All cultures were maintained at $+20^0$C under illumination with a 16 hrs photoperiod at about 3000 lx light intensity. After the incubation period (first 3-4 weeks), we transferred the inocula on a new fresh media to accelerate the growth. In this period (5-8 weeks) we observed and noticed the cultures with callus formated.

## RESULTS AND DISCUSSIONS

After the incubation period (3 - 4 weeks after the inoculation of the apical meristem tips), we ascertained a coming late of the cultures growth as a result of the

diminution of nutrients in medium. The first passages of inocula on new fresh media were made at the end of the incubation period (Table 2).

Table 2. The passages dynamics and callusogenesis in potato landrace explants

| Code no. | Passages no. | Passages period (weeks) | Callusogenesis (%) |
|---|---|---|---|
| 5142 | 11 | 4 | - |
| 5143 | 12 | 4 | - |
| 5137 | 13 | 5 | 25 |
| 5126 | 12 | 7 | - |
| 5136 | 15 | 9 | - |
| 8455 | 24 | 13 | 75 |
| 8287 | - | - | - |
| 5659 | 17 | 10 | 5 |
| Average | 13,0 | 6,5 | |

Multiple passages were applied in explants belonging to some potato landraces (e.g. 8455) and, in this case, the transfer period was longer.

A very particular situation was registered in potato landrace explants code no.8287. In this instance, the inocula developed very fast and, consequently, it was not necessary the transfer of potato explants and no callus developed.

In general, the passage period of the potato explants has been included between minimum 4 and maximum 13 weeks until the organogenesis period.

The callusogenesis process registered a low level, in this respect explants from only 3 potato landraces developping callus. The percentages of callus induction varied between 5% (landrace 5659) and 75% (landrace 8455) in survivor cultures.

## CONCLUSIONS

Our experiment showed that the passages period of the potato explants varied between 1 week (landrace 5659) and 13 weeks (landraces 8455). The average number of passages in this period has been 13,0 transferred inocula per potato landrace.

The callusogenesis process had a sporadic character and it was registered in only 3 potato landrace explants. The maximum percentage of callus induction (75%) was registered in one potato landrace explants.

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