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IN VITRO PROPAGATION IN SYRINGA JOSICKAEA Jacq.

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G.MOCUȚA

Abstract:

CORINA CĂTANĂ, ADRIANA FLORINCESCU, CORINA SUCIU, C.BELE, G.MOCUȚA
1998, *in vitro* propagation in *Syringa Josickaea* (in English), Not. Bot. Hort. Agrobot. Cluj,
XXVII-XXVIII.

The report deals with several aspects of micropropagation in *Syringa josickaea* Jacq. There were employed various types of meristems, i.e. apical, tip axillary internode axillary, as well as differing lengths of meristems (0.2; 0.4; 0.6; 1.0 mm). Woody Plant Medium (WPM) medium supplemented with AIA (0.25 ml/l), ANA(0.1ml/l), sacharose(30g/l), agar (7g/l), of 4.5 PH was used.

Also, the influence of meristem type and length on the neoplant rooting percentage was studied. It was found that the type of meristem influenced plantlet formation and rooting. Best results were recorded with apical meristems (48.4 % rooted plantlets). There is a positive correlation between the length of explant and the percentage of neoformation (explant length increase from 0.2 to 1.0 mm leads to the multiplication of this percentage by 3.7 times).

Keywords: *Syringa josickaea*, *in vitro*, propagation.

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Received: Field literature is of opinion that species in *Syringa* genus respond fairly well to micropropagation, as measured against other woody species. Due to its high rate of multiplication, *Syringa vulgaris* L. is among most fit species to introducing into *in vitro* culture. Contrary to this, *Syringa josickaea* Jacq. displays certain characteristics making it lesser fit to micropropagation. This study introduces several aspects tackled in the context of *in vitro* propagation of *Syringa josickaea*.

Material and method

The biological material was harvested from young branches of *Syringa josickaea* mother plant (grown al fresco in the Botanical Gardens of Cluj). After trimming stalk segments were made free of germs and practised the culture of one single tissue fragment/jar. Starting and growing of meristems was noticed after about three weeks and axillary-bud formation was rather sluggish (round about four weeks).

Meristems were inoculated on WPM medium to trigger growth tips to develop and the medium was supplemented with AIA (0.25 ml/l), ANA (0.1ml/l), saccharose (30g/l), agar (7g/l). Ph-value was of 4.5. The utilization of such type of medium favoured us to obtain 80% shoot initiation.

Plantlets of 2cm hight were kept in small culture for ten weeks when the plants grew 8 to 10 cm and formed 6 internodes on average. These neoplantlets made up the initial material meant for propagation by modal minicuttings. The plants were selectioned right in the middle of each internode, starting from the very tip. After detachment, minicuttings were passed on cultivation medium following the succession of detachment, i.e., from tip to base. The same WPM medium was used for subculture, differently supplemented, depending on the destination of the culture (shoot tips initiation, propagation, rooting, callus initiation and propagation). The meristems used in experiments had lengths of 0.2; 0.4; 0.6; 1.0 mm.

Results and discussion

To establish the influence of meristem type in the neoformation of plantlets there were sampled as many as five cuttings that offered, in this order:

- an internodal axillary meristem at approximately 3 cm distance from the central meristem;
- an axillary meristem in proximate vicinity of apex, about 1cm, that is;
- an apical meristem.

Meristems were transfered on to a WPM+ANA(0.1 mg/l) +BAP(7.5ml/l) medium. The culture was kept in vegetation chamber at 25C, photoperiod of 16 hours light, 8 hours darkness and 2.000 lux per surface unit.

After eight weeks of culture *in vitro*, the newly formed plantlets were transferred on WPM+ANA rooting media.

Rooted newly formed plantlets depending on type of drawn meristem (results recorded after ten weeks in culture)

Variant	Rooted newly formed plantlets	V3	V2	V1
		28.7	32.5	48.4
V1	48.4	**	*	-
V2	32.5	*	-	-
V3	28.7	-	-	-

The results recorded prove the existence of significant differences among types of meristems in so far as the formation of rooted plantlets is concerned. Best results were in apical meristems

forming an average 48.4% rooted neoplantlets. The poorest evolution was shown by internodal axillary meristems, i.e., only 28.7 p.c. rooted newly-formed plantlets.

Such differentiated evolution can be ascertained to the supply of endogenous components seemingly differing with the three meristem types which makes the organogenous response of the meristem be dependent on its position on the cutting.

The contribution of endogenous components had an important part with utmost effect at the tip of cutting and on its vicinity, effect decreasing with distance from the tip. This is due either to a progressive lowering in endogenous substances extant at the cutting tip or to alteration in the makeup of these components on moving of from the apex dome.

Using the three kinds of meristem had led to forming, on average, of 36.5 p.c. rooted neoplantlets. This allowed for obtaining *in vitro* of a substantial surplus of planting material accompanied by an important number of cuttings spared.

The length of meristems drawn is one of the most important factors in initiating *in vitro* culture, directly influencing the rate of propagation.

In order to stress the impact of meristems tallness on the formation of newly formed rooted plantlets a fourth variant experiment had been initiated, in which the meristems drawn were 0.2 to 1.0 mm long. There were drawn as many as five meristems per variant in two replicates, reaching an end number of 80.

The *in vitro* culture was obtained on WPM medium supplemented with ANA (0.1mg/l), BAP (7.5mg/l), saccharose (30g/l), agar (7g/l) till the length of 2 cm in plantlet was reached.

Newly formed and rooted plantlets depending on the length of meristem drawn (results recorded after ten weeks in culture)

Variant	Rooted newly formed plantlets
V1-0.2	14.3
V2-0.4	23.7
V3-0.6	37.5
V4-1.0	53.6

The increase in neoformation percentage direct proportionally with meristem-length increase is noticeable. With the increase in the length of explant - from 0.2 to 1.0 mm - the percentage of neoformation goes up 3.7 times. The explanation of such difference can be attributed on the basis of varying plant-tissue volume with the drawn meristem entered *in vitro* culture.

Conclusions

Meristems of *Syringa josickaea* inoculated on WPM medium supplemented with AIA(0.25 ml/l), ANA)0.1 ml/l), saccharose(30 g/l), agar(7 g/l), Ph of 4.5, have produced 80 p. c. shoot initiation.

Type of meristem had an impact on formation and rooting of the plantlets and the most satisfactory results were drawn with apical meristems(48.4%).

There is a positive correlation between the length of explant and neoformation percentage (increase in explant length from 0.2 to 1.0 mm will prompt an increment of 3.7 in this percentage).

Rezumat

Lucrarea tratează câteva aspecte ale micropropagării la specie *Syringa josickaea* Jacq. S-au utilizat tipuri diferite de meristeme (apicale, axilare de vârf, axilare de internod) și diferite lungimi ale meristemelor (0.2; 0.4; 0.6; 1.0 mm). S-a folosit mediul WPM (Woody Plant Medium) suplimentat cu AIA (0.25 ml/l), ANA (0.1 ml/l), zaharoză (30g/l), agar (7g/l), cu un pH de 4,5.

S-a studiat influența tipului de meristem și a lungimii meristemelor asupra procentului de neoplantule înrădăcinate. S-a constatat că tipul de meristem a influențat formarea și înrădăcinarea plantulelor, cele mai bune rezultate obținându-se la meristemele apicale (48.4% neoplantule înrădăcinate) și că există o corelație pozitivă între lungimea explantului și procentul de neoformare (creșterea lungimii explantului de la 0,2 mm la 1,0 mm determină sporirea acestui procent de 3,7 ori).

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Rezumat

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