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Effect of organic nanofibers carrying auxin on morphology and non-enzymatic antioxidant defense in *Stevia rebaudiana* Bert. under *in vitro* conditions

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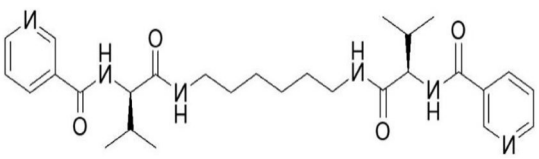
BACKGROUND: *Stevia rebaudiana* B. is an herbaceous perennial plant of Asteraceae family and is known as stevia, sweet leaf, honey leaf, and candy leaf. Stevia leaves contain many biologically active substances, which have beneficial effects on human health. The antioxidant activity of *in vitro* cultivated *S. rebaudiana* is influenced by growth regulators and amino acids added to the nutrient media.

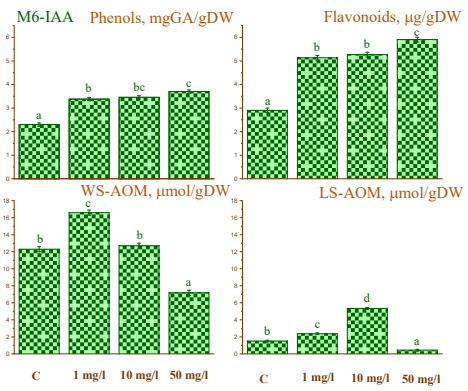
OBJECTIVE: This study aimed to evaluate the influence of the concentration (1, 10 and 50 mg L^{-1}) of organic nanofibers, carriers of plant growth hormone on the growth characteristics, physiology and biochemistry in *S. rebaudiana* plantlets.

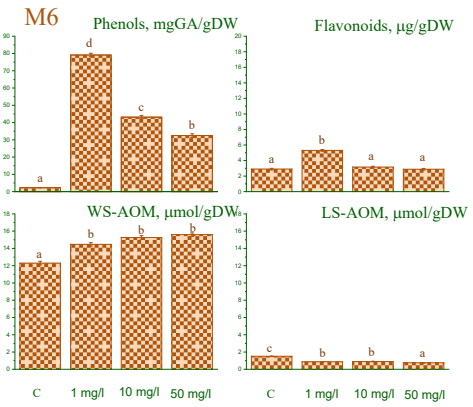


Structure of the compound M6

MATERIALS AND METHODS

The nanofibers structure (M6) contains two fragments - valine and nicotinic acid, linked together and doubled through diamino hexane spacer.
Shoot explants (1.5–2 cm) were cultured on MS media including vitamins supplemented with 3.0% sucrose and 7.0 g L^{-1} agar. The main biometric indicators of 30-day-old micro plantlets were determined. To quantify the main complexes of biologically active substances in *Stevia rebaudiana* Bert., a number of phytochemical spectrophotometric methods were used to measure the non-enzymatic antioxidant activity.





Compound	FW	Shoot height	Shoot number	Number of internodes	MR	Root formation %
Control	0,115	5,97	1,01	2,5	2,52	0,04
M6 (mg/l)						
1	0,229	7,621	1,75	5,767	10,09	65
10	0,249	9,538	1,95	5,265	10,28	85
50	0,213	7,192	1,65	4,80	7,92	75
M6+IAA (mg/l)						
1	0,185	5,413	1,70	3,875	6,59	100
10	0,191	5,706	1,75	4,125	7,22	100
50	0,176	4,713	1,55	4,058	6,29	85

In this study, the application of different concentrations (1 mg L^{-1}, 10 mg L^{-1} and 50 mg L^{-1}) of organic nanofibers (M6) carrying auxin (IAA) in MS medium during micropropagation provoke the metabolism of Stevia rebaudiana and led to better performance in some biometric parameters and to higher content of most metabolites with antioxidant potential.

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