

***In vitro* cultivation of *Stevia rebaudiana* by adding silver salts of amino acid-based nanofibers**

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Keywords

Stevia; *in vitro*; nanofibers

Research Objective: *Stevia rebaudiana* Bertoni is a valuable medicinal plant with wide application in the pharmaceutical and food industry. It is a source of sweet components (steviol glycosides), vitamins, minerals, amino acids, fatty acids, flavonoids, phenolic compounds, etc.

The increasing need for obtaining high biomass and secondary metabolites necessitates the using of biotechnological approaches for mass propagation of the plant. The present study describes the effect of silver salts of two types of amino acid-based nanofibers on some biometric characteristics and accumulation of phenols, flavonoids and soluble sugars in *Stevia* grown *in vitro*.

Ag⁺ ions are well known as an antimicrobial agent, an ethylene inhibitor, and a factor with a stimulatory effect on some morphological and biochemical parameters in plant tissue culture. In this research, the Ag⁺ ions were bound to amino acid nanofibers forming salts: Ag salt of decanoyl-L-Aspartic acid-N-hexylamide (NF1-Ag salt) and Ag salt of N,N'-Bis (N-decanoyl-L-Asparagine) diamino hexane (NF2-Ag salt). This implies the gradual release of Ag⁺ ions into the medium.



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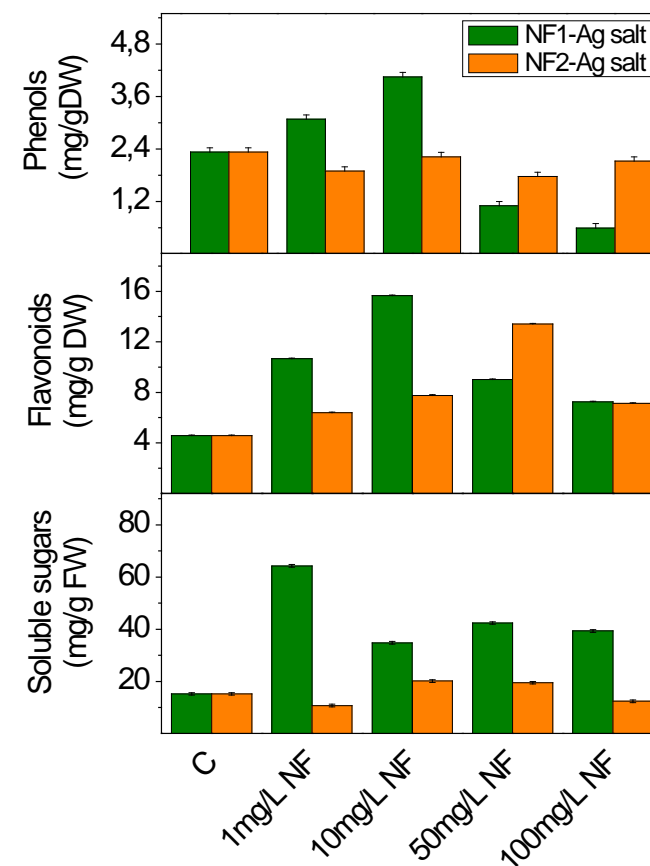
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	FW _{sh} (g)	DW _{sh} (g)	Height _{sh} (cm)	Shoot number plant ⁻¹	root initiation (%)
Control	0,115	0,018	5,97	1,00	0,00
1mg/L NF1-Ag salt	0,311	0,043	10,14	1,45	8,00
10mg/L NF1-Ag salt	0,374	0,076	6,39	1,99	5,13
50mg/L NF1-Ag salt	0,389	0,066	5,48	3,07	5,17
100mg/L NF1-Ag salt	0,237	0,020	2,01	1,44	5,26
1mg/L NF2-Ag salt	0,121	0,013	6,46	1,40	37,5
10mg/L NF2-Ag salt	0,105	0,015	5,10	1,39	62,5
50mg/L NF2-Ag salt	0,139	0,014	4,80	1,49	34,1
100mg/L NF2-Ag salt	0,061	0,009	2,16	1,30	40,0



Conclusion: NF1-Ag salt had favorable effect on the growth of the aboveground part of the plant, while NF2-Ag salt had a positive effect on root formation. The contents of the tested metabolites were higher after treatment with NF1-Ag salt than with NF2-Ag salt. The results showed that tested nanofibers enriched with silver salts are promising for mass propagation and production of valuable metabolites from *Stevia rebaudiana* Bertoni.

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