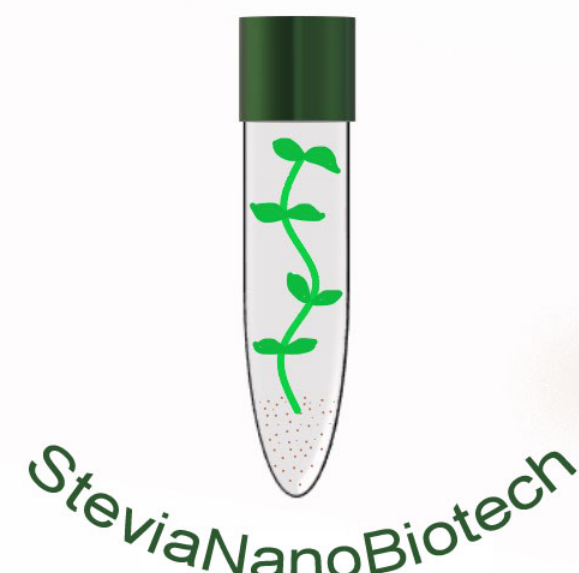


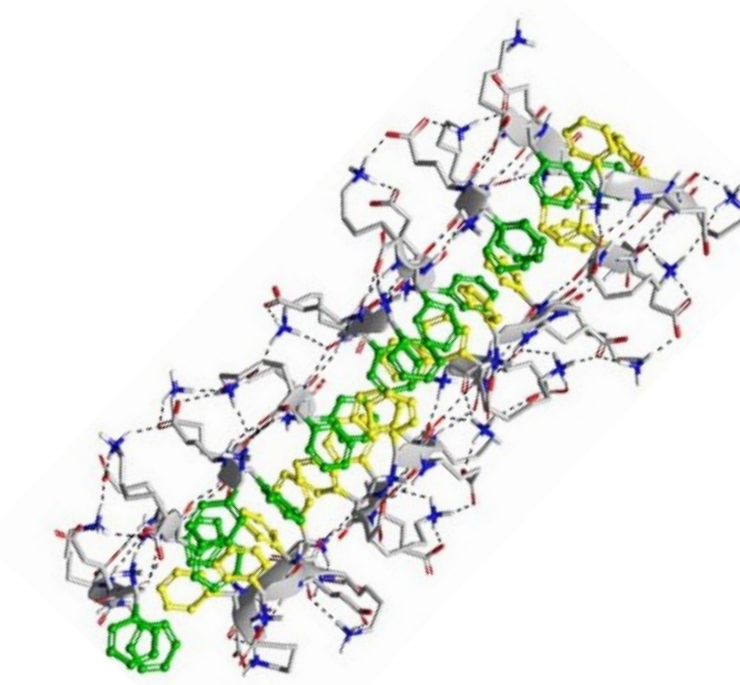
Maria Geneva²; Mariana Sichanova²; Kamelia Miladinova-Georgieva²; Maria Petrova²; Elisaveta Kirova²; Victoria Ivanova¹; Antoaneta Trendafilova^{*1}

¹Institute of Organic Chemistry with Centre of Phytochemistry, Bulgarian Academy of Sciences, Acad. G. Bonchev Street, Bldg. 9, 1113 Sofia, Bulgaria

²Institute of Plant Physiology and Genetics, Bulgarian Academy of Sciences, Acad. G. Bonchev Street, Bldg. 21, 1113 Sofia, Bulgaria



BACKGROUND: During the *in vitro* propagation, the addition of amino acids to the MS medium provides a primary fast source of nitrogen to plants. In addition to this function, amino acids also affect other physiological processes in plants. Despite the presence of numerous data in the literature on the impact of amino acids on the plant growth *in vitro*, there is no information about their effect if they are bound in a polypeptide chain with a diameter in the nanoscale, which to be a carrier of biologically active agents. The beneficial influence of AgNO₃ and silver nanoparticles on the plant *in vitro* regeneration is well known. However, only a few reports have evaluated the effect of silver ions on growth and secondary metabolite production of *S. rebaudiana* Bertoni.



OBJECTIVE: The present study aims to describe the influence of nanofibers, formed by low molecular weight peptidomimetics carriers of the silver ion (NF-2%Ag) on stevioside and rebaudioside A content in *in vitro* propagated *Stevia rebaudiana* Bert.

PLANT MATERIAL AND TREATMENTS: Shoot explants of *Stevia rebaudiana* Bertoni were cultured on following nutrient media:

- 1) Control MS (Murashige and Skoog nutrient medium);
- 2) Control MS + 0.5 mg/l 6-benzylaminopurine (BAP);
- 3) MS + 1.0 mg/l NF-2% Ag;
- 4) MS + 10.0 mg/l NF-2% Ag;
- 5) MS + 50.0 mg/l NF-2% Ag;
- 6) MS + 100.0 mg/l NF-2% Ag;

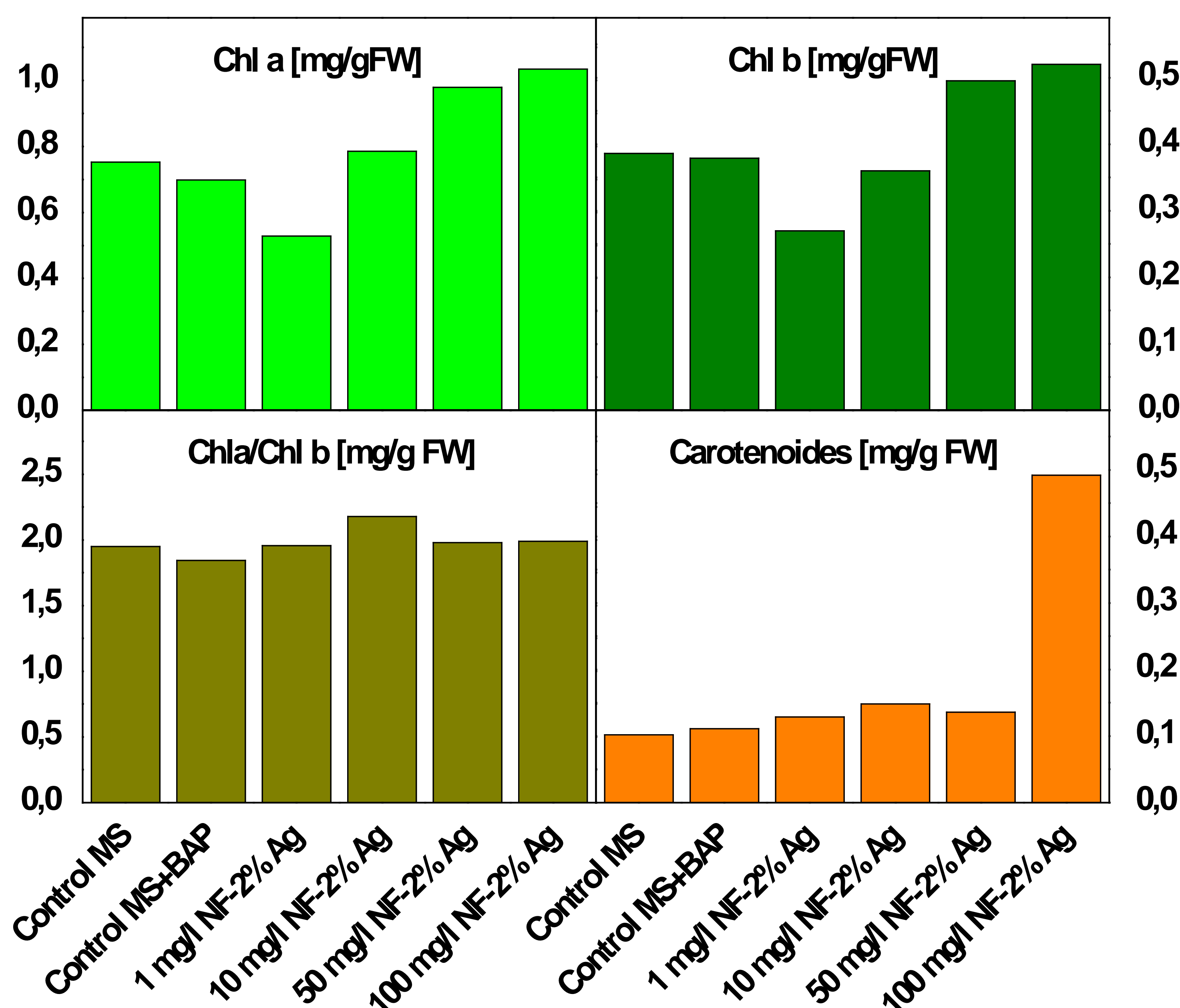
at 22±2°C and 16 h photoperiod for 4 weeks.



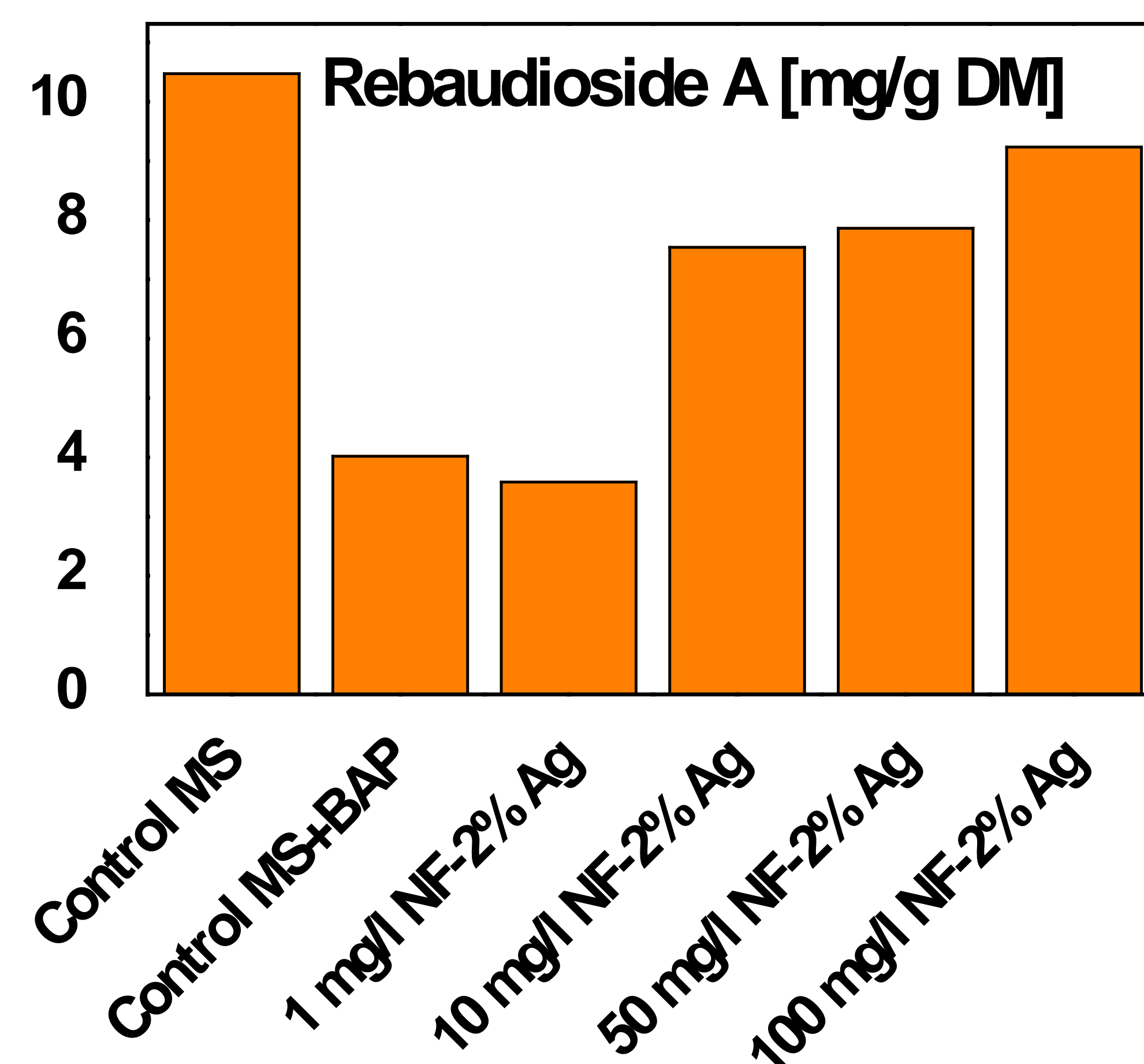
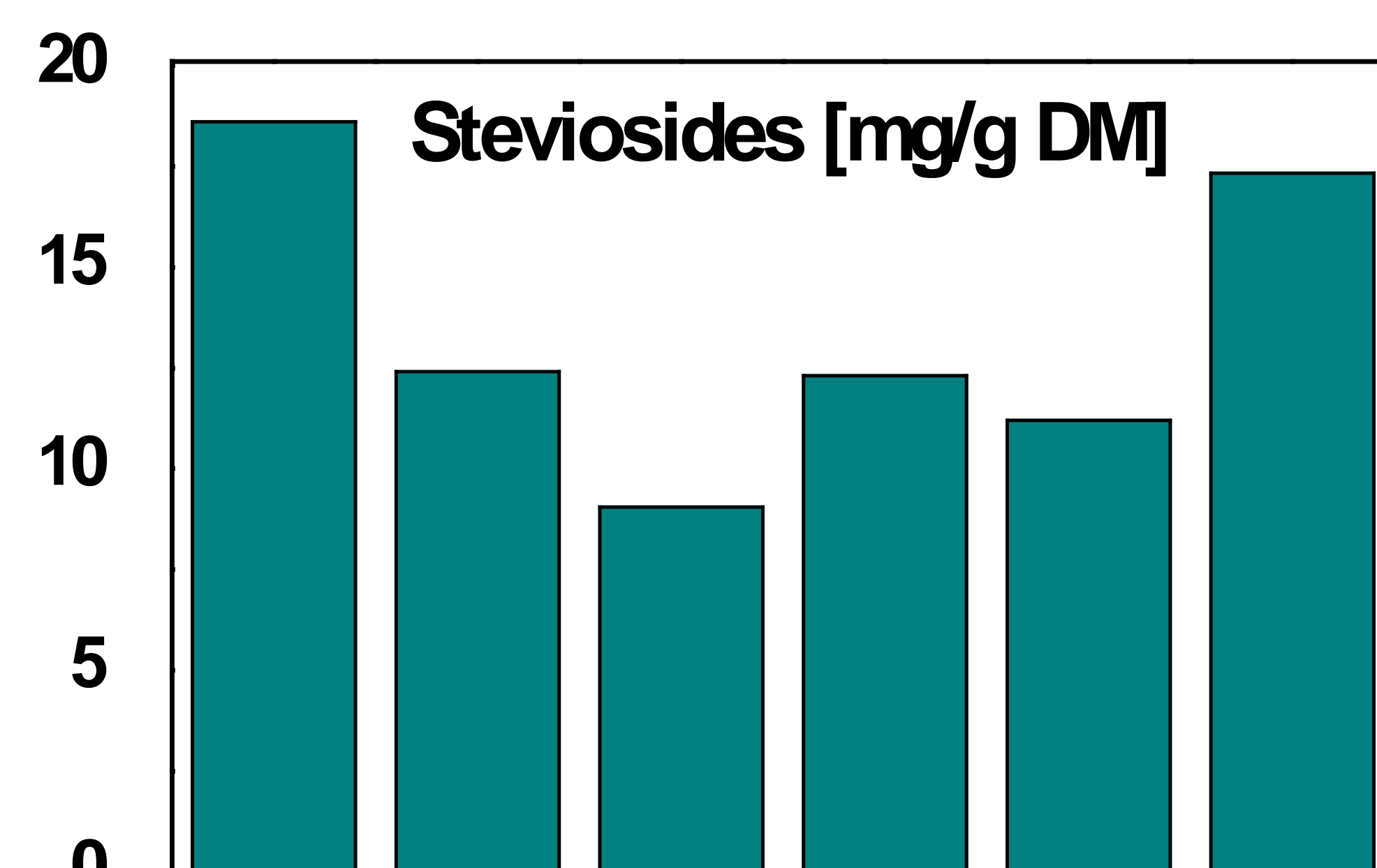
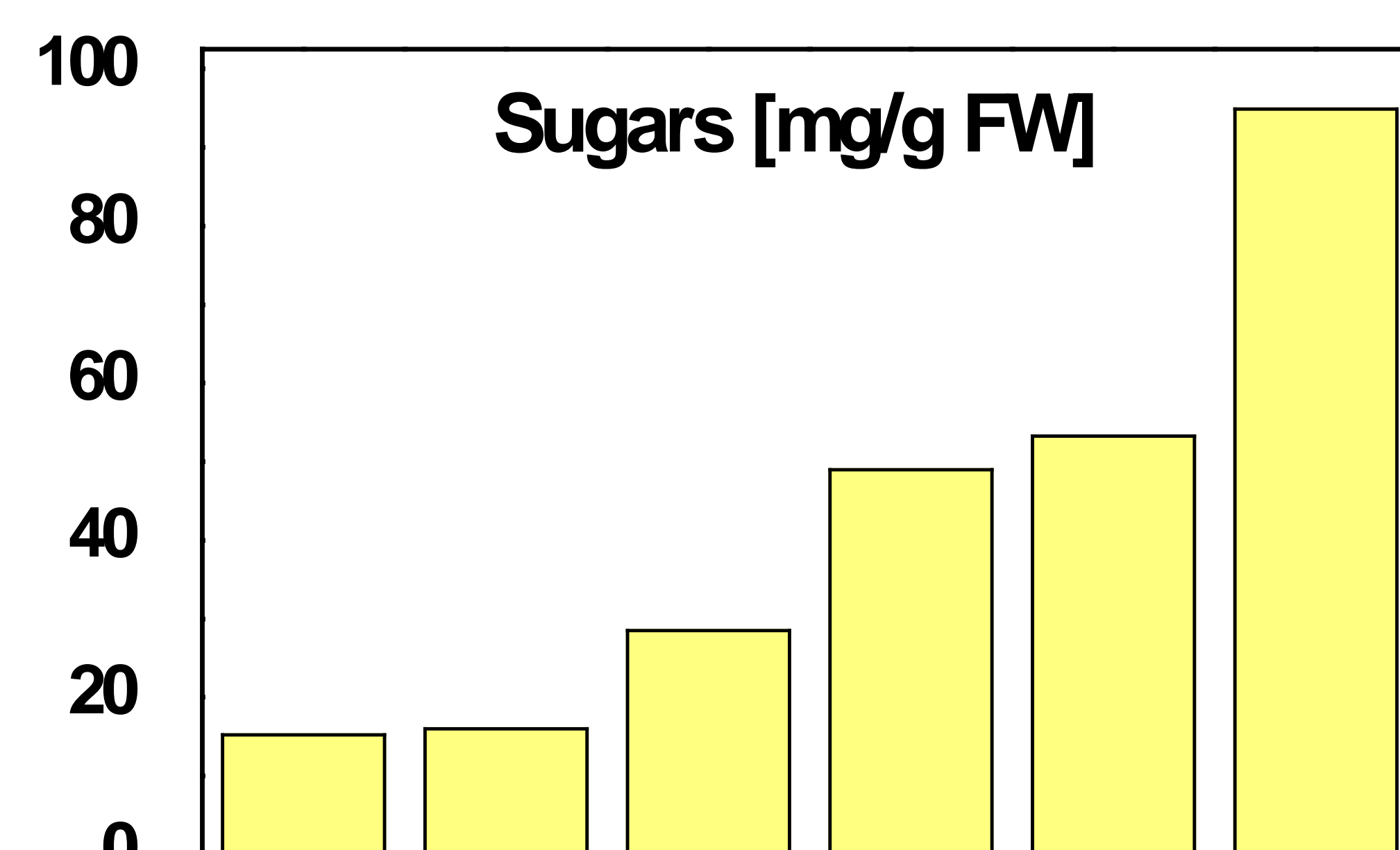
Control MS Control MS+BAP 1 mg/l NF-2% Ag 10 mg/l NF-2% Ag 50 mg/l NF-2% Ag 100 mg/l NF-2% Ag

Treatments	Shoot FW, g	Average plant length, cm	Average plant branches	Rooting, %
Control MS	0.115	5.97	1.0	0.042
Control MS + BAP	0.353	7.58	1.7	0
1.0 mg/l NF-2% Ag	0.377	8.28	2.44	13.68
10.0 mg/l NF-2% Ag	0.412	8.63	3.35	17.13
50.0 mg/l NF-2% Ag	0.464	10.79	3.25	26.43
100.0 mg/l NF-2% Ag	0.193	5.35	1.25	28

Effect of different concentrations (1, 10, 50 and 100 mg/l) of NF-2% Ag on *in vitro* growth of *Stevia rebaudiana* Bertoni



Effect of different concentrations (1, 10, 50 and 100 mg/l) of NF-2% Ag on pigment content in *Stevia rebaudiana* Bertoni grown *in vitro*



Effect of NF-2% Ag (1, 10, 50 and 100 mg/l) on the production of sugars, stevioside and rebaudioside A in *in vitro* cultivated *Stevia rebaudiana* Bertoni

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CONCLUSION: The results obtained from these analyzes make it possible to conclude that NF-Ag added to the MS media possessed hormetic effect. At low concentrations, they have a beneficial impact on plant growth, but at high concentrations had a harmful effect. This has been also confirmed by the established enhanced amount of stevioside and rebaudioside A that act as a defense secondary metabolites against stress conditions.