

Evaluation of the antioxidant activity of micropropagated *Stevia* affected by peptidomimetic nanofibers as an Ag carrier

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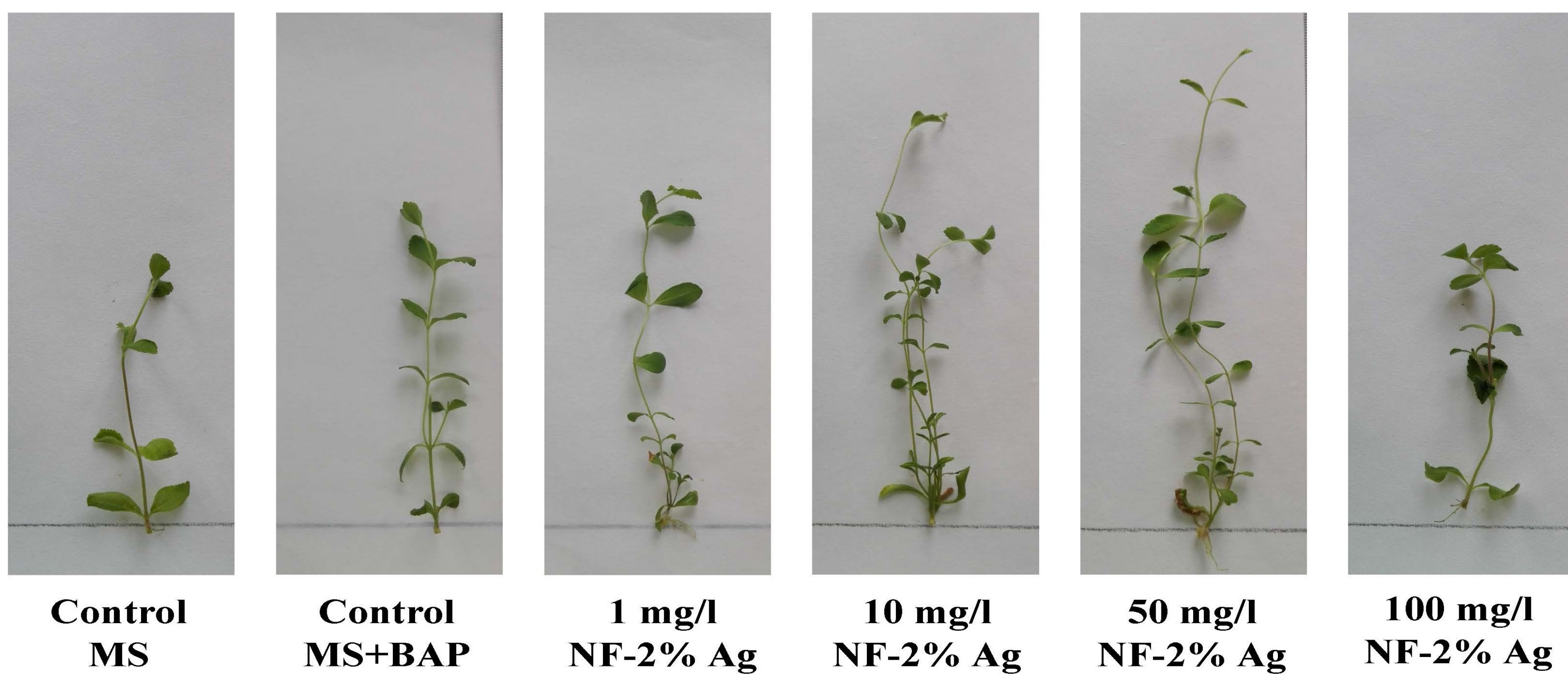
BACKGROUND: *Stevia rebaudiana* B. is an herbaceous perennial plant of Asteraceae family and is known as stevia, sweet leaf, honey leaf, and candy leaf. Stevia leaves contain many biologically active substances, which have beneficial effects on human health. The antioxidant activity of *in vitro* cultivated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

OBJECTIVE: The present study was conducted to evaluate the influence of nanofibers, formed by low molecular weight peptidomimetics (a derivative of amino acid Valine) as a carrier of the biologically active agent silver atoms/particles (NF-2%Ag) and their impact on the antioxidant activity of *S. rebaudiana* plantlets propagated by direct organogenesis.

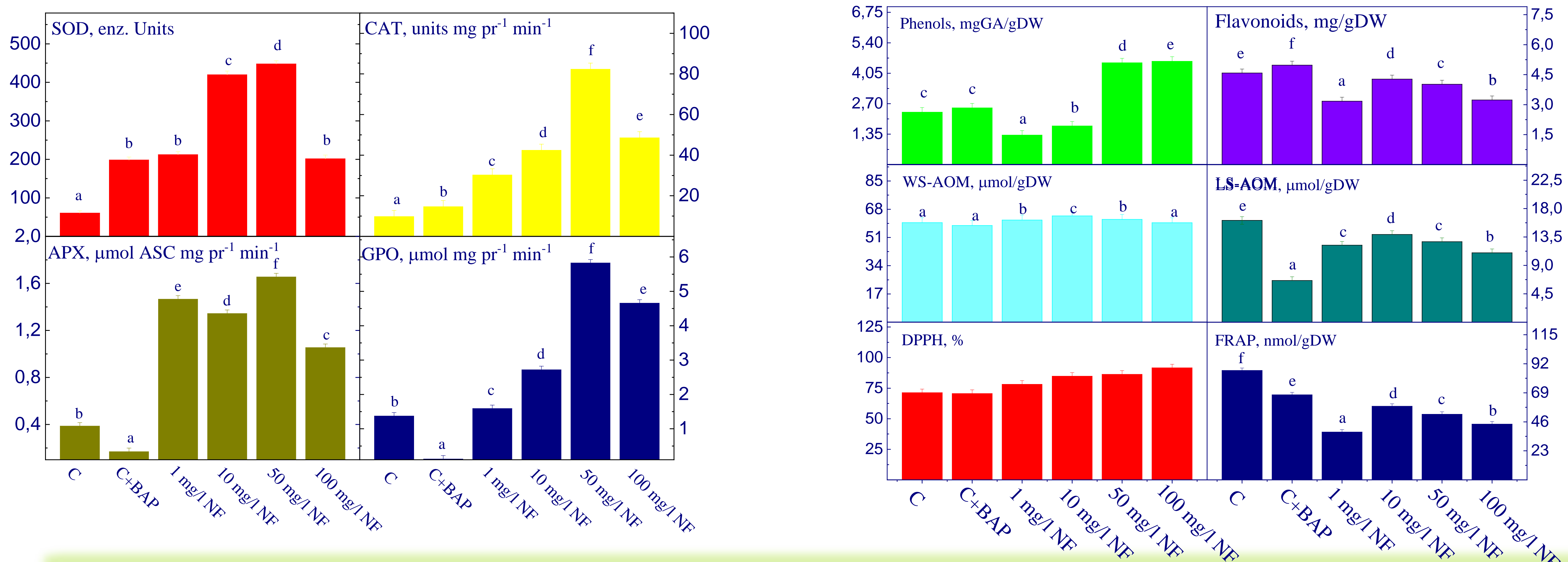
MATERIAL AND METHODS



For *in vitro* seed germination, *S. rebaudiana* seeds were cultured on an MS medium including vitamins supplemented with 3.0% sucrose, 7.0 g L⁻¹ agar and 0.4 mg L⁻¹ gibberellic acid and 1.0 mg L⁻¹ CaCl₂ for three weeks of culture. Stem explants (1 cm) were excised from three months *in vitro* shoots and placed onto MS medium supplemented with various concentrations (1, 10, 50, 100 mg L⁻¹) of aminoacid nanofibers enriched with 2% colloidal Ag particles (NF-2%Ag). The control plantlets were developed on two nutrient media – MS free of PGR and other additives and MS medium containing 0.5 mg L⁻¹ BAP (C+BAP).



Effect of different concentration NF-2% Ag (1mg/L, 10mg/L, 50mg/L, 100mg/L) on shoot micro propagation of *S. rebaudiana* on the MS nutrient medium, after 4 weeks of cultivation



Enzyme antioxidant capacity (SOD, CAT, APX and GPO activity), antioxidant potential and content of low molecular metabolites with antioxidant capacity as phenols, flavonoids, water- and lipid soluble antioxidants in the leaves in micro propagated stevia plantlets, grown on different concentration NF-2% Ag

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CONCLUSION: The hormetic effect of the enriched with Ag nanofibers on the culture by direct organogenesis on the development and production of natural antioxidants in *S. rebaudiana* was observed. The activity of enzymes with antioxidant capacity increased from 0 mg L⁻¹ to 50 mg L⁻¹ concentration, after that it decreased.