Journal of Zhejiang University-SCIENCE A (Applied Physics & Engineering)

Phytotoxicity of silver nanoparticles to cucumber (*Cucumis sativus*) and wheat (*Triticum aestivum*)

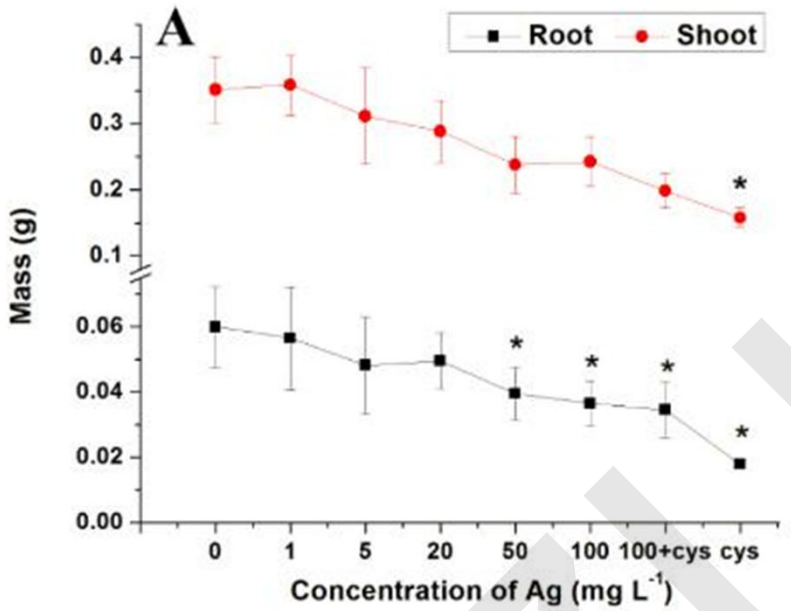
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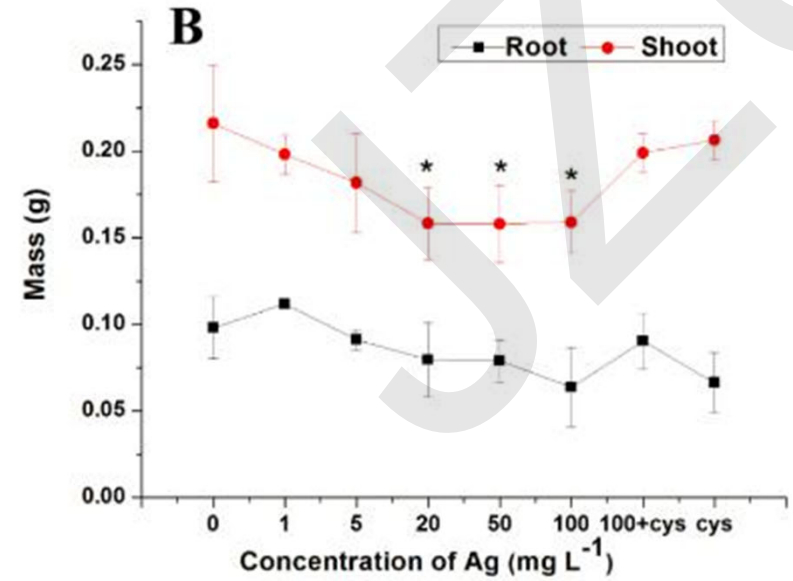
Results

Effects of Ag NPs on biomass

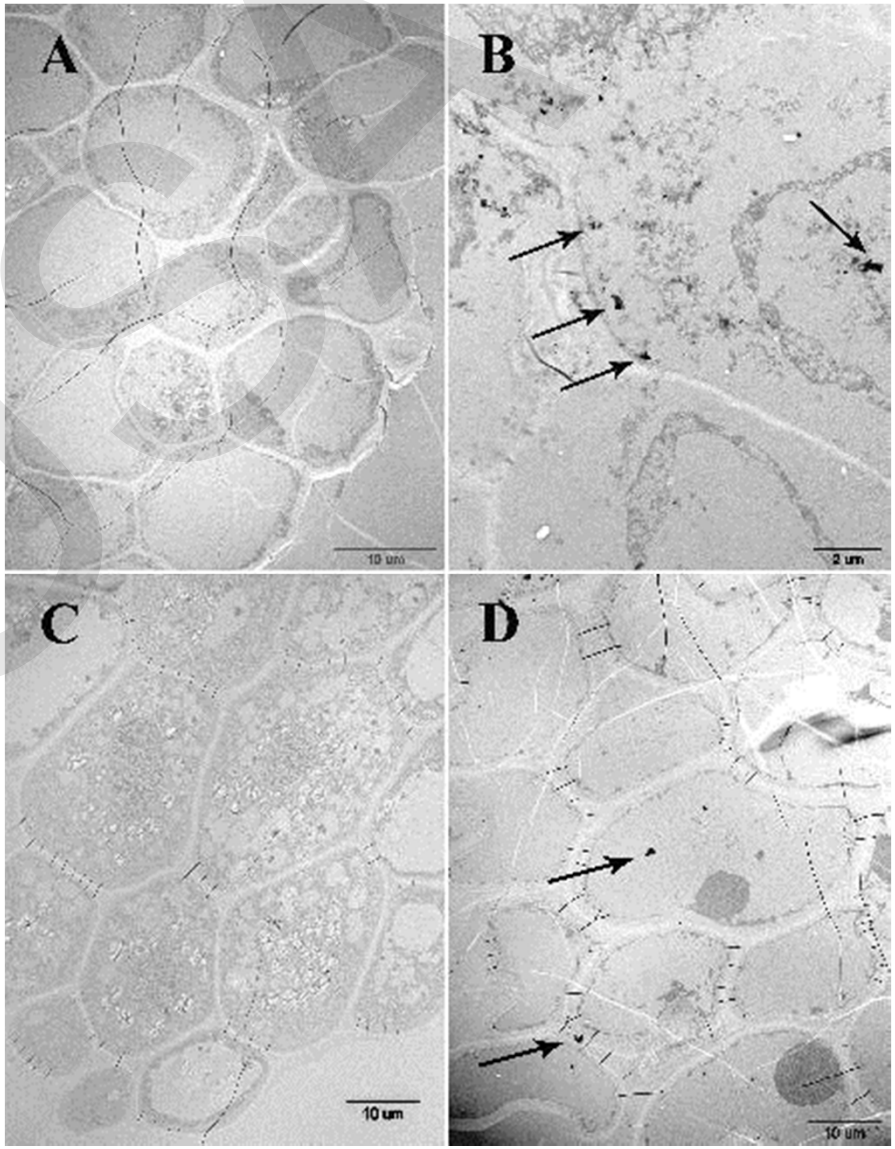
Cucumber



Wheat

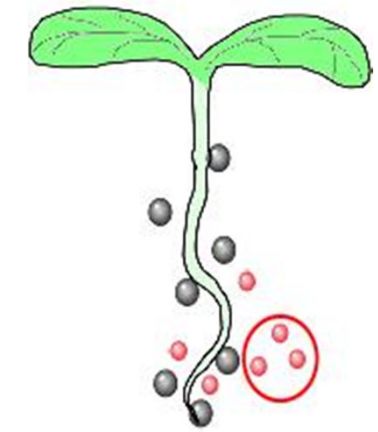


Location of Ag NPs in root by TEM

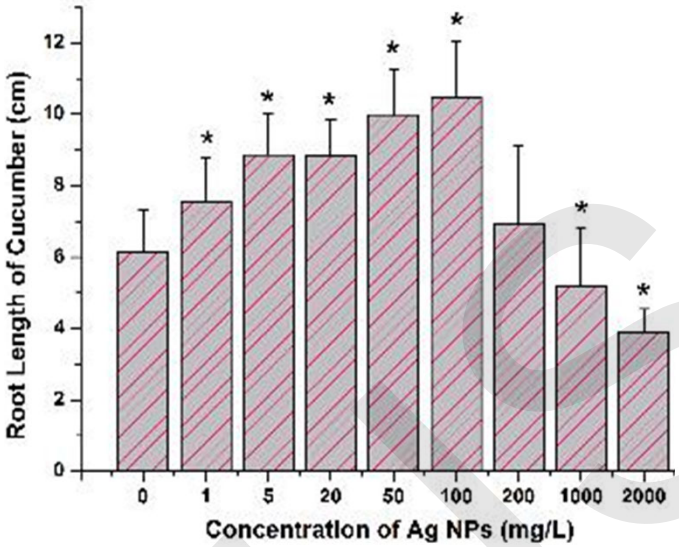


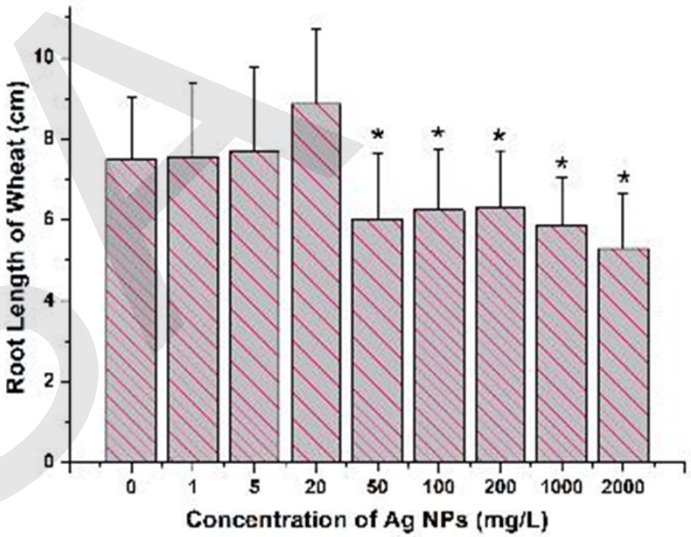
Results

Determinant role of dissolved Ag^+ on the toxicity of Ag NPs



Toxic



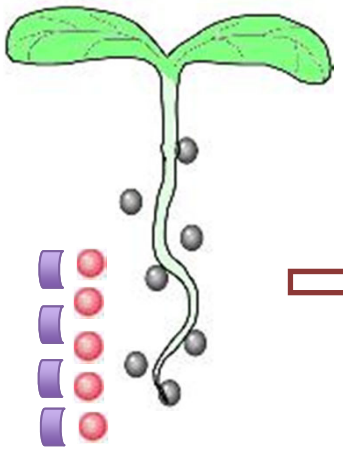


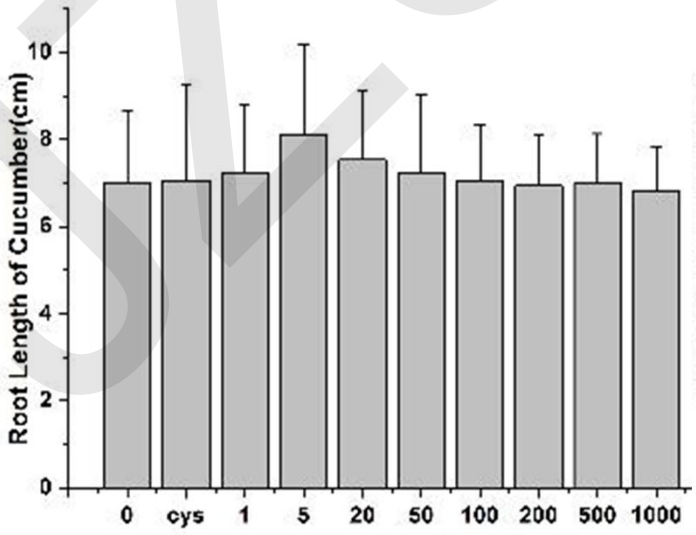
Ag NPs

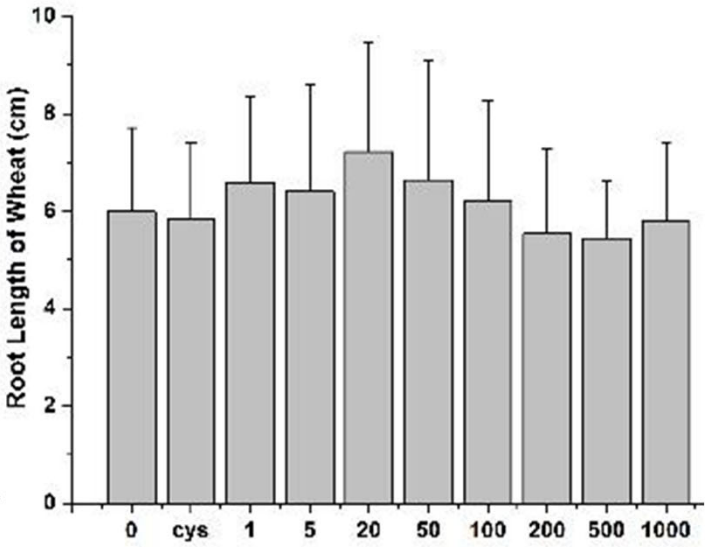
Ag^+

cysteine

Add cysteine







Results

Ag content in tissues

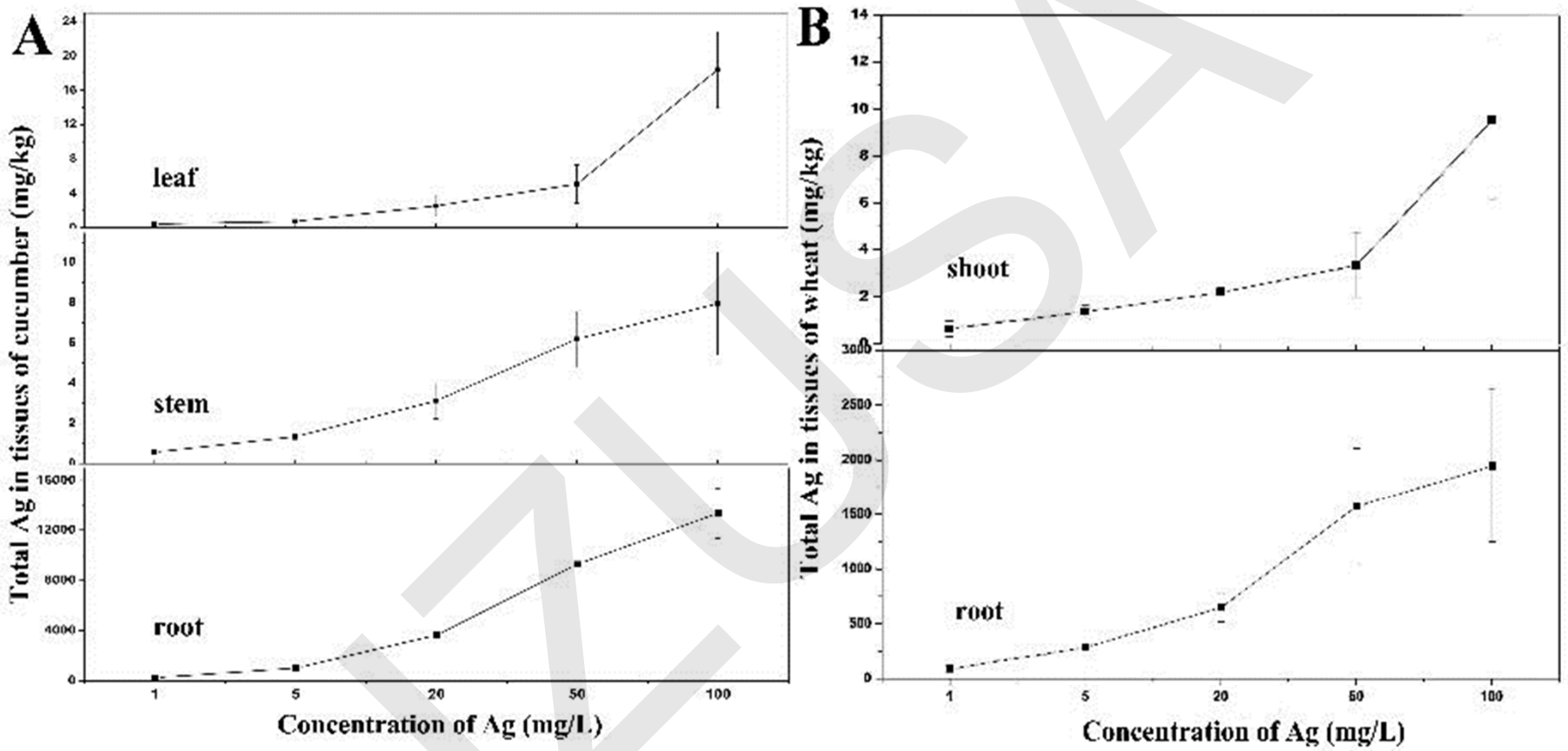


Figure. Ag content in tissues of cucumber (A) and wheat (B) after 3 weeks of exposure of Ag NPs. The values were given as mean ± SD.

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Innovation Point

- ❑ Toxicity of Ag NPs to monocot plant wheat and dicot plant cucumber at both germination and vegetative growth stages were examined for better understanding the toxicity and factor influencing the toxicity.

- ❑ Cysteine, a strong chelating agent for Ag^+, was used to mask the released Ag^+ for investigating the role of particulate Ag involved in the toxicity.

Conclusions

- ❖ Plants at different growth stages show different sensitivity to the toxicity of Ag NPs.

- ❖ Ag NPs can release Ag^+ with the assistance of plant roots.

- ❖ Cysteine greatly relief the toxicity of Ag NPs by masking the Ag^+, indicating that the phytotoxicity of Ag NPs in the present study was mostly induced by the released Ag^+.

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