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SUPPLEMENTARY MATERIAL

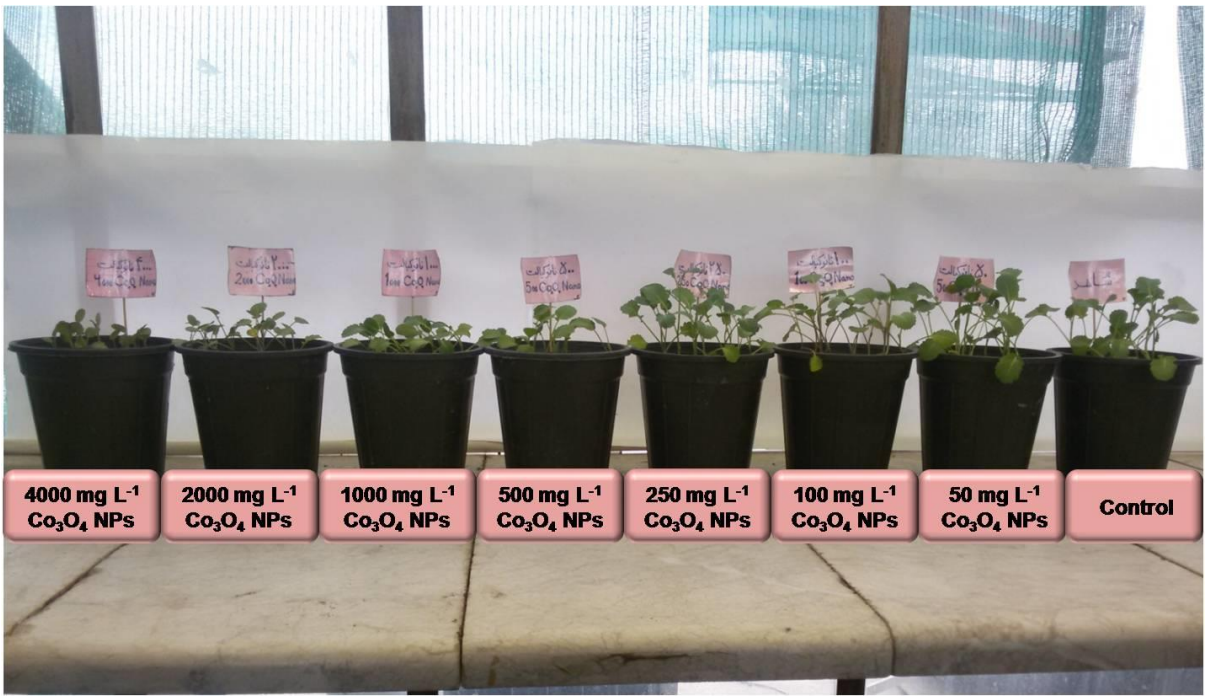
Jahani et al., ABCbot 61(1) 2019

Effects of foliar application of cobalt oxide nanoparticles on growth, photosynthetic pigments, oxidative indicators, non-enzymatic antioxidants and compatible osmolytes in canola (*Brassica napus* L.)

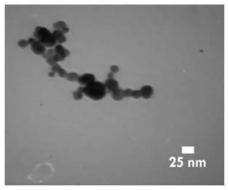
Fig. S1. Effect of foliar application of different concentrations of Co_3O_4 NPs (0-4000 mg L^{-1}) on canola plants grown in a greenhouse.

Fig. S2. A schematic image of the present study.

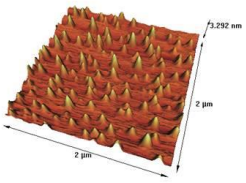
S1



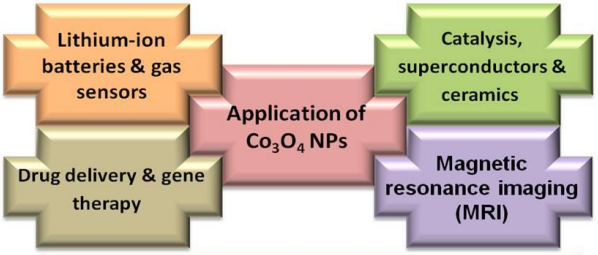
S2

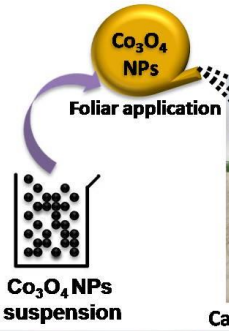


TEM image of Co_3O_4 NPs



AFM image of Co_3O_4 NPs

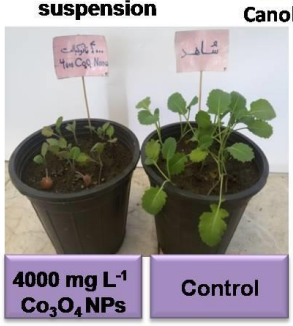




Canola (*Brassica napus* L.)

Effect of high concentrations of Co_3O_4 NPs

- Induction of oxidative stress: Increase MDA, H_2O_2, LOX activity and Decrease MSI
- Decrease in growth & photosynthetic pigments (chlorophylls & carotenoids)
- Accumulation of compatible osmolytes (proline, glycine betaine & soluble sugars)
- Decrease starch (insoluble sugar)
- Decrease AsA, GSH & Increase DHA
- Increase DPPH (antioxidant capacity)
- Accumulation of shoot cobalt



↑ Proline

↓ Chlorophyll

↑ Soluble sugars