



Short communication

# Salvia multicaulis for biosynthesis of antioxidant CuO/SiO<sub>2</sub> NCs and assessment of its phytochemical profile

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<https://doi.org/10.1016/j.inoche.2023.110903>

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## Highlights

- Investigation of polyphenol profile of *Salvia multicaulis* plant.
- Bio-fabrication of CuO@SiO<sub>2</sub> nanostructure.
- Designing the possible mechanism of nanostructure formation by plant bioreducing phytochemicals.
- Identification of green CuO@SiO<sub>2</sub> nanocomposite using spectroscopic, spectrophotometric and micrograph techniques.
- Study of antioxidant activity and green CuO@SiO<sub>2</sub> nanostructure and plant.

## Abstract

The phytochemical and elemental profile of *Salvia multicaulis* plant is evaluated for bio-fabrication of CuO@SiO<sub>2</sub> nanocomposite (NCs). The antioxidant activity of plant extract and NCs were also determined using 1,1-diphenyl-2-picrylhydrazyl (DPPH) method. Also, the phytochemical examination of the plant shows some biomolecules such as terpenes, flavonols, keto-enol compounds, aldehydes, proteins, vitamins, nitrogen-containing compounds, alkaloids, and tannins. According to our findings, high phenolic content (438mg GAE/g dry wt) and flavonoid (252.16mg QE/g dry wt) in *Salvia multicaulis* extract exhibited maximum inhibition of DPPH radicals (47.74%, 97.05% and 114.8% in 50, 800 and 3200μg/ml), respectively, demonstrating the potent antioxidants activity due to plant's phytoconstituent antioxidants.