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**Efficacy of titanium dioxide nanoparticles in modulating photosynthesis, peltate glandular trichomes and essential oil production and quality in *Mentha piperita* L.**

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## Highlights

The present study is first report regarding the effect of Titanium dioxide nanoparticles (TiO<sub>2</sub> NPs) on *Mentha piperita* L. showing

- TiO<sub>2</sub> NPs mediated improvement in photosynthesis
- Increased density and diameter of peltate glandular trichomes
- Enhanced content of menthol and essential oil of peppermint
- Possible signaling mechanism of elicitation

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