

4<sup>th</sup> International Conference and Expo on NANOSCIENCE AND NANO TECHNOLOGY

June 13-14, 2022 | Webinar

**Nano indole acetic acid (IAA) elicits improved agronomical and essential oil attributes in *Matricaria chamomilla* L**

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**Statement of the Problem:** Increased demand for Medicinal and aromatic plants (MAPs) due to their widespread use in the cosmetic, food and pharmaceutical industries on one hand and the disruptive climatic conditions on the other has compelled the agriculturists to develop sustainable strategies to increase their yield.

**Methodology & Theoretical Orientation:** *Matricaria chamomilla* L. (German chamomile), of the family Asteraceae, is a highly demanded MAP bearing blue colored essential oil (EO) with valuable secondary metabolites, out of which  $\alpha$ - Bisabolol and chamazulene are known to be the most important bioactive compounds. Amongst various sustainable agricultural approaches, agro-nanotechnology is emerging with a promising future more so when it's merged with compounds of plant growth regulation, opening new avenues of research in agricultural sustainability. In this study, the yield and production of the selected MAP (German chamomile) was enhanced by the application of synthetic analogue of the plant hormones, popularized as plant growth regulators (PGRs) in its nano form. For this, commercially available PGR, indole acetic acid (IAA) was nanotized using the top-down method of nanotization via ball milling and aqueous solutions of both bulk and nanotized IAA at 0 (control), 25, 50 and 100  $\mu$ M were applied through foliage at specific intervals to analyze its effect on the agronomical and essential oil attributes of the chamomile plants.

**Findings:** Nano IAA at 25  $\mu$ M concentration improved the agronomical parameters along with maximally enhancing the content of EO and  $\alpha$ - Bisabolol, while nano IAA at 100  $\mu$ M drastically increased the chamazulene content of the EO, and the content of phenols and flavonoids also.

**Conclusion & Significance:** The application of nano IAA/ nano PGRs is a novel, cost-effective, non-toxic, and eco-friendly method of improving crop productivity which may be utilized to fill the gap between the demand and supply of significant crops of human welfare.

**Biography**

Nausheen Khanam is a research scholar in the field of Plant physiology currently working at the Department of Botany, Aligarh Muslim University, U.P., India under the supervision of Prof. M.Masroor.A.Khan. His lab has been working on improving the productivity of medicinal and aromatic plants (MAPs) for decades and she has taken this task forward by employing the unique concept of nanotized plant growth regulators (PGRs) on the MAPs. A part of her research is presented here where the amazing results of using nano PGRs on German chamomile are shown. Although this work is in its infancy but surely it paves the way for agriculturists around the globe to improve crop productivity using nano forms of the conventional plant growth regulators which are non-toxic to plant health as well as the environment.

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