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Harnessing Homoeopathy in Horticulture: A Novel Agrohomoeopathic Observational *In Vitro* Study of *Luffa Acutangula*

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Abstract

Luffa acutangula (ridge gourd) is an economically and nutritionally important vegetable crop in India. The growing need for sustainable and eco-friendly farming practices has encouraged the exploration of homoeopathic medicines in agriculture/horticulture (Agrohomeopathy). The present study investigates the in-vitro effects of homeopathic ultrahigh dilutions, Arnica montana and Silicea, on germination and early growth of Luffa acutangula. Seeds were pre-soaked in Arnica montana 200C and distilled water as control while the growth medium i.e., soil was treated with Silicea 30C. Observations were recorded for germination rate and shoot length under controlled conditions. Seeds soaked in Arnica m. exhibited significantly higher germination rate when compared with control. Enhanced overall shoot length and plant vigor was observed in Silicea treated soils with seeds soaked in Arnica m. were sown. Arnica m. was selected for its reputed action in enhancing cellular vitality and stress tolerance, while Silicea was employed for its role in strengthening plant tissue and promoting balanced growth. These findings suggest that homoeopathic ultrahigh dilutions can positively influence plant development in in-vitro conditions, supporting the emerging concept of Agrohomeopathy as a sustainable, low-input alternative to conventional agrochemicals. This study provides foundational evidence for further experimental and on-field research to validate the reproducibility and underlying mechanisms of homoeopathic action in plant systems.

Keywords: *Luffa acutangula, Ridge Gourd, Horticulture, Homoeopathy, Agrohomeopathy, sustainable, ultra-high dilutions, Arnica montana, Silicea, in-vitro.*

INTRODUCTION

Luffa acutangula (ridge gourd) is a widely cultivated vegetable in India and many tropical and sub-tropical regions around the world. The young fruits are consumed as a valuable component of the diet due to their nutritional benefits. In India Ridge gourd is grown across states including Andhra Pradesh, Telangana, Tamil Nadu, Karnataka and Gujarat among others, and is adapted to diverse climatic zones and cropping systems [1]. In Telangana it is grown mainly during the Kharif season under trellis/pandal systems. According to 2026-27 state Horticulture data for Telangana, the total area under Ridge gourd cultivation was 4,087 hectares, with a recorded production of 33,601 metric tonnes for that year.[2] Globally, the species is naturalized in parts of Southeast Asia, Africa and other warm regions, making it an important horticultural crop in warm climate agriculture.

Luffa acutangula has high nutritive value and is often called a nutrition powerhouse because of its rich and varied nutrient content. It has vitamin-C, Riboflavin, Niacin and essential amino acids. Beyond its role as a vegetable, it has been examined for its phytochemical and medicinal properties. Studies note its content of proteins, amino acids, phytin, flavonoids and other bioactive compounds, making it a dual-purpose plant of food and therapeutic interest.[3]

NEED FOR THE STUDY:

- Despite its adaptability and importance, the cultivation of ridge gourd faces several agronomic challenges. Among these, early seedling establishment, pest and disease pressures (such as viral and fungal infections), and the need for repeated fertilizer and chemical inputs in multi harvest systems reduce profitability and sustainability.
- The widespread use of chemical fertilizers, fungicides and pesticides in horticulture has several drawbacks. Soil fertility and structure may deteriorate under intensive fertilizer regimes. Repeated chemical application can harm beneficial soil microorganisms, degrade soil health, lead to residue accumulation and increase production cost.

- Moreover, excessive agrochemical use may reduce the long-term resilience of plants and ecosystems, as well as pose environmental and human health risks. In vegetable cultivation, ridge gourd in particular, the requirement for frequent fertilization and resulting nutrient imbalance or soil fatigue can lead to declining yield and fruit quality over successive harvests.[4]

The use of homeopathy in agriculture has been changing conventional agriculture to agro ecological, through the application of homoeopathic ultrahigh dilutions in different dynamizations, following homoeopathic pharmacopoeia guidelines proposed by Dr. Samuel Hahnemann, the father of homoeopathy, in 1810. The homoeopathic dynamizations follow the principles of disintegration of matter and radiation without nuclear rupture, through the mechanical action on smaller particles and addition of inert substances with dynamic activity, following the laws of electromagnetic waves: frequency, length and amplitude. Homoeopathic preparations can be applied on the soil and/or on the leaves. The proper selection of homoeopathic medicines can be cost effective and very efficient in terms of tolerance to abiotic stress in various crop species. The similia principle has been shown to be very helpful in overcoming abiotic stress in plants. Several reviews have surveyed the experimental evidence for ultra-high diluted homoeopathic preparations in agriculture, noting evidence of improved germination, seedling vigor, yield enhancement and reduced chemical input dependency.[5] Although the literature also highlights methodological short comings and the need for more rigorous, standardized research.

Given the importance of ridge gourd and challenges associated with its chemical-intensive cultivation, exploring alternative, low-input strategies such as Agrohomeopathy is timely. The in vitro application of homoeopathic seed soaking and soil treatment provides a controlled environment to test the impact of such interventions on early growth phases, thereby minimizing external variables. This study therefore investigates the combined effects of a seed soaked in Arnica montana dilution and soil treatment with Silicea dilution on in vitro germination, shoot development of *Luffa acutangula*. The underlying hypothesis is that the homoeopathic intervention will enhance early growth metrics thereby supporting a more sustainable and ecofriendly agricultural practice.

AIMS AND OBJECTIVES:

1. To evaluate the efficacy of Arnica montana on germination of *Luffa acutangula* seeds.
2. To assess the effect of Silicea treated soil on seedling development.

MATERIALS AND METHODS

Study Design: A Controlled *in vitro* Experimental Study

Study Site: The study was conducted in Hamsa Homeopathy Medical College, Hospital & Research Centre, Ksheerasagar, Mulugu mandal, Siddipet Dist., Telangana.

Duration of Study: 1 month

Sample:

The research was conducted using *Luffa acutangula* (ridge gourd) seeds. Ten seeds each were taken for soaking in Arnica m. and distilled water as control. Four experimental sets were prepared and were labelled as A, B, C, and D. Each set has one germinated L. acutangula seed sown in soil. Final measurements were recorded for germination and shoot length.

METHODOLOGY AND PROCEDURE:

Methods used for medicine application:

- Medicines were administered through water used for soaking the seeds and for treating the soil.
- The Homoeopathic ultra-high dilutions Arnica montana and Silicea were diluted in distilled water at a ratio of 1:500 prior to application.[5]

PROCEDURE OF THE RESEARCH:

- Initially, good quality seeds of Aneeta variety of L. acutangula were collected and for soaking, ten seeds were allocated to each of the two experimental sets labelled as A & B.
- Two clean glass beakers were used for soaking, each labelled accordingly.
- Using alcohol, the two glass beakers were first sterilized and then allowed to air dry for a few minutes.
- Beaker A served as control and contained only distilled water.
- In the beaker labelled B, 200ml of the solution prepared by diluting the homoeopathic ultra-high dilution of Arnica montana in 1000ml of distilled water at a ratio of 1:500 was taken.
- On day 1, ten (10) seeds of L. acutangula were introduced into each glass beaker and allowed to soak for about 8 hours.

The setup was designed as follows:

1. Set A (control): seeds soaked in distilled water only.
2. Set B: seeds soaked in solution prepared by dilution at a ratio of 1:500

- After soaking, the seeds were transferred onto a moist white cotton cloth to facilitate germination.
- By day 3, all the 10 seeds from set B had germinated with prominently developed radicles, whereas only 8 seeds germinated in set A (control).
- Meanwhile, soil preparation was carried out. The soil designated for treatment was moistened with solution prepared by adding 2 ml of Silicea 30C to 1000ml of distilled water followed by 10 succussions, a method of potentisation as per homoeopathic pharmacopoeia.
- Four plastic cups, each with drainage holes, were prepared. Two were filled with Silicea treated soil and the other two were filled with untreated soil.
- Germinated seeds were now transplanted into plastic cups with one seed per cup, forming four experimental combinations.

1. Treated soil with treated seed
2. Treated soil with untreated seed
3. Untreated soil with treated seed
4. Untreated soil with untreated seed

- After sowing, daily observations were made to record growth parameters and developmental changes throughout the experimental period.

Figure 1: Beaker A: Seeds with distilled water only

Figure 2: Beaker B: Seeds soaked in solution prepared by dilution at a ratio of 1:500

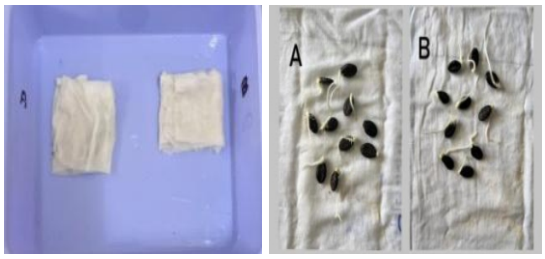

Figure 3: seeds transferred onto a moist white cotton cloth for germination

Figure 4: soil preparation with silicea 30 C and distilled water

Figure 5: Untreated soil

Figure 6: 4 Plastic cups – 2 with silicea treated soil; 2 with untreated soil

Figure 7: Developmental changes

RESULTS

Table: 1

Experimental set	A	B
Number of seeds germinated by Day – 3 (out of 10 seeds)	08	10

Table: 2

Experimental set	Shoot length in Centi Metre		
	Day -10	Day - 20	Day - 30
A	6.5	13.5	23
B	6	13	22
C	4	12.3	19
D	4	12	16

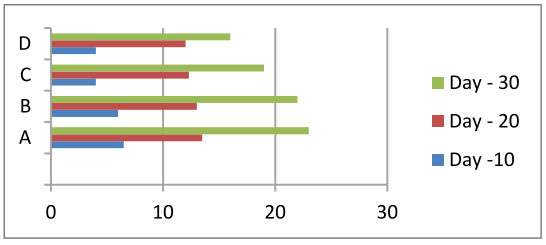

Figure 8: Shoot length of experimental sets

DISCUSSION:

The present study explores the effects of Arnica montana 200C and Silicea 30C on the germination and early growth of Luffa acutangula under in vitro conditions. The findings demonstrated that the seeds soaked in Arnica montana showed faster and more uniform germination compared with the controlled study, while plants grown in Silicea treated soil exhibited enhanced shoot length.

These observations suggest that homeopathic ultra-high dilutions can positively modulate early plant development. Arnica montana is traditionally recognized for its ability to stimulate cellular recovery and improve vitality following stress or trauma. Its effect on seed germination in this experiment could indicate activation of metabolic or enzymatic processes that promote early radicle elongation. Similar results have been reported in previous Agrohomeopathic studies, where Arnica m. improved seed vigor and stress tolerance in other plant species.[6] The beneficial influence of Silicea on shoot growth may relate to its well-known role in strengthening structural tissues and improving the plant resistance to environmental stress. [7] In this study, plants grown in Silicea treated soil were visibly healthier. The combination of Arnica m. (seed treatment) and Silicea (soil treatment) appear to act synergistically, supporting both germination and subsequent vegetative growth. While the present findings are promising, further investigations under field conditions are needed to validate these effects across different environmental variations and ultra-high dilutions. The study supports the emerging evidence that Agrohomeopathy can serve as a sustainable and ecologically sound approach to enhance crop performance without compromising environmental health.

CONCLUSION

The present study demonstrates that homeopathic ultra-high dilutions can exert a beneficial influence on the germination and early growth of *Luffa acutangula* under *in vitro* conditions. Seeds soaked in Arnica montana 200C exhibited faster and more uniform germination with stronger radical development, while plants grown in Silicea 30C treated soil showed enhanced shoot length. The combination of Arnica for seed treatment and Silicea for soil enrichment appeared to act synergistically, promoting both initial vitality and sustained vegetative development. These findings support the potential application of Agrohomeopathy as a sustainable and non-toxic alternative to conventional chemical inputs in crop production.

By stimulating natural physiological processes and improving plant resilience, homoeopathic ultra-high dilutions help in developing ecologically balanced farming systems. Further field studies are needed to validate these results and quantify long term effects.

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CONFLICT OF INTEREST

The author declares no conflict of interest.

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REFERENCES

1. Choudhary BR, Kumar S, Sharma SK. Evaluation and correlation for growth, yield and quality traits of Ridge gourd (Luffa acutangula) under arid conditions. *Indian J Agri Sci.* 2014; 84(4):498-502.
2. Telangana Horticulture Department. Area, Production and Productivity – 2016-17.2017.
3. Swetha MP, Muthukumar SP. Characterization of nutrients, amino acids, polyphenols and antioxidant activity of Ridge gourd (Luffa acutangula) peel. *J Food Sci Technol*. 2016; 53(7):3122-3128.
4. Surekha T. Agrohomeopathy: Bridging Nature and Agriculture for Sustainable Crop Health. *Galore International Journal of Health Science and Research* (GIJHSR). 2023; 8(3).
5. Prieto Mendez J, Prieto Garcia F, Hernandez Perez AD, Quijada Morales LM, Aquino Torres A, Acevedo Sandoval OA. Agrohomeopathy: New Tool to improve soils, crops and plant protection against various stress conditions. Horticultura Argentina. 2021; 40(101):43-58.
6. Rissss JSP, Ferreira JB. Influence of homeopathic medicines and preparations in the development of lettuce seedlings. Rev Colomb Investig Agroindustr. 2017; 4(10:6-14.
7. Baumgartner S, Doesburg P, Scherr C. Influence of Silicea on plant growth and stress resistance. J Agro-Homeopathy. 2020; 5(2):45-53.