International Journal of Homoeopathic Sciences

E-ISSN: 2616-4493
P-ISSN: 2616-4485
www.homoeopathicjournal.com
IJHS 2023; 7(1): 200-205
Received: 06-10-2022
Accepted: 13-11-2022

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An comparative observational study on the effectiveness of magnesium phosphoricum 6X & 6C in the growth of culantro

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DOI: https://doi.org/10.33545/26164485.2023.v7.i1d.751

Abstract
"Culantro", also known as "cilantro" (*Eryngium foetidum*) is extensively used in seasoning, marinating and garnishing as a culinary condiment. It's occasionally used as a cover for coriander leaves, but has a much stronger taste. Agro-homoeopathy is one of the newest approaches in husbandry exploration and also is the most chemical free, nontoxic system of growing food and other crops. So, this exploration was carried out with indigenous Culantro using Homoeopathic medicine Magnesium Phosphoricum 6X & 6C potencies at biodynamic farming prospective level. This study was conducted for 90 days to assess initial plant growth in 7 different settings to minimize obscurity. The growth was assessed by measuring plant height, number & size of leaves in millimeters. After study period the compliances shown that, Homoeopathic medicine Magnesium Phosphoricum 6X & Magnesium Phosphoricum 6C is effective in cultivating indigenous Culantro and can be recommended for agrarian field for cultivation of indigenous Culantro (*Eryngium foetidum*).

Keywords: Culantro, cilantro, *Eryngium foetidum*, homoeopathic medicines, magnesium phosphoricum, biodynamic farming

Introduction
"Culantro", also known as "Cilantro" (*Eryngium foetidum*) is extensively used in seasoning, marinating and garnishing in the Caribbean, particularly in Cuba, the Dominican Republic, Puerto Rico, Trinidad and Tobago, Panama, Costa Rica, Guyana, Suriname, Ecuador and Peru's Amazon regions. It's used considerably in Cambodia, Thailand, India, Vietnam, Laos, Myanmar, southwestern China and other corridor of Asia as a culinary condiment. It dries well, retaining good colour and flavour, making it precious in the dried condiment assiduity. It's occasionally used as a cover for coriander leaves, but has a much stronger taste [1].

Growers and experimenters started working on addition of organic husbandry ways. Among these ways Biodynamic husbandry incorporated the principles of Homoeopathy which is grounded on the law of minimal cure and law of dynamization.

Homoeopathic drug has set up recognition in healing mortal beings and beast husbandry. Presently applied Homeopathic exploration in husbandry is also chancing place [2, 3, 4].

Potentized Homoeopathic drug can alter the physiological conditioning of plants. It makes the plant resistant to disease and pest by driving the essential self-defense mechanism of plants and strengthening them from the inside [2, 4].

Out of numerous enterprise biodynamic husbandry incorporated with the principle 'Law of Deficiency', this study has great capabilities and can give new direction to the field of husbandry. Bio-chemic System of Medicine grounded on law of insufficiency, doses are minute and have physiological action. The insufficiency of inorganic salts which beget disequilibrium in the harmonious functioning of the organic ingredients of the cells, so it must be corrected by supplying the needful proportion of inorganic salts [5].

When Magnesium Phosphoricum is employed, excess of Magnesium & Phosphate is employed, which improves magnesium & phosphate input, perfecting imbalance of phosphorus content & promoting maximum growth of Culantro (*Eryngium foetidum*) [6].

Materials and Methods
Materials
- Indigenous Culantro seeds from authentic seed supplier from Manipur.
- Homoeopathic drugs Magnesium Phosphoricum 6X & 6C from authentic pharmaceutical company (Dr. Willmar Schwabe India Pvt.

- Small size plastic trays.
- Soil (local- Mijar, Karnataka; 13.04025°N 74.967838°E) free from organic & inorganic fertilizers or pesticide.
- Potable/Tap water.
- Garden water dispenser.
- Plastic measure cup for liquids (600 ml).

Methods

- Sample Size-35 plants.
- Study Location-Alva's Homoeopathic Medical College, Mijar, Moodabidiri, Mangalore, Dakshina Kannada, Karnataka (Google Map plus Code: 2XC9+MC).
- Study Settings-7 groups.
- Study Period-90 days.

Assessment

- Number of germinated plants in each tray/group.
- Plant growth every 10th day from day of sowing in terms of plant height, number & size of plant leaves in millimeters.
- Results-After the study period (90 days) the observations for each group are represented in the tables and result is presented after analysis of data.

Study Design

Table 1: Study Design

Group	Germination	Size	Post Germination Irrigation	Size
Group-A (Control Group)	Potable Water	20 seeds	Potable Water	5 Plants
Group-B (Experimental Group)	Potable Water	20 seeds	Water Mixed With Magnesium Phosphoricum 6X	5 Plants
Group-C (Experimental Group)	Potable Water	20 seeds	Water Mixed With Magnesium Phosphoricum 6C	5 Plants
Group-D (Experimental Group)	Water Mixed With Magnesium Phosphoricum 6X	20 seeds	Potable Water	5 Plants
Group-E (Experimental Group)	Water Mixed With Magnesium Phosphoricum 6C	20 seeds	Potable Water	5 Plants
Group-F (Experimental Group)	Water Mixed With Magnesium Phosphoricum 6X	20 seeds	Water Mixed With Magnesium Phosphoricum 6X	5 Plants
Group-G (Experimental Group)	Water Mixed With Magnesium Phosphoricum 6C	20 seeds	Water Mixed With Magnesium Phosphoricum 6C	5 Plants

- Daily care like sunlight, water, air was provided to all groups.
- No fertilizers were added in any groups.
- Irrigation was done daily twice for all groups.

Medicine dilution proportion

- 10 tablets of Magnesium Phosphoricum 6X in 500 ml of potable water.
- 10 drops of Magnesium Phosphoricum 6C in 500 ml of potable water.

Results

Table 2: Total Germinated Plants Group Wise

Group	30th Day	40th Day	50th Day	60th Day	70th Day	80th Day	90th Day
Group-A	-	-	1	1	1	-	-
Group-B	-	1	2	3	3	4	5
Group-C	-	1	2	3	4	5	6
Group-D	-	1	2	4	5	7	7
Group-E	-	1	1	2	2	4	4
Group-F	1	2	2	3	4	5	5
Group-G	-	1	2	3	4	4	5

Table 3: Plant Height (in mm) Group Wise

Group	30th Day	40th Day	50th Day	60th Day	70th Day	80th Day	90th Day
Group-A	-	-	4	6	6	-	-
Group-B	-	5	10	12	13	15	19
Group-C	-	6	9	12	15	18	22
Group-D	-	4	6	9	12	14	16
Group-E	-	4	6	8	9	11	14
Group-F	5	7	9	10	12	15	16
Group-G	-	5	7	8	10	11	12

Table 4: Number of Leaves (Average) Group Wise

Group	30th Day	40th Day	50th Day	60th Day	70th Day	80th Day	90th Day
Group-A	-	-	2	2	2	-	-
Group-B	-	2	2	2.67	3.33	3.5	3.8
Group-C	-	2	2	2.67	3	3.8	3.5
Group-D	-	2	2	2.5	3.2	3.14	3.43
Group-E	-	2	2	3	3	3	4.25
Group-F	2	2	2	2.67	3	3.6	3.8
Group-G	-	2	2	2.67	3	3.5	3.2

Table 5: Breadth of Biggest Leaf (in mm) Group Wise

Group	30th Day	40th Day	50th Day	60th Day	70th Day	80th Day	90th Day
Group-A	-	-	2	2	2	-	-
Group-B	-	2	2	3	3	4	5
Group-C	-	2	4	5	5	6	6
Group-D	-	2	2	3	3	4	4
Group-E	-	2	2	2	3	3	3
Group-F	2	2	3	3	4	4	4
Group-G	-	2	3	4	4	5	5

Table 6: Length of Biggest Leaf (in mm) Group Wise

Group	30th Day	40th Day	50th Day	60th Day	70th Day	80th Day	90th Day
Group-A	-	-	3	4	4	-	-
Group-B	-	3	4	6	7	8	10
Group-C	-	3	5	6	7	8	9
Group-D	-	3	4	5	6	7	9
Group-E	-	2	2	3	3	4	4
Group-F	3	4	5	6	6	7	7
Group-G	-	3	4	5	6	7	8

Table 7: Group Wise Plant Growth Assessment on Day 90

Group (Day 90)	Germinated Plants	Number of Leaves (Average)	Plant Height (in mm)	Breadth of Biggest Leaf (in mm)	Length of Biggest Leaf (in mm)
Group-A	–	–	–	–	–
Group-B	5	3.8	19	5	10
Group-C	6	3.5	22	6	9
Group-D	7	3.43	16	4	9
Group-E	4	4.25	14	3	4
Group-F	5	3.8	16	4	7
Group-G	5	3.2	12	5	8

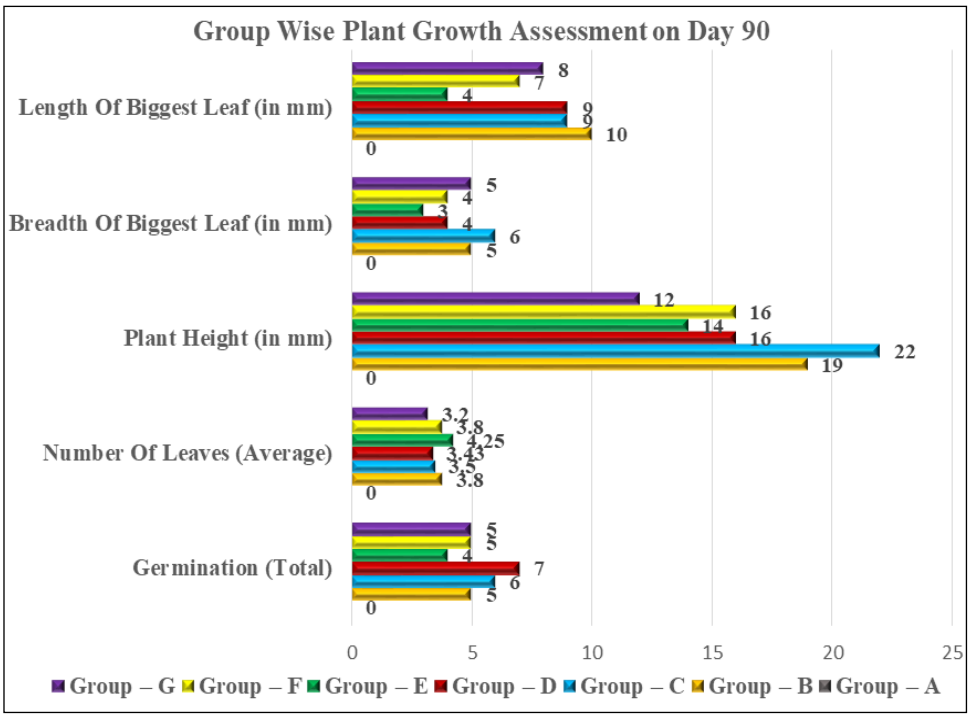

Fig 1: Group Wise Plant Growth Assessment on Day 90

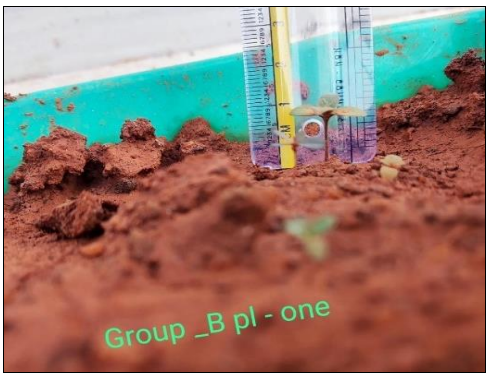

Fig 2: Height Group B (Day 90)

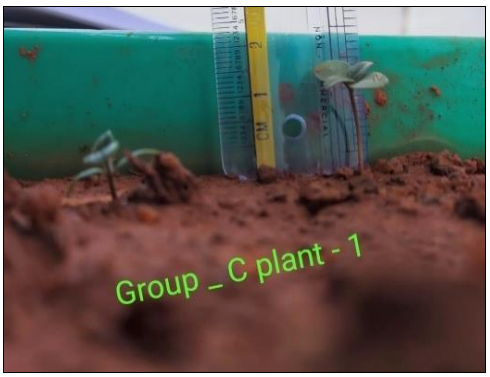

Fig 4: Height Group C (Day 90)

Fig 3: Canopy Group B (Day 90)

Fig 5: Canopy Group C (Day 90)

Fig 6: Height Group D (Day 90)

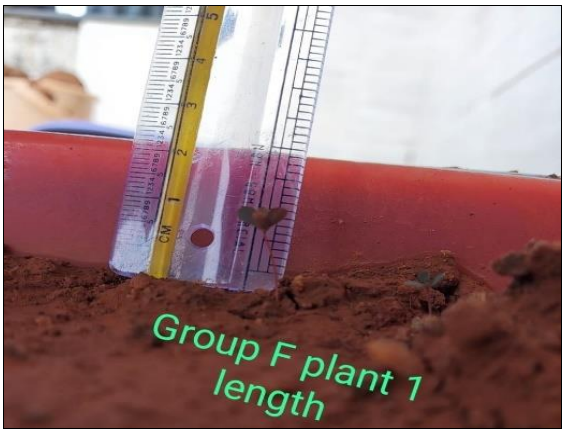

Fig 10: Height Group F (Day 90)

Fig 7: Canopy Group D (Day 90)

Fig 11: Canopy Group F (Day 90)

Fig 8: Height Group E (Day 90)

Fig 12: Height Group G (Day 90)

Fig 9: Canopy Group E (Day 90)

Fig 13: Canopy Group G (Day 90)

Discussion

In this study 7 plants in Group-D, 6 plants in Group-C, 5 plants each in Group-A; Group-F & Group-G. 4 plants in Group-E were present on day 90. Maximum germinated plants were in Group-D. Maximum height of well grown plant was 22mm in Group-C, 19mm in Group-B, 16mm in Group-D & Group-F, 14mm in Group-E & 12mm in Group-G being noted. Maximum Height of well grown plant was noted in Group-C. Average number of leaves were notes as 4.25 in Group-E, 3.8 in Group-B & Group-F, 3.5 in Group-C, 3.43 in Group-D & 3.2 in Group-G. Maximum average number of leaves were found in Group-E. Breadth of biggest leaf of well grown plant was noted 6mm in Group-C, 5mm in Group-B & Group-G, 4mm in Group-D & Group-F, & 3 mm in Group-E. Maximum breadth of biggest leaf was noted in Group-C. Length of biggest leaf of well grown plant was noted 10mm in Group-B, 9 mm in Group-C & Group-D, 8mm in Group-G, 7mm in Group-F & 4mm in Group-E. Maximum length of biggest leaf was noted in Group-B. In Group-A (Control Group) only 1 plant germinated on 50th day from sowing the seeds. Initial growth there were 2 leaves for the budding plant, but within interval of 10 days the plant started drying up and was dead after 70th day, in spite of proper watering, sufficient sunlight.

All these above observations and results showed that Homoeopathic medicine Magnesium Phosphoricum 6X & Magnesium Phosphoricum 6C is effective in cultivating indigenous Culantro (*Eryngium foetidum*).

For comparing the effectiveness of Magnesium Phosphoricum 6X & Magnesium Phosphoricum 6C in the growth of Culantro plant following observations are concluded:

Magnesium Phosphoricum 6X favours better Germination rate (average Germination rate 5.67; 17 total plants) than Magnesium Phosphoricum 6C (average Germination rate 5; 15 total plants). Magnesium Phosphoricum 6X favours better growth in height (average growth in height 17mm) than Magnesium Phosphoricum 6C (average growth in height 16mm) among well grown plants. Magnesium Phosphoricum 6X favours better number of leaves (average number of leaves 3.67) than Magnesium Phosphoricum 6C (average number of leaves 3.65). Magnesium Phosphoricum 6C favours better growth in breadth of leave (average breadth of leave 4.67) than Magnesium Phosphoricum 6X (average breadth of leave 4.33) among well grown plants. Magnesium Phosphoricum 6X favours better growth in length of leave (average length of leave 8.67) than Magnesium Phosphoricum 6C (average length of leave 7) among well grown plants.

Thus, Magnesium Phosphoricum 6X is more effective in cultivating indigenous Culantro (*Eryngium foetidum*) than Magnesium Phosphoricum 6C as per data attained from current study.

Culantro usually germinate within 2 or 3 weeks but Control Group did not have any viable plant at the end of study (90 days), whereas the Experimental Groups had viable plants at the end of study (90 days). In this study most of germination occurred 34th day onwards except in Group-F in which germination occurred on 28th day in this study. When compared with Control Group to Experiments Groups, Magnesium Phosphoricum 6X & Magnesium Phosphoricum 6C helped for the growth & development of indigenous Culantro (*Eryngium foetidum*).

Limitations

Culantro is generally planted from seed; it takes roughly 14 to 28 days for the seeds to germinate. The out-of-door temperature should be between 80°F (26.67 °C) to 85°F (29.44 °C) & need to maintain the soil wettish for 3 to 4 months for favourable growth. Whereas at study location (Tenka Mijar) the average day temperature ranges from 91.4 °F (33 °C)-96.8 °F (36 °C) with costal humid climate, so it was delicate to maintain soil humidity.

For this study indigenous Culantro (*Eryngium foetidum*) seeds were procured from authentic seed supplier from Manipur which require specific soil (Black soil) for the favourable growth, whereas at study location (Tenka Mijar) the red soil was available which was used.

Tenka Mijar has average elevation of 142 metres (466 bases) from mean ocean position (costal belt of western ghat), whereas Imphal Manipur has average elevation of 786 metres (2,579 ft) from mean ocean position (north-east hills), which contributes in geographical diversity.

The stem of plants grown was veritably thin, making dimension wasn't doable.

Culantro is a perennial herb & this is a time bound study for initial growth of plant, couldn't be studied for longer period for the harvest.

Conclusion

Based on this study on indigenous Culantro (*Eryngium foetidum*) with Magnesium Phosphoricum 6X & Magnesium Phosphoricum 6C, after all these compliances and results, I've arrived at the following conclusions:

Homoeopathic drug Magnesium Phosphoricum 6X & Magnesium Phosphoricum 6C are effective in cultivating indigenous Culantro (*Eryngium foetidum*).

Magnesium Phosphoricum 6X is more effective in cultivating indigenous Culantro (*Eryngium foetidum*) than Magnesium Phosphoricum 6C as per data attained from current study.

The results from this study have shown that there's scope for Magnesium Phosphoricum 6X & Magnesium Phosphoricum 6C for civilization of indigenous Culantro (*Eryngium foetidum*) and therefore as per this study it can be recommended for agrarian field for cultivation of indigenous variety Culantro (*Eryngium foetidum*).

Acknowledgments

This work was carried out at Alva's Homoeopathic Medical College, Moodbidri, Karnataka, India. I sincerely thank Dr. Herald Roshan Pinto (Principal, Alva's Homoeopathic Medical College, Moodbidri, Karnataka) for his guidance. I am also thankful to Miss. Allencia Longjam, Miss. Medalin Moirangthem, Miss. Moirangthem Saya Devi, Miss. Rajluxmi Wahengbam and Miss. Keidongbam Devicha Devi for their help and support.

Conflict of Interest

Not available

Financial Support

Not available

References

1. Wikipedia contributors. *Eryngium foetidum*. Wikipedia, The Free Encyclopedia [Internet]; c2021 July. [Cited 2023 Jan 3]. Available from:

https://en.wikipedia.org/w/index.php?title=Eryngium_foetidum&oldid=1084760117
2. Mueller M. Agrohomeopathy: Natural alternative treatment for plants & crops [Internet]. Homeopathic Associates. Homeopathic Associates [Internet]; c2014 April. [Cited 2023 Feb 5]. Available from: https://homeopathicassociates.com/agrohomeopathy-natural-alternative-plants-crops/
3. Sen S, Chandra I, Khatun MA, Chaterjee S, Das S. Agrohomeopathy: An emerging field of agriculture for higher crop productivity and protection of plants against various stress conditions. International Journal of Research and Analytical Reviews [Internet]; c2018 Oct. [cited 2023 Feb 5]. Available from: https://www.ijrar.org/papers/IJRAR1904125.pdf
4. Singhania PK, Singhania A. Homoeopathy in agriculture. Semantic Scholar [Internet]; c2014 Oct. [cited 2023 Feb 5]; Available from: https://www.semanticscholar.org/paper/56569a1d3a1dc6a826134c2d98d669bdc3c8fda0
5. Patil JD. Gems of Biochemic Materia Medica. 1st ed. New Delhi, India: B Jain; c2021. p. 1-10.
6. José Manuel MS, Carlos Michel OS, Milagro GB, María Araceli AQ, Fernando AP, Daulemys BS, *et al*. Agricultural homoeopathy: A new insight into organics. In: Multifunctionality and Impacts of Organic and Conventional Agriculture. Research Gate [Internet]; c2019 May. [Cited 2023 Feb 5]. Available from: https://www.researchgate.net/publication/333142937_Agricultural_Homoeopathy_A_New_Insight_into_Organics

How to Cite This Article
Kangabam R, Patil KC. An comparative observational study on the effectiveness of magnesium phosphoricum 6X & 6C in the growth of culantro. International Journal of Homoeopathic Sciences. 2023;7(1):200-205.