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Exploring the Potential of Homeopathy for Sustainable Agriculture

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Agrohomeopathy is an interesting new development in homoeopathy. We are living in times of climate change and increased pollution with plants and crops being more and more affected, thus affecting the food of animals, humans and their overall general health. The treatments usually applied in agriculture are in themselves toxic and contribute to increased pollution. Agrohomeopathy can bring salutary solutions, providing a means to treat plants with low doses of substances with no toxicity and also offering important economic advantages due to low costs, increased yields and a better quality of harvest. Another important aspect of agrohomeopathy is the prompt response that plants have when treated with homeopathic products, meaning that both farmers and homeopaths have good reasons to use homeopathy in agriculture, as the results can be convincing: farmers obtain efficient and sustainable results and homeopaths obtain new evidence of the validity of their method.

Agrohomeopathy is the specialized area of homeopathic practice used to treat plants. Homeopathic medicines can be used in agriculture from seed germination to crop production for various purposes. Most ofthe preliminary work started with observing the effect of homeopathic drugs on seed germination of different crop species. From the late 20th century, scientific studies have been performed rapidly in laboratories. The study of Agrohomeopathy is not limited only to seed germination. Eradication of biotic and abiotic stresses was also made possible by the practice of homeopathy in agriculture. In 1986, V.D. Kaviraj first used Belladonna (Kaviraj, 2011) successfully to treat a diseased apple tree. Here he opened a new door to agricultural research. He preferred lower potencies of drugs, whereas recent studies showed that some homeopathic drugs having higher potencies also seem to be very effective on seed germination and stress resistance.

History of Agrohomeopathy

The first studies on agrohomeopathy were performed by Kolisko on wheat germination in 1923. Afterwards, in 1928, another researcher published a study aboutthe effects of high dilutions on microorganisms (Junker, 1928). These two researchers were initiating a domain which lately was defined as agrohomeopathy, a domain that started to develop more intensely at the end of the 60s. One of the earliest models belongs to Nitien *et al*., in 1969, with homeopathic preparations of copper sulphate (*Cuprum sulphuricum*CH 15) for detoxification of green peas previously intoxicated with the same substance in high dosage, demonstrating a positive effect. Another study was performed in 2011 on wheat seedlings pre-treated with high concentrations of gibberellic acid expected to facilitatethe inhibitory effect of the same plant hormone in diluted doses, but the supposition was not confirmed by the experimental results (Pfleger *et al*, 2011). Another model consisted of seeds of *Vigna unguiculata* pre-treated with *Natrium muriaticum* and afterwards stressed with NaCl. In the pre-treated group,

therewas an increase in seed germination compared with the control group stressed with the same substance (Mondal, Sukul, 2012).

Need of Agrohomeopathy

India is the second largest consumer of fertilizers in the world after China. However, the average intensity of fertilizer use in India remains much lower than most countries in the world but is highly skewed with wide inter-regional, inter-state and inter-district variations (Sharma *et al*., 2011). Soil health management continues to be a critically important tool for global food security; their undesirable effects cannot be overlooked particularly when sustainable agriculture is the universal focus.Fertilizers and pesticides tend to have long persistence in the soil so they are bound to affect the soil microflora thereby disturbing soil health (Prashar and Shah., 2016). Much evidence has shown the potential risk to humans and other life forms and unwanted side effects to the environment by these chemicals. Agrohomeopathy can reduce the dependency on chemical fertilizers and pesticides.Homeopathic drugs are cost-effective as compared to chemical fertilizers and it required in very small amounts. For that reason, agrohomeopathy can be a good alternative to traditional agriculture and pest control methods in India. Agrohomeopathy can also be practised by combining with other biofertilizers.

Effect of Homoeopathy on Plant Species

1. **Promotion of plant growth health, nutrition and performance:** Homoeopathyin plants contributes to the improvement of internal processes to optimise theirgrowth and development.Germination of seed is the most important and preliminary step for crop production. *In-vitro* study of agrohomeopathy was also started by observing the effect of homeopathic drugs on seed germination of different crop species. Many researchers across the world found that some homeopathic drugs can increase the rate of seed germination of different plant species. But they functionally vary according to their potency and dilutions.

Example:

- Sorghum seed germination was treated with *Arsenicumalbum* and showed that different potencies of homeopathic drugs can influence the rate of seed germination both positively and negatively (Marques *et al.*, 2012).
- Phosphorus 6CH can increase the rate of seed germination of *Brassica oleracea* (Barbosa *et.al.*, 2012).
- Along with an increased rate of seed germination homeopathic drugs can alter the protein, sugar, chlorophyll content etc.(Dutta *et.al*, 2013) (Sukul*et.al.*,2014).
- Bonato and de Silva (2003) find out that homeopathic Sulphur can affect the growth and productivity of radishes. They found that except Sulphur 200CH (affects negatively), other potencies of Sulphur are helpful for radish cultivation.
- Recently the homoeopathic medicines Sulphur, Siliceaterra and Nux vomica have been assessed on different plants of commercial interest, including corn.
- The use of other HOM treatments is recommended, such as *Calcarea carbonica*, *Carbo vegetabilis* and *Magnesia carbonica*, because their active ingredients can provoke favourable responses in plants.

2. **Agrohomeopathy to control abiotic stresses:** Abiotic stresses may be of different kinds, i.e.- Salt stress, heat stress, cold stress, drought stress, metal (copper, nickel, lead, cadmium, arsenic etc) toxicity etc.In this sense, HOM treatments imply the application of ultra-diluted substances, which are an eco-friendly and economical variant that could be used effectively inany condition and circumstance. Unfortunately, this organic-like alternativehas been little studied worldwide.

- Salt stress (50mM NaCl) tolerance of Cowpea seeds by the treatment of Sepia 200CH was reported by Sukul *et al.*,(2012).
- Mondal *et al.*,(2012) successfully germinated cowpea seeds under 100mM salt stress using Natrum Meriaticum 200CH as a homeopathic remedy.
- Cuprum sulphuricum can combat the toxic effect of copper in *Vigna unguiculata*(Banerjee, 2013).
- Homeopathic preparations Alumina (6CH and 12CH) and *Calcarea carbonica*(6CH and 12CH) can improve the rate of seed germination of lettuce seeds exposed to toxic levels of aluminium (Bonfim*et al.*,2010).
- Another drug Arsenicum album had a positive impact on the growth rate of arsenic impaired duckweed (Jager, 2010).
- Brizzi *et al*.,2000 cure Wheat from As2O3 to treat with *DH* As2O3.

3. **Agrohomeopathy to control biotic stresses:** Biotic stresses are mainly associated with plant diseases. There are various causative agents for plant diseases- fungi, bacteria,viruses,insects etc. To control these disease causing agents, some researchers used potentised homeopathic drugs successfully. It contributes to pest control and influences crop growth and development.

- A bunch of mulberry diseases (root knot, leaf spot, powdery mildew, mosaic disease and tukra disease) can be cured by Aakashmoni 200CH (Dutta and Dutta, 2012).
- Cina200CH is used to treat root-knot disease only (Dutta, 2006).
- High dilution of Belladonna can affect the mycelial growth of *Corynespora cassiicola* (Fagan, 2011).
- Fungal disease-Rusts can be eliminated using homeopathic solutions Silicea terra 30CH (Bonato*et al.*, 2006).
- Biotherapic 27CH and 28CH of *Alternaria solan* have the capability to control early blight in tomato plants (de Toledo *et al.*,2010).
- Betti*et al.*, (2003) were able to increase TMV resistance in tobacco plants using homeopathic Arsenic.
- The preparation made with *Coccinellaseptempunctata* from the adult beetle gives the necessary protection against different types of pests, like *Trioleurodesvaporariorum* (whitefly).
- Another efficient remedy against whitefly is made from the tincture of a live parasitic wasp, *Encarsia formosa* (Kaviraj, 2012) or from Sulphur (CH 200), if the honeydew secretions lead to colonisation with sooty mould, turning the leaves black (Maute, 2011).
- Sinha and Singh obtained significant results in the control of fungi producing aflatoxins in stored products, with *Sulphur* CH 200 which inhibited 100% of the growth of *Aspergillus parasiticus*.
- Khanna and Chandra, obtained good results in the control of rot in mango,guava and tomatoes, suppressing the spore germination and respiration of the fungi *Alternaria alternate*, *Colletotrichum gloeosporioides*, *Fusarium roseum* and *Gloeosporium psidii*.

Conclusion

It is believed that agrohomeopathy can be a good alternative to conventional farming. It is also a kind of organic way of farming. Homeopathic drugs may also be used with chemical fertilizers or with biofertilizers. Agrohomeopathy has the capacity to address typical problems associated with plants. These problems(delayed seed germination, ageing of seeds, lower rate of fertilizer absorption, delayed growth, abscission of flowers, various diseases, numerous types of abiotic stresses etc.) can be cured by using homeopathic drugs.More numbers of field trials are also required in our country to check the efficacy of drugs in large-

scale agricultural land and crop varieties. After these benefits, one should remember that a few precautions must be taken. Proper drug selection, proper potency of the drug and proper dilution of the drug with water- are the three things which are responsible for the success of agrohomeopathy. Apart from these, government aid and initiatives are also important for agrohomeopathy research in a proper direction.

References

4. Banerjee P, Sukul NC. 2013.Cuprum Sulphuricum - a homeopathic drug that can combat the toxic effect of Cu,and promote seed germination and peroxidase activity in *Vigna unguiculata*.Int J High Dilution Res, 12(44):129-130.
5. Barbosa IS, Valério TS, Siqueira CM, Salgueiro AM, Gomes MDN. 2012.Evaluation of the effects of homeopathic medicines on the germination seeds of *Brassica oleracea*L. var. Italica, Int J High Dilution Res,11(40):213-214.
6. Betti L, Lazzarato L, Trebbi G, Brizzi M, Calzoni GL, Borghini F, Nani D. 2003.Effects of homeopathic arsenic on tobacco plant resistance to tobacco mosaic virus. Theoretical suggestions about system variability, based on a large experimental data set. Homeopathy, 92(4):195-202.
7. BonatoCM; de Souza AF; Collet MA. 2006.Rust (*Phakopsoraeuvitis*) Control in the Grape Culture with the Application of Homeopathic Solutions. Int J High Dilution Res.;5(16).
8. Bonfim FPG, das Dores RGR, Martins ER, Casali VWD.2010. Germination and vigour of lettuce seeds (*Lactuca sativa* L.) pelleted with homeopathic preparations Alumina and Calcareacarbonica subjected to toxic levels of aluminium. Int J High Dilution Res. 9(33):138-146.
9. Datta SC, Datta R. 2012.Homeopathic Medicine Aakashmoni 200C Control Mulberry Diseases Enriching Sericulture. J. Curr. Chem. Pharm. Sc.2(1):37-49.
10. de Toledo Piza Gomes Carneiro SM, Romano EDB, Pignoni E, Teixeira MZ, da Costa Vasconcelos ME, Gomes JC. 2010.Effect of biotherapic of *Alternaria solani* on the early blight of tomato-plant and the in vitro development of the fungus; Int J High Dilution Res, 9(33):147-155.
11. Dutta P, Baneerjee S. 2013.Potentized Sucrose alters growth, sugar, protein and chlorophyll content in cowpea seedlings.Int J High Dilution Res.12(44):137-138.
12. Fagan RV, Reis B,Schawan-Estrada KRF, Bonato CM. 2011.High dilution of Belladonna affects the mycelial growth of *Corynesporacassiicola* in vitro, Int J High Dilution Res. 10(36):245-248.
13. Jäger T, Scherr C, Simon M, Heusser P, Baumgartner S. 2010.Effects of homeopathic arsenicum album, nosode, and gibberellic acid preparations on the growth rate of arsenic-impaired duckweed (*Lemnagibba* L.); ScientificWorldJournal. 4;10:2112-29. doi: 10.1100/tsw.2010.202.
14. Junker H, 1928. The effect of extreme dilutions on microorganisms. Phluger's Archiv fur die Gesamte Physiologie; 219: 647-672.
15. Kandil AA, Shareif AE, Gad MA. Effect of salinity on germinationand seeding parameters of foragecowpea seed. Research. Journal of SeedScience. 2017;**10**:17-26.
16. Kaviraj VD, 2011, 'Homeopathy for Farms and Gardens',Narayana Publishers, Second revised edition.
17. Marques RM, Reis B, Cavazin ACT, Moreira FC Buchoski M, Silva HA, Lolis M, Bonato CM. 2011. Germination and vigour of the seed of sorghum (*Sorghum bicolor* L. Moench) treated with Arsenicum album.Int J High Dilution Res, 10(36):239-244.

18. Mondal S, Sukul NC, Sukul S, 2012. Natrum mur 200c promotes seed germination and increases total protein, chlorophyll, rubisco and sugar in early seedlings of cowpeas under salt stress. Int J High Dilution Res;11:128.
19. Mushak, E W, and W T Piver.(1992). Agricultural chemical utilization and human health. Environmental health perspectives. 97: 269-74. doi:10.1289/ehp.9297269
20. Nitien G, Boiron J, Marin A. 1969. Acao de doses infinitesimais de sulfato de cobre sobre plantas previamente intoxicadas por essa substancia; acao da 15 centesimal hahnemanniana. Pesquisa Experimental moderna em Homeopatia, ed. Homeopatica Brasileira, Rio de Janeiro.
21. Pfleger A, Hofacker J, Scherer- Pongratz W, Lothaller H, Endler PC. 2011. The effect of extremely diluted agitated gibberellic acid (10c-30) on wheat seedling development - a two researcher pilot study. Complement Ther Med; 19:164- 169.
22. Prashar P., Shah S. (2016). Impact of Fertilizers and Pesticides on Soil Microflora in Agriculture. Sustainable Agriculture Reviews. 19. doi: 10.1007/978-3-319-26777-7_8.
23. Sharma, Vijay Paul &Thaker, Hrima, 2011. Demand for Fertiliser in India: Determinants and Outlook for 2020, IIMA Working Papers WP2011-04-01, Indian Institute of Management Ahmedabad, Research and Publication Department.
24. Sukul A, Sukul NC, Sen P, Bhattacharya A, Sukul S. 2014. Homeopathic potencies alter photosynthesis of cowpea,Homeopathy. 103(1):91-92.