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A Meta-analysis of the Efficacy of Homoeopathic Ultra High Dilutions on Wheat Plant Growth and Disease Management

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ABSTRACT Homoeopathic medicines have been examined in plant models for various purposes like promotion of seed germination, growth and physiology of plants, plant disease control, secondary metabolites enhancement, metal detoxification, etc. However, a limited number of the studies question the reliability of the data, which restricts the use of homoeopathy in the plant system. Therefore this meta-analysis was undertaken to investigate the effect of various homoeopathic medicines on seed germination, growth and disease control in wheat (*Triticum aestivum* L.). A web search was performed on the National Library of Medicine's PubMed search engine and 16 studies were retrieved based on inclusion and exclusion criterions. Using data from each study, two by two tables were prepared and fixed mean differences for plant growth, odd ratios for seed germination and risk ratio for disease control along with their ninety-five percent confidence intervals were calculated by Inverse Variance method using Review Manager 5.4.1 (Rev Man 5.4.1) software. Data suggests that gibberellic acid significantly reduces the wheat seedling/stalk growth in autumn season with mean difference of -3.99 (95% CI: -4.41, -3.51), with inconsistent effect in winter and spring season. Further, Arsenicum album treatment promoted the seedling growth in wheat with mean difference: 11.86 (95% CI: 11.67, 12.06), while there was no significant effect on seed germination, and odd ratio: 1.27 (95% CI: 0.87, 1.85, P = 0.22). Moreover, various homoeopathic agents significantly reduced the risk of *Fusarium* and *Alternaria* infection in wheat seeds. To conclude, meta-analysis of included studies suggests significant effects of homoeopathic agents in various aspects of wheat plant growth and disease management.