https://www.thieme-connect.de/products/ejournals/abstract/10.1055/s-0044-1779756

Homeopathy 2024; 113(01): A1-A26
DOI: 10.1055/s-0044-1779756
Presentation Abstracts
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Characterization of Physicochemical Markers of Homeopathic Medicines

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In recent years, we have dedicated ourselves to studying the effects of *Antimonium crudum* and *Silicea terra* on experimental infection, using *in vivo* and *in vitro* models. However, the mechanisms involved in this modulation are still unknown and prompt different questions, such as: (1) do homeopathic dilutions keep antimony molecules from the raw material used as a starting point? (2) to what extent are the observed effects specific? (3) would there be changes in the physical-chemical properties of ultra-diluted preparations that could explain the biological effects? The present study aimed to answer, at least in part, such questions. To verify the existence of microparticles in suspension and their chemical nature, samples of medicines at different potencies were subjected to centrifugation for collecting the sediment, which was observed under a scanning electron microscope coupled to an energy dispersion spectroscopy system. Spectrophotometry using solvatochromic dyes was used to evaluate variations in the dipole moment of both homeopathic remedies. All measurements were performed in a controlled environment. Data were statistically analyzed for homoscedasticity and homogeneity (Shapiro–Wilk, Levene) and compared using parametric (ANOVA, Tukey–Kramer) or nonparametric (Kruskal–Wallis/Dunn) methods, as appropriate. The significance level was set at $p = 0.05$. The chemical composition of the solid sediment of the drugs showed a random pattern and no correspondence with the biological effects; however, the topography of the deposited particles showed agglomeration (or nucleation) only at the highest dilutions. On the other hand, the interaction of the drugs with the solvatochromic dyes ET33, BDN, and Methylene Violet showed a periodic pattern in the potency-effect curve, as well as a close correspondence with the biological effects ($p = 0.0001$ for *Antimonium crudum* and $p \leq 0.05$ for *Silicea terra*). These results suggest that the balance of charges in the liquid medium may be an essential factor in its mechanism of action, which corroborates the coherence domain hypothesis.

Keywords: Silicea terra, *Antimonium crudum*, microparticles, solvatochromic dyes, mechanisms of action

Publication History

Article published online:
30 January 2024

Georg Thieme Verlag KG
Rüdigerstraße 14, 70469 Stuttgart, Germany