

NMR analysis: potential and challenges as a homeopathic basic research tool

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Abstract

Background

Homeopathic ultra-diluted solutions surpass the threshold of matter dispersion and, consequently, their chemical constitution are similar to inert solvent. Nevertheless, randomized clinical trials have shown that the clinical effects of these homeopathic medicines are superior to placebo¹.

Nuclear magnetic resonance (NMR) is one of the most promising techniques to detect physicochemical alterations induced by homeopathic procedures^{2,3}.

Aims

To investigate T2 NMR relaxation times of *Zincum metallicum* and lactose dynamized samples.

Methodology

Zincum metallicum samples were ground until 6dH using lactose as excipient. Subsequently, these samples were dynamized with ultrapure water to produce 8dH, 9dH, 10dH and 11dH. Lactose dynamized samples (6dH-11dH) were used as control. Aliquots of 540µl of each sample were diluted with 60µl of deuterated water (D2O) in 5mm tubes. The analyses were carried out in BrukerAscendTM 500MHZ spectrometer at 288 K.

Results and discussions

The *Zincum metallicum* and lactose T2 relaxation times were very similar, except for *Zincum metallicum* 8dH, which presented a value of 1.226 in comparison to 1.036 of lactose 8dH. The following T2 values were registered: 1.287 - 9dH; 1.413 - 10dH; 1.467 - 11dH, and 1.303 - 9dH; 1.400 – 10dH; 1.350 -11dH, for *Zincum metallicum* and lactose, respectively. The differences detected in 8dH samples are probably due to the presence of lactose in the first dilution step, in which 1 part of 6dH triturated mixture is diluted in 9 parts of water, to prepare 7dH. Following this homeopathic procedure, these 8dH solutions remain around 1% of lactose which could be influenced by the T2 values.

Conclusion

These preliminary results showed the possibility to apply the NMR technique to evaluate the influence of dynamization in the relaxation parameters. Further studies should be carried out with other potencies and/or other homeopathic substances. Besides the T1 and the T1/T2 relaxation times will be done, as previously described by other groups.

Keywords

Proton Magnetic Nuclear Resonance, T2 values, Homeopathic remedies, *Zincum metallucum*, ultra-diluted solutions

References:

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