Can mechanical agitation induce stable physicochemical changes on a solvent?

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Why do serial agitations are so important to prepare a homeopathic medicine? This question has been discussed for two centuries but it still remains opened. Accordingly some experimental evidences, agitated (and diluted) samples have different biological effects when compared with equivalent ones kept at rest or diluted without vigorous serial agitations. To explain these differences many hypotheses have been proposed considering the increase on the solvent's gasification, cavitation effects, nanobubbles formation, mechanically or thermally induced chemical reactions, nanoclusters formation and silica release, among others. These hypotheses could explain some physicochemical changes induced by agitation. However, these changes have not always been easily observed or understood. Further, homeopathic medicines are able to provoke biological responses in live systems and, until now, there isn't one even reliable hypothesis or evidence able to correlate their physicochemical properties with biological activity. To start addressing this problem, we focused on some physicochemical changes induced by agitation. A $KMnO_4$ solution was submitted to three different modes of mechanical agitation (simulated arm, vertical shaking and hammer). Since this chemical reaction is dependent on agitation, we followed the rate of color change (speed of reaction) through the absorbance values at some peaks (visible spectrum), for each different agitation mode. We have concluded that this chemical model can be useful to gather more information about the dynamical physicochemical changes induced by serial agitations. However, no biological correlation can be established from these results.

Keywords: agitation, $KMnO_4$, spectroscopy, chemical reaction

Support: authors declare that this study received no funding
Conflict of interest: authors declare there is no conflict of interest
Received: 16 June 2013; Revised: 12 August 2013; Published: 30 September 2013.
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How to cite this article: Zacharias CR, Silva MF. Can mechanical agitation induce stable physicochemical changes on a solvent? Int J High Dilution Res [online]. 2013 [cited YYYY Month DD]; 14(42): 83-83. Proceedings of the XXVII GIRI Symposium; 2013 Sep 03-04; Bern (Switzerland). GIRI; 2013; Available from: http://www.feg.unesp.br/~ojs/index.php/ijhdr/article/view/640/638