

Abstract**Physicochemical and UV/VIS measurements of UHD solutions of water, potentized water, and different potencies of organic substances****Igor Jerman ***, Linda Ogrizek, Luka Jan, Vesna Periček Krapež

BION Institute, Stegne 21, Ljubljana, Slovenia, EU

* igor.jerman@bion.si - <https://orcid.org/0000-0003-2057-2033>**Abstract**

Introduction: Conventional science regards the study of UHD (highly homeopathically potentized) solutions as pseudo-science. However, an increasing number of rigorous scientific investigations demonstrate differences in physicochemical and physical characteristics of such solutions. Strictly chemically regarded, they correspond to highly distilled water. Our research team developed a system of physicochemical and UV spectrographic measurements, whereby the differences may be consistently confirmed with high statistical significance. **Methods:** For measurement of the physicochemical parameters, we used pH, electrical conductivity, and oxidation-reduction potential (ORP) sensors. For UV/VIS spectroscopy measurements, we used a Macherey-Nagel spectrophotometer. For UHD research, we used two batches of substances: Russian (**R**) and Brazilian (**B**). In **R**, distilled water (W) was used for dilutions and potencies as follows: potentized water (W cH9), potentized dilution of antibodies to interferon-gamma (Abs IFN γ cH9), the same original substance in the form of a mixture of potencies (Abs IFN γ cH12, cH30, cH50, shortly Abs IFN γ mix). Furthermore, we prepared higher potencies of the substances (supplementary potentiation) in a specially prepared solution and measured their characteristics. In **B**, the solution was used for further dilutions and potencies as follows: potentized water (W cH1) and Glyphosate potencies (Gly cH6 => cH8, cH30 => cH 32, and cH200 => cH 202). For direct or post-hoc analysis, we used Wilcoxon signed-rank test, two-tailed. **Results: UV-VIS spectroscopy (R):** measurements of received liquids potentized for further cH1 show statistically significant differences between all substances, except between water W and W cH9 at 260 nm. Significant differences (p-values) were as follows: Abs IFN γ mix vs. W = 0.007; Abs IFN γ mix vs. W cH9 = 0.008; Abs IFN γ cH9 vs. W = 0.044; Abs IFN γ cH9 vs. W cH9 = 0.026; Abs IFN γ mix vs. W cH9 = 0.007; W vs. W cH9 = 0.506. **Physicochemical measurements: R:** measurements demonstrated statistical difference only in pH (Abs IFN γ mix towards all others). Significant differences (p-values) were as follows: Abs IFN γ mix vs. W = 0.022; Abs IFN γ mix vs. W cH9 = 0.005; Abs IFN γ mix vs. Abs IFN γ cH9 = 0.025. After supplementary potentiation, we obtained a more conspicuous picture with many statistical differences in conductivity and ORP, ranging from p= 0.001 to 0.046. A difference between water and potentized water has also been demonstrated. **B:** the measurements demonstrated statistical differences mainly in pH between Gly cH8 and the rest and between Gly cH202 and W cH1. Significant differences (p-values) were as follows: Gly cH8 vs. Gly cH32 = 0.027; Gly cH8 vs. Gly cH202 = 0.011; Gly cH8 vs. W cH1 = 0.014; Gly cH202 vs. W cH1 = 0.034. **Conclusion:** UV/VIS at wavelength 260 nm Abs IFN γ mix discloses a pattern similar to exclusion zone (EZ) water at 270 nm. By additional potentiation and with physicochemical measurements, we obtained higher statistical differences than in the original dilutions. In contrast, UV/VIS spectroscopy showed more conspicuous results without additional potentiation. However, the very act of succussion becomes very distinct.

Keywords: UHD solution, physicochemical measurements, UV spectroscopy, different potencies

Acknowledgment

We are grateful to Materia Medica Holding, Moscow, Russia, and to Mirian Yaeko DO Nagai and Prof. Leoni Villano Bonamin, University Paulista, Sao Paulo, Brasil, for kindly providing the samples.

