

# Influence of an electromagnetic field on high dilutions measured by ultraviolet light spectroscopy

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**Background:** High dilutions of various starting materials, e.g. copper sulfate, *Hypericum perforatum* and sulfur, showed significant differences from controls and amongst different dilution levels in ultraviolet light (UV) transmission [1,2]. Exposure of high dilutions to external physical factors such as UV light or elevated temperature (37°C) also yielded significantly different UV transmissions compared to unexposed dilutions [2,3]. In a study with highland frogs it was shown that animals incubated with thyroxine 30c but not with thyroxine 30c exposed to electromagnetic fields (EMFs) of a microwave oven or mobile phone metamorphosed more slowly than control animals [4].

**Aims:** The aim was to test whether the EMF of a mobile phone influences the UV absorbance of dilutions of quartz and *Atropa belladonna* (AB).

**Methodology:** Commercially available dilutions of 6x, 12x, 15x, 30x in H<sub>2</sub>O and 19% ethanol of quartz (SiO<sub>2</sub>) and of 4x, 6x, 12x, 15x, 30x in H<sub>2</sub>O and 19% ethanol of AB were used in the experiments (Weleda AG, Arlesheim, Switzerland).

Four samples of each dilution were exposed to the EMF of a mobile phone (Philips, Savvy Dual Band) at 900 MHz with an output of 2 W for 3 h, while control samples (4 of each dilution) were kept in a separate room. Absorbance of the samples in the UV range (from 190 to 340 nm) was measured in a randomized order with a Shimadzu UV-1800 spectrophotometer equipped with an auto sampler. In total 5 separate measurement days will be carried out for quartz and for AB dilutions.

The average absorbance from 200 to 340 nm and from 200 to 240 nm was compared among dilution levels using a Kruskal-Wallis test and between exposed and unexposed samples using a Mann-Whitney-U test.

**Results:** Preliminary results after 2 measurement days indicated that for quartz the absorbance of the various dilution levels was different from each other (except 12x and 15x), and that samples exposed to an EMF did not show a difference in UV absorbance from unexposed samples.

Preliminary results after one measurement day indicated that for AB the absorbance of the various dilution levels was different from each other. The samples exposed to an EMF did not show a difference in UV absorbance from unexposed samples (except 4x in the range from 200 – 240 nm).

**Conclusions:** These results suggest that exposure of high dilutions of quartz and AB to a mobile phone EMF as used here does not alter UV absorbance of these dilutions. The final results will show whether this holds true.

**Keywords:** Electromagnetic field, EMF, UV spectroscopy, high dilutions, quartz, *Atropa belladonna*

## References:

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