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The Effects of Terahertz Radiation on the Development of Biological Organisms I: Wheat Seeds

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The uses of Terahertz (THz) radiation are broad, ranging from scanning packages to identifying various chemical compounds. Its effects on living matter have been neglect. The scientific literature available to date describes various effects on living matter depending on the type of cells studied. No studies thus far have investigated the effects of THz radiation on dormant seeds, whose animal-like metabolism creates a unique opportunity to assess the full extent of THz radiation as well as further analyze the mechanism of action behind this type of non-ionizing radiation. The aim of this study is to assess the radiation's effects on the sprouting of wheat seeds. Previous studies have shown a positive effect on the growth and proliferation of plants when placed under the effects of THz radiation; however, due to the aforementioned unique metabolism of seeds' cells, the ongoing hypothesis is that the seeds will suffer under the effects of the THz radiation. The seeds have been placed into two distinct batches, depending on whether they were exposed dry or wet. Multiple time-frames were assessed to different sub-groups, having one control sub-group in each batch. The exposed seeds saw a significant decrease in the success of germination, albeit the fact that those that survived saw a significant increase in their growth rate without any subsequent exposure. More research is needed to assess the effects of THz radiation on seeds, but the technology seems promising for use in agriculture, especially seeing the daunting effects of climate change on crop yields.