A Pulsating Magnetic Field Stimulates Growth in Cress Seedlings

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Injuries can be treated using medical devices that produce a pulsating magnetic field aimed at promoting metabolism and substance exchange. I questioned whether this system, a coil attached to a power supply, could actually make a difference to living organisms. All organisms are constantly exposed to Earth's geomagnetic field, and some have adapted to use it. In my experiment seeds from the herb cress were sprouted under two conditions: control seeds were only exposed to the geomagnetic field; experimental seeds were exposed to an additional pulsating magnetic field for four hours each day over four days. The lengths from the seed-base to first leaves (plumules) were measured. The results show that exposure to a pulsating electromagnetic field results in straighter plumules that statistically were significantly longer than the controls. Increased length is due to either increased cell division or increased cell elongation or both. Being straighter may imply increased cell elongation which characterizes many plant movements. Repeating the experiment with the magnetic field at right angles will test whether this growth movement is directional in which case it is a tropic response (magnetotropism) or if it is a non-directional, nastic response (magnetonasty).

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