Comparison of Phototropic Inhibition of Natural and Synthetic Auxin

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Does inducing auxin inhibit the plant to grow and bend towards the light? Understanding how phytohormones affect plants is vital as they are widely used in agriculture. Auxin is a class of phytohormones that controls numerous aspects of plant growth and development including phototropism. Plants naturally produce this hormone during phototropism, resulting in stem elongation. This experiment was designed to compare the inhibitory effects of natural and synthetic auxin when induced in plants. Natural auxin was extracted from grounded lentils sprouts using direct extraction. The synthetic auxin (Indole-3-acetic Acid (IAA)) has a 98+% purity. The experiment included three treatments, each consisting of five Phaseolus vulgaris. The first treatment received 60ml of diluted natural auxin, the second treatment received 60ml of diluted synthetic auxin, and the third being the control. Treated and control plants were placed in black boxes, each having a single hole in the center side and were exposed equidistantly from a light source for a week. Plants that received natural auxin appeared to prevent phototropism with an average stem bending of 86° as compared to the synthetic auxin group with an average bending of 76°.The control recorded an average bending of 48°. Since phototropism was prevented, stem elongation was also affected. Plants that received either natural or synthetic auxin tend to be shorter than the control group. Plants treated with natural auxin recorded an average height of 12cm while plants that received synthetic auxin had an average of 13cm. Control group had an average height of 16cm.

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