Dehydroabietinal Signaling in Plant Defenses

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The plant hormone abscisic acid (ABA) plays a critical role in the regulation of plant tolerance to drought. ABA stimulates root growth in plants to increase their ability to extract water from the soil. Additionally, ABA inhibits leaf growth and decreases transpiration. These physiological and metabolic changes ultimately reduces water loss and induces drought resistance in plants. However, it still remains unclear on how to increase ABA content in horticulture to develop plants resistant to drought conditions. In this study, the natural, plant-based compound Dehydroabietinal (DA) treatment has been identified to increase ABA levels. To test the effects of DA treatment on drought resistance, Solanum lycopersicum (tomato) used as model plants for this study. First, I treated the model plants with DA. Next, the levels of ABA were measured using bioassays. Then, stomatal conductance and transpiration were measured. Overall, these results indicate that DA treatment induces drought-resistance by increasing levels of the hormone ABA.

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