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Stressed Plants Produce their Own Aspirin

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People often reach for painkillers when they have headaches or sore muscles; plants do the same. In addition to self-medicating, plants can also use their aspirin when under stress from their surroundings. During times of stress, sunflowers and trees produce the pain medication salicylic acid, an unprocessed form of the chemical.

A new study examined how plants produce salicylic acid, the active metabolite of aspirin, and how it is regulated.

To better understand this phenomenon, researchers at UC Riverside conducted a study aimed at improving plants' chances of surviving climate change.

Arabidopsis, a plant species exposed to intense light, was used in the experiment. In high numbers, reactive oxygen species (ROS) can become extremely damaging to plants as a result of this environmental stressor. ROS plays a crucial role in the functioning of plant cells at low levels, however.

Upon detecting low levels of ROS, the team found that an early warning molecule - MEcPP was produced, which then promoted the production of salicylic acid. The chloroplasts, which carry out the vital process of photosynthesis, are then protected by further reactions in the plant cells. Heat, unabated sunlight, and drought-induced this chain of reactions in plants, showing that plants also use painkillers to treat pain!

In addition to our food, those impacts extend beyond it. By sequestering carbon dioxide, plants clean our air, provide shade, and serve as a habitat for numerous animals. It is exponentially beneficial to boost their survival," said senior author Katayoon Dehesh.

KEYWORDS

Plant stresses, climate change, environmental stresses, droughts, stress responses, insects, food production, arabidopsis, plant genetics, food security, reactive oxygen species, sunscreen, salicylic acid signaling, light signaling, plant science