

A novel chemical that promotes accumulation of Jasmonic acid, a plant hormone

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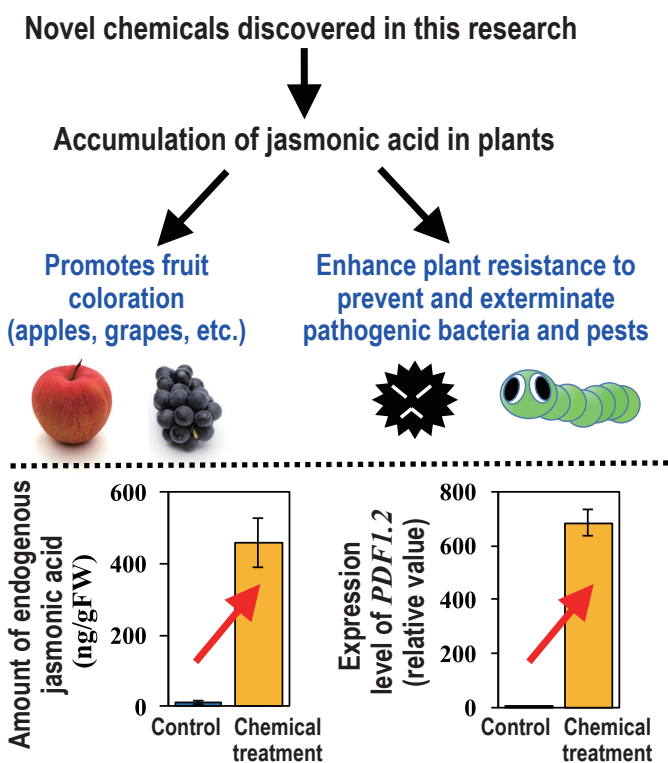
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Purpose of Research

Jasmonic acid is a plant hormone that controls plant growth including fruit coloration, and plant defense responses against pests and diseases. Although jasmonic acid analogs have been developed and used as agrochemicals to date, it has been difficult to control the amount of jasmonic acid in plants. The aim of this research is to find novel chemicals that promote the accumulation of jasmonic acid in plants and develop novel technology to control plant growth and defense responses including enhance the plant resistance against pests and diseases.

Summary of Research

We have discovered a chemical that has the effect of increasing the amount of endogenous jasmonic acid in plants. Our research has shown that when a model plant is treated with this chemical, the amount of endogenous jasmonic acid in plants and the expression level of a marker gene that responds to jasmonic acid drastically increases.



Comparison with Conventional or Competitive Technologies

- Conventional
 - Agricultural chemicals containing a jasmonic acid derivative as an active component are already used in agriculture.
- This research
 - As the novel chemical has an action mechanism completely different from that of conventional chemicals such as jasmonic acid analogs, the novel chemical could be used for unprecedented applications such as control of pests and diseases.

Expected Applications

- Promotion of fruit coloration
- Control of plant pathogenic bacteria
- Pest control

Challenges in Implementation

- It has been confirmed that if a model plant is treated with the novel chemical in a laboratory, the amount of jasmonic acid increases.
- Effectiveness for various plants is being examined and the structure is being optimized.
- Field assessment is necessary ahead of practical implementation

What We Expect from Companies

- Open to partnership opportunities with interested corporations.
- Practical application based on field assessment
 - Product development as an agricultural material

POINT

- Increases endogenous jasmonic acid amount in plants
- Induces jasmonic acid responses of plants

Future Developments

Present Structure-activity relationship test, test of effectiveness on resistance to disease and insect damage

2020 Field assessment

- Intellectual Property: International Patent Application No. No. PCT/JP2019/50992 "Jasmonic acid endogeny promoting agent, and method for promoting jasmonic acid endogeny"
- Sample: Available

