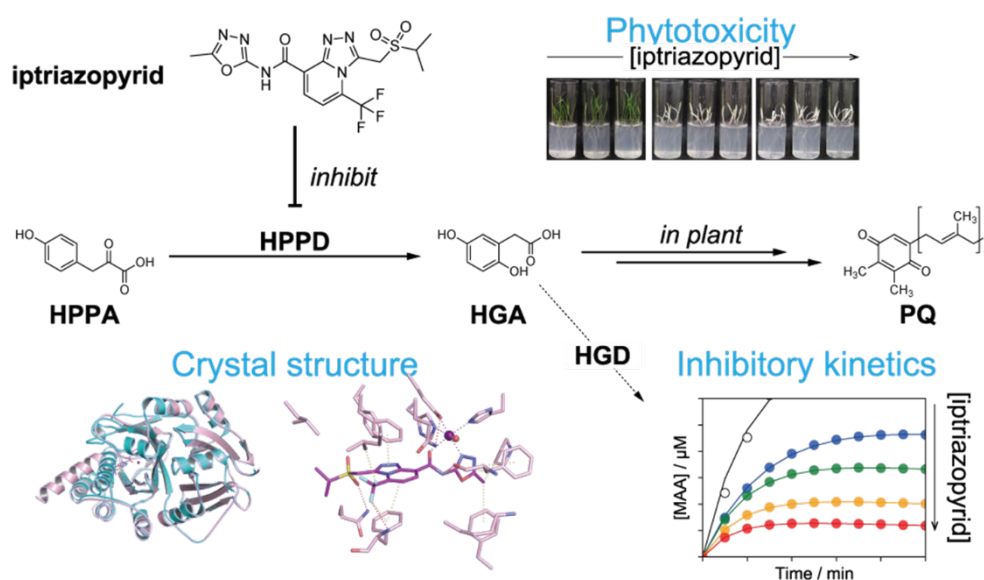


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## Mechanism of action of the rice herbicide “iptriazopyrid” elucidated

Nissan Chemical Corporation (Head office: Tokyo, Japan, President: Shinsuke Yagi, hereinafter “NCC”) and The National Institute of Advanced Industrial Science and Technology (Headquarters: Tokyo, Japan, Chairman: Kazuhiko Ishimura, hereinafter “AIST”) have elucidated the mechanism of action of the rice herbicide “iptriazopyrid.” It is an HPPD inhibitor with a novel structure, and was shown to have a strong herbicidal effect on barnyard grass, a major weed in rice paddies, without being metabolized by the barnyard grass plant, whereas it is rapidly metabolized by rice plants, making it safe for the crops. The results of this study were published in the international academic journal, “Journal of Agricultural and Food Chemistry” on 06/11/2025.



Iptriazopyrid is a novel herbicide active ingredient for paddy rice. It was discovered by NCC and provides excellent control of resistant grass weeds (e.g. barnyard grass and red sprangletop) for which existing herbicides are losing their efficacy.

NCC and AIST have found that this compound, a herbicide with a novel azole carboxamide structure, exerts its herbicidal effects by inhibiting 4-hydroxyphenylpyruvate dioxygenase (HPPD), an enzyme required for carotenoid synthesis in plants. Crystal structure analysis also revealed that it specifically binds to HPPD.

HPPD inhibitors are classified as Group 27 of the global Herbicide Resistance Action Committee (HRAC) classification, and iptriazopyrid is expected to be the first foliar-applied

herbicide for paddy rice classified as Group 27. It is also expected to be a groundbreaking solution and tool for the management of resistant weeds in rice cultivation.

This study also demonstrated that iptriazopyrid exhibits a strong herbicidal effect without being metabolized by barnyard grass plants, whereas it is rapidly metabolized by rice plants and therefore is highly safe for rice crops. Having elucidated the mechanism of action of this new herbicide allows us to supply a product that rice producers around the world can use with confidence. Since this herbicide is suitable for the direct-seeded rice system, it is expected to become an agricultural material that can contribute to the realization of sustainable agriculture in terms of labor saving, water conservation, and methane emissions reduction.

NCC will continue to develop iptriazopyrid globally, and aims to launch the product in 2027.

<Information of research paper>

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