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Enantio-specific Fate of Chiral Pesticide Pydiflumetofen in Wheat (*Triticum aestivum* L.)

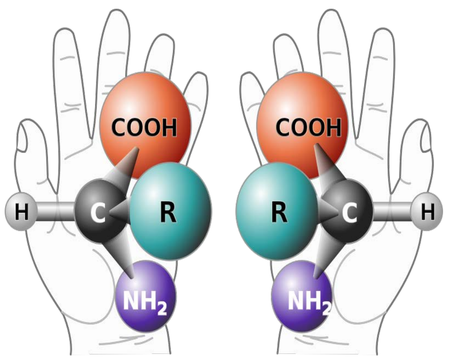
Zhen Wang, Yuting Tan, Yanhong Li, Haiyan Shi, Minghua Wang

Department of Pesticide Science, College of Plant Protection, State & Local Joint Engineering Research Center of Green Pesticide Invention and Application, Nanjing Agricultural University, Nanjing 210095, China.

南京農業大學 NANJING AGRICULTURAL UNIVERSITY

植物保护学院 COLLEGE OF PLANT PROTECTION

INTRODUCTION



*More than 30% of commercial, globally used pesticides, are chiral compounds, and this proportion has continually increased as more complex structures have been introduced in recent years[1].

*The stereoselective bioactivity, toxicity and degradation of many chiral pesticides has been reported[2].

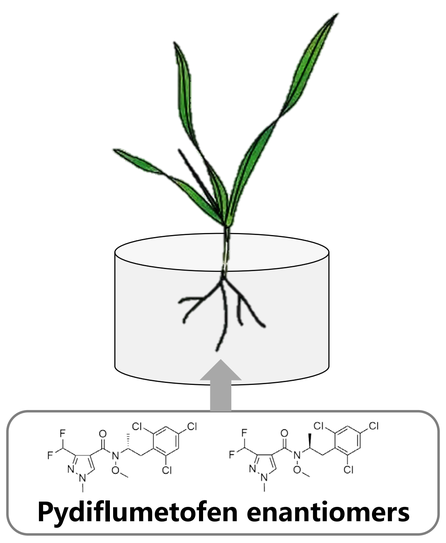
*Pydiflumetofen (PYD), a newest chiral fungicide, recently found enantioselectivity in plant degradation and bioactivity[3].

Aims: 1. Comprehensively understand the uptake, translocation, and biotransformation processes of chiral fungicide PYD in wheat from enantioselective perspective.

2. Exploring the mechanism of the enantioselective fate of chiral pesticides in plants.

METHODOLOGY

Hydroponic Experiment → **Sampling and Extrication** → **Chiral Analysis**



*Exposure stage: sampled randomly at 2, 6, 12, 24, 48, 72, 96, and 144 h

*Depuration stage: sampled randomly at24, 48, 72 and 96 h

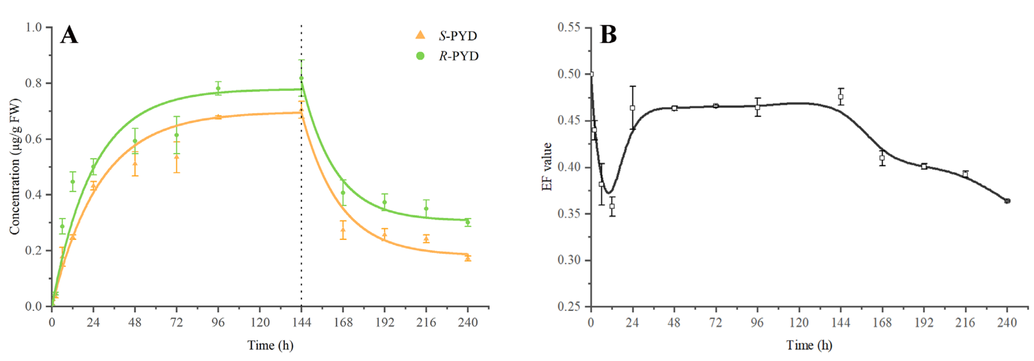
*QuEChERS method: extrication by water and acetonitrile; purification by PAS and MWCNTs

*UPLC-MS/MS for quantitative analysis of PYD enantiomers[4]

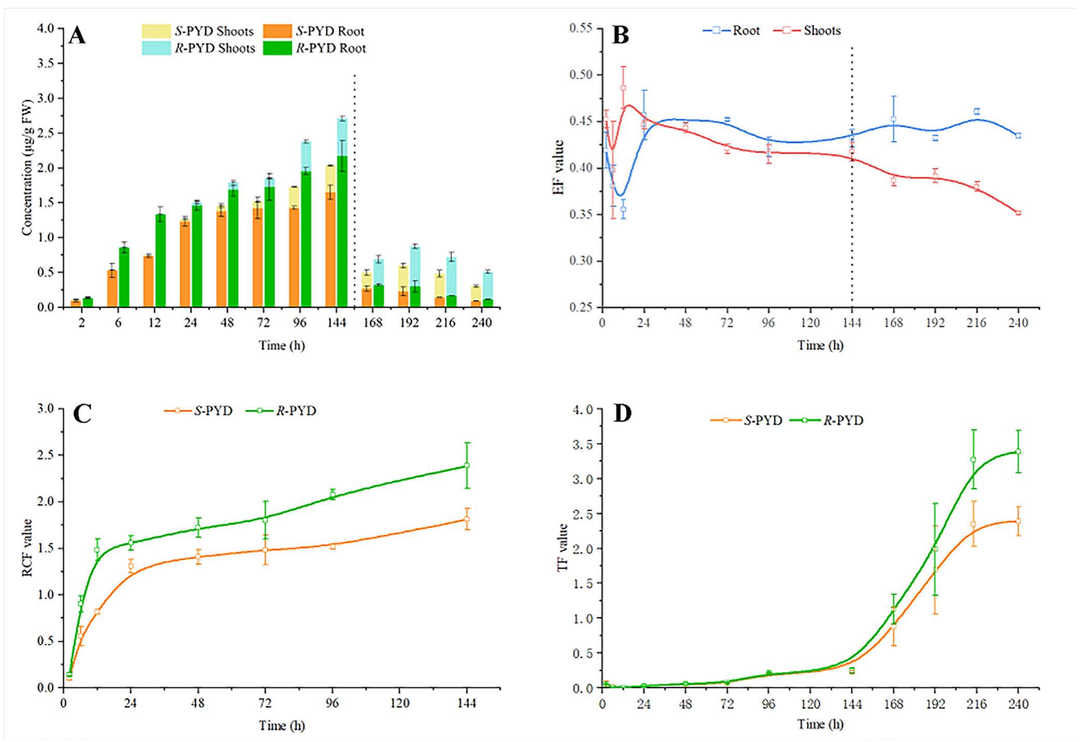
*LC-Q-TOF-MS for qualitative analysis of the metabolites

RESULTS AND DISCUSSION

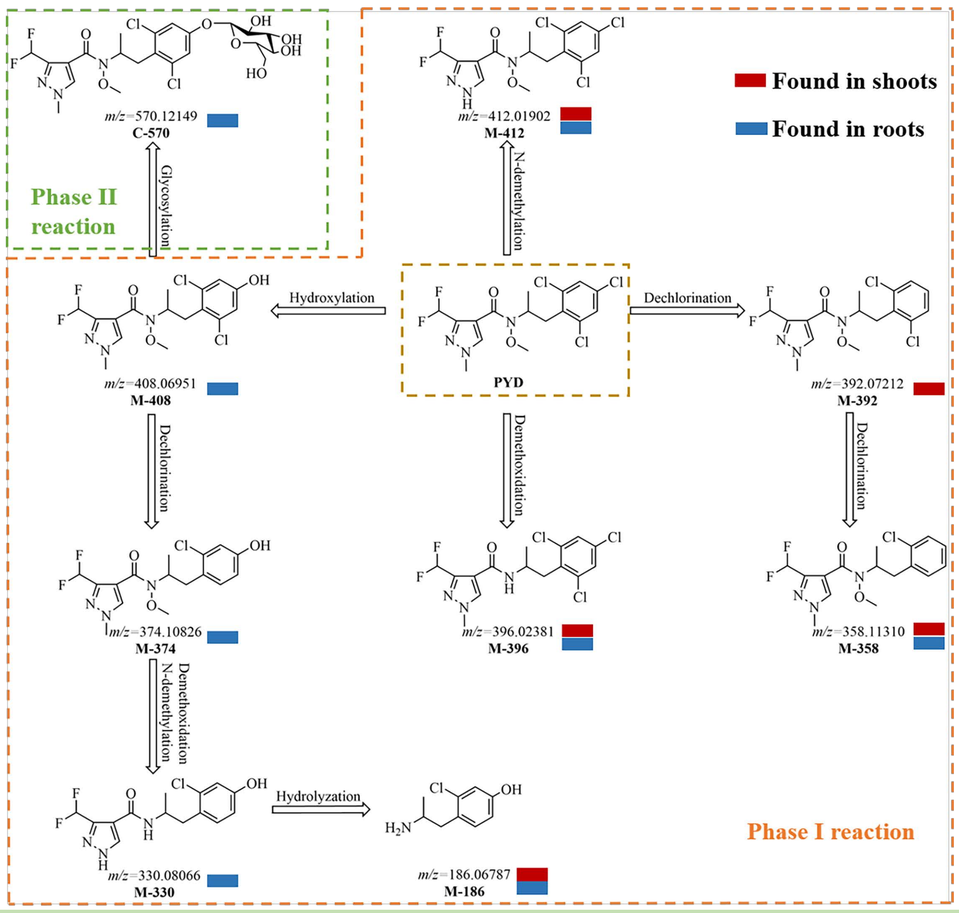
Uptake



Translocation



Biotransformation



- Enantioselective fate of PYD was observed in wheat.
- *R*-PYD was more easily accumulating in wheat roots and translocating to shoots.
- A total of 9 metabolites of PYD were detected in wheat roots and shoots.

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CONTACT

E-mail: 2020202059@stu.njau.edu.cn (Z. Wang), wangmha@njau.edu.cn (M. Wang)