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Corrigendum: Nanocarrier-mediated RNAi of *CYP9E2* and *CYB5R* enhance susceptibility of invasive tomato pest, *Tuta absoluta* to cyantraniliprole

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A Corrigendum on

Nanocarrier-mediated RNAi of *CYP9E2* and *CYB5R* enhance susceptibility of invasive tomato pest, *Tuta absoluta* to cyantraniliprole

By Ullah F, G G-P-P, Gul H, Panda RM, Murtaza G, Zhang Z, Huang J, Li X, Desneux N and Lu Y (2025). *Front. Plant Sci.* 16:1573634. doi: 10.3389/fpls.2025.1573634

In the published article, there was an error in the article title. Instead of “Nanocarrier-mediated RNAi of *CYP9E2* and *CYB5R* enhance susceptibility of invasive tomato pest, *Tuta absoluta* to cyantraniliprole”, it should be “Nanocarrier-mediated RNAi of *CYP9A306* and *CYB5R* enhances susceptibility of invasive tomato pest, *Tuta absoluta* to cyantraniliprole”.

In the published article, there was an error. Throughout the manuscript, the gene name “*CYP9E2*, *CYP92*, and *CYP9E22*” are wrong. All these three names should be replaced by the correct name “*CYP9A306*”. Also, the word “ds*CYP9E2*/SPc” should be revised as “ds*CYP9A306*/SPc”.

In the published article, there was an error in [Table 1](#) as published. In [Table 1](#), the gene name “*CYP9E2*” is wrong. It should be replaced by the correct name “*CYP9A306*”. Also, the word “ds*CYP9E2*/SPc” should be revised as “ds*CYP9A306*/SPc”. The corrected [Table 1](#) and its caption “Table 1. Primer sequences used for RT-qPCR and dsRNA synthesis” appears below.

In the published article, there was an error in [Figure 2](#) as published. In [Figure 2](#), the gene name “*CYP9E2*” is wrong. It should be replaced by the correct name “*CYP9A306*”. The corrected [Figure 2](#) and its caption “Figure 2: Relative expression levels of *CYP9A306* and *CYB5R* genes in cyantraniliprole-resistant (CyanRS) and susceptible (SS) strains of *Tuta absoluta*. Data presented as mean ± SE of the three independent biological replicates. The

asterisks **** show significant differences at $P < 0.0001$, based on Student's t-test." appear below.

In the published article, there was an error in **Figure 3** as published. In **Figure 3**, the gene name "CYP9E2" is wrong. It should be replaced by the correct name "CYP9A306". The corrected **Figure 2** and its caption "Figure 3: Phylogenetic and motif analysis of the CYB5R (a, b) and CYP9A306 (c, d) in lepidopteran insect species." appear below.

In the published article, there was an error in **Figure 4** as published. In **Figure 4**, the gene name "CYP9E2" is wrong. It should be replaced by the correct name "CYP9A306". Also, the word "dsCYP9E2/SPc" should be revised as "dsCYP9A306/SPc". The corrected **Figure 4** and its caption "Figure 4: Nanocarrier-mediated RNAi of CYP9A306 and CYB5R genes increase the sensitivity of the cyantraniliprole-resistant strain (CyanRS) of *Tuta absoluta* against cyantraniliprole. (a) Schematic diagram of nanocarrier-mediated RNA inference. (b) Relative mRNA expression level of CYP9A306 and CYB5R genes in CyanRS and SS populations of *Tuta absoluta*. Data presented as mean \pm SE of the three independent biological replicates. (c) The activity of cytochrome P450 enzyme among CyanRS and SS populations of

Tuta absoluta. (d) Mortality rates (%) of cyantraniliprole-resistant strain of *Tuta absoluta* at 48 h of feeding on dsCYP9A306/SPc, dsCYB5R/SPc, dsEGFP/SPc and DEPC water after exposure to the LC₅₀ of cyantraniliprole. Different lowercase letters represent significant differences at $P < 0.001$ level (one-way analysis of variance (ANOVA) with Tukey's *post hoc* test." appear below.

In the published article, there was an error in **Supplementary Table 1**. The gene name "CYP9E2" is wrong. It should be replaced by the correct name "CYP9A306".

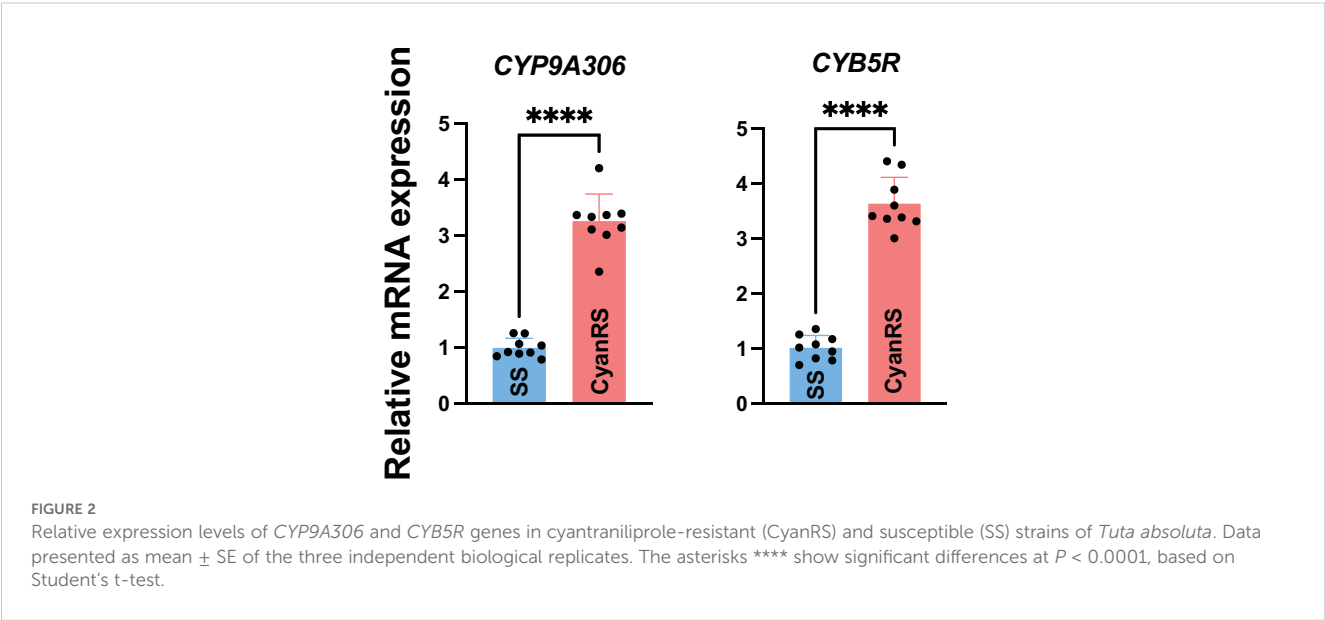
The authors apologize for these errors and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

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TABLE 1 Primer sequences used for RT-qPCR and dsRNA synthesis.

Primer name	Forward sequence	Reverse sequence
CYP9A306	CGAGGTGAAAATCATGGCGT	CAGTGTCCACCCTTCATCCT
CYB5R	CGAGAGCGGGAAAATTGAGG	CGACTGTTCTTGGTGACGTC
RPL28	TCAGACGTGCTGAACACACA	GCCAGTCTTGGACAACCATT
TaEF1 α	GAAGCCTGGTATGGTTGTCGT	GGGTGGGTTGTCTTTGTG
dsEGFP	TAATACGACTCACTATAGGGAAGTTTCAGCGTGTCCGGCGAGG	TAATACGACTCACTATAGGGCACCTTGATGCCGTTCTTCTGC
dsCYP9A306	taatacgactcactatagggTCCTTCTTCACGAGTTGGCT	taatacgactcactatagggACGTTGAAGGTGGAGGTGTC
dsCYB5R	taatacgactcactatagggTCGTGTAGTGAGCAAATCGC	taatacgactcactatagggTGTCGTCTTCTTCGCAATG





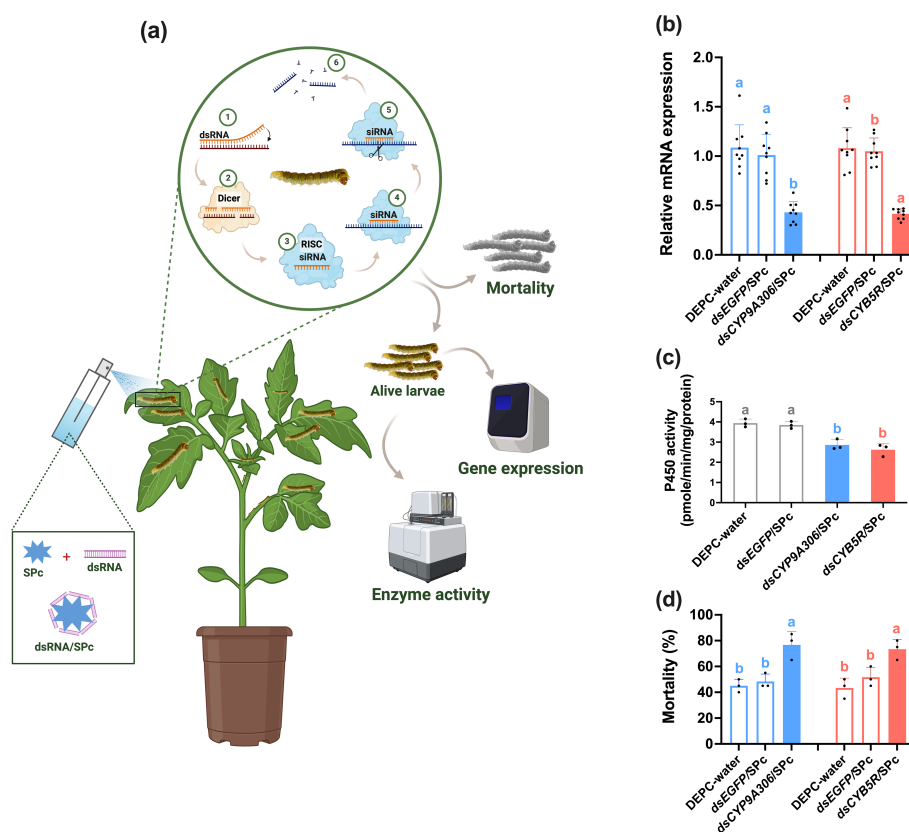


FIGURE 4

Nanocarrier-mediated RNAi of *CYP9A306* and *CYB5R* genes increase the sensitivity of the cyantraniliprole-resistant strain (CyanRS) of *Tuta absoluta* against cyantraniliprole. **(a)** Schematic diagram of nanocarrier-mediated RNA interference. **(b)** Relative mRNA expression level of *CYP9A306* and *CYB5R* genes in CyanRS and SS populations of *Tuta absoluta*. Data presented as mean \pm SE of the three independent biological replicates. **(c)** The activity of cytochrome P450 enzyme among CyanRS and SS populations of *Tuta absoluta*. **(d)** Mortality rates (%) of cyantraniliprole-resistant strain of *Tuta absoluta* at 48 h of feeding on dsCYP9A306/SPc, dsCYB5R/SPc, dsEGFP/SPc and DEPC water after exposure to the LC₅₀ of cyantraniliprole. Different lowercase letters represent significant differences at $P < 0.001$ level (one-way analysis of variance (ANOVA) with Tukey's post hoc test.