

Supplementary Material

**NADPH–cytochrome P450 reductase mediates the susceptibility of
Aphis (Toxoptera) citricidus (Kirkaldy) to abamectin**

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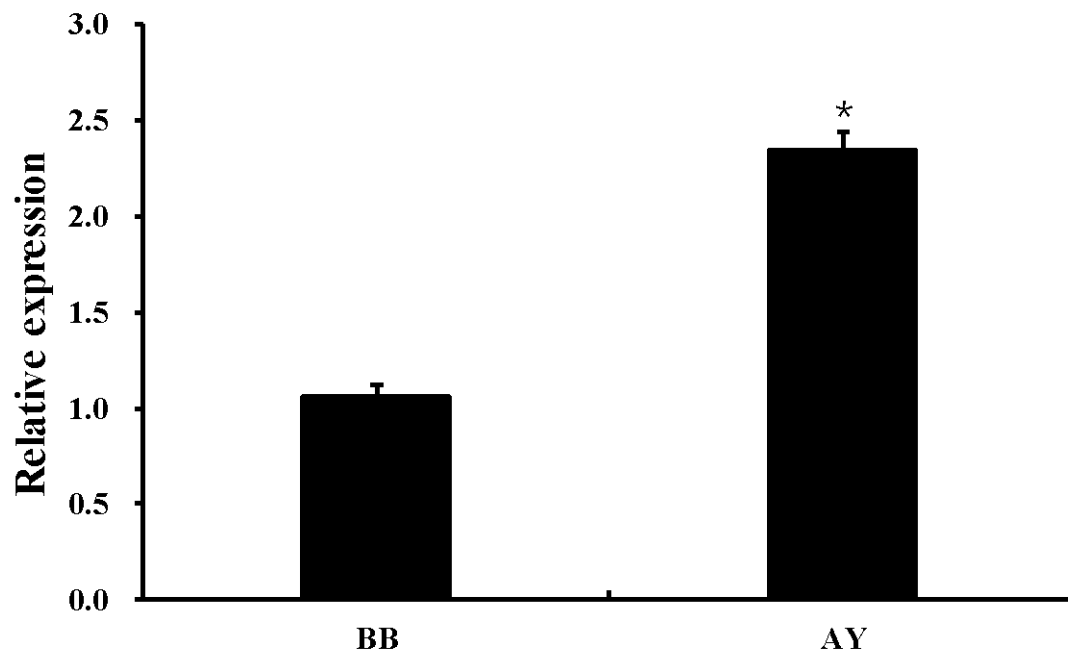


Figure S1. Expression level of *AcCPR* in *A. citricidus* of two different field-populations. The Anyue (AY) *A. citricidus* adults were obtained and collected at an orange grove in Anyue County, Sichuan Province. The LC_{50} ratio (AY:BB) to abamectin is 2.21 fold.

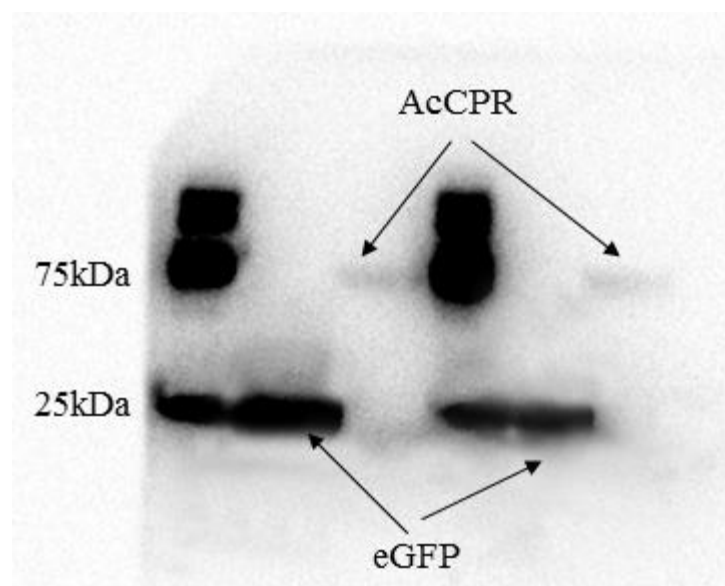


Figure S2. Western blot analysis of eGFP- and AcCPR-expressed Sf9 cells. Two replicates were shown meanwhile.

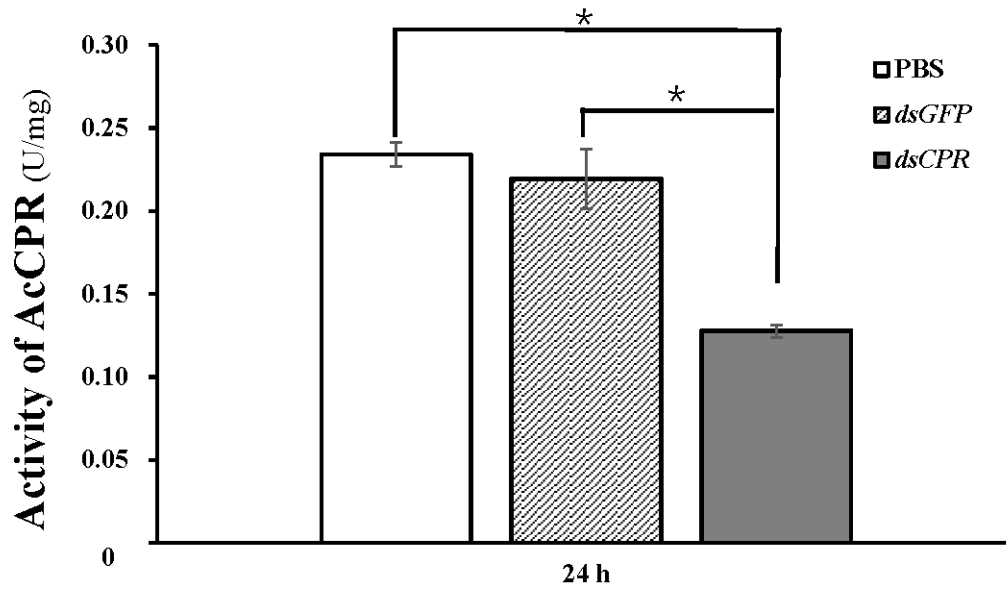


Figure S3. Activity of AcCPR in *A. citricidus* after RNAi. PBS, aphids treated with PBS; *dsGFP*, aphids treated with *dsGFP*; *dsCPR*, aphids treated with *dsCPR*. Asterisk indicates significant differences ($P < 0.05$).

Table S1. Primers used in this study

Application of primers	Primer names	Sequence (5'–3')	Product size (bp)
ORF cloning	<i>AcCPR-F</i>	ggatccgATGGAGAATTCTGAAG	2059
	<i>AcCPR-R</i>	tctagaTCAGCTCCACACATCAGC	
RT-qPCR	<i>AcCPR-qF</i>	TTGGGAGATGATGACGCCAA	285
	<i>AcCPR-qR</i>	AGAACGGTCGCCAGATTTGT	
	<i>EF1α-F</i>	GATGCACCTGGTCACAGAGA	194
	<i>EF1α-R</i>	CCATCTTGTTACACCAACG	
	<i>β-ACT-F</i>	TCCTTCGTCTCGATCTTGCT	214
	<i>β-ACT-R</i>	TGTCCATCAGGCAATTCGTA	
dsRNA synthesis	<i>dsAcCPR-F</i>	TAATACGACTCACTATAGGGCGAAGTTTTACCAGAACG	561
	<i>dsAcCPR-R</i>	TAATACGACTCACTATAGGGGGTTATCATGTAAAATCCAATCG	
	<i>dsGFP-F</i>	TAATACGACTCACTATAGGGCAGTTCCTTGTTGAATTAGATG	482
	<i>dsGFP-R</i>	TAATACGACTCACTATAGGGTTTGGTTTGTCTCCCATGATG	

Table S2. Insect species of NADPH-cytochrome P450 reductase and GenBank accession numbers

Insects	GenBank accession numbers	Insects	GenBank accession numbers
<i>Acyrtosiphon pisum</i>	XP_001945312.1	<i>Apis mellifera</i>	XP_006569767.1
<i>ogatella furcifera</i>	AHM93009.1	<i>Apis florea</i>	XP_012341485.1
<i>Nilaparvata lugens</i>	AHB59865.1	<i>Fopius arisanus</i>	XP_011306347.1
<i>Dendroctonus ponderosae</i>	AFI45002.1	<i>Pogonomyrmex barbatus</i>	XP_011643152.1
<i>Cimex lectularius</i>	AFD50507.1	<i>Plutella xylostella</i>	NP_001292469.1
<i>Bemisia tabaci</i>	AGT15701.1	<i>Drosophila mettleri</i>	AAB48964.1
<i>Tribolium castaneum</i>	XP_971174.2	<i>Chilo suppressalis</i>	AGM20565.1
<i>Monomorium pharaonis</i>	XP_012541364.1	<i>Bombyx mandarina</i>	ABJ97709.1
<i>Orussus abietinus</i>	XP_012275162.1	<i>Bombyx mori</i>	NP_001104834.1
<i>Athalia rosae</i>	XP_012251354.1	<i>Spodoptera exigua</i>	ADX95746.1
<i>Solenopsis invicta</i>	XP_011157063.1	<i>Helicoverpa armigera</i>	ADK25060.1
<i>Microplitis demolitor</i>	XP_008548684.1	<i>Musca domestica</i>	NP_001273818.1
<i>Anopheles gambiae</i>	AAO24765.1	<i>Anopheles funestus</i>	ABO77954.1
<i>Drosophila melanogaster</i>	CAA63639.1	<i>Laodelphax striatella</i>	AID55422.1
<i>Bactrocera dorsalis</i>	GU325631	<i>Aphis citricidus</i>	MG807883