

GEPHE SUMMARY

	Gephebase Gene		GepheID
Chitin synthase 1 (CHS1) (https://www.gephebase.org/search-criteria?/and+Gene)		GP00002628	
Gephebase="Chitin synthase 1 (CHS1)"#gephebase-summary-title)			Main curator
	Entry Status	Courtier	
Published			

PHENOTYPIC CHANGE

	Trait Category		
Physiology (https://www.gephebase.org/search-criteria?/and+Trait)			
Category="Physiology"#gephebase-summary-title)	Trait		
Xenobiotic resistance (insecticide; benzoylurea) (<a (insecticide;="" benzoylurea)"#gephebase-summary-title"="" href="https://www.gephebase.org/search-criteria?/and+Trait=" resistance="" xenobiotic="">https://www.gephebase.org/search-criteria?/and+Trait="Xenobiotic resistance (insecticide; benzoylurea)"#gephebase-summary-title)			
	Trait State in Taxon A		
Frankliniella occidentalis - susceptible			
	Trait State in Taxon B		
Frankliniella occidentalis - resistant			
	Ancestral State		
Taxon A			
	Taxonomic Status		
Intraspecific (https://www.gephebase.org/search-criteria?/and+Taxonomic)			
Status="Intraspecific"#gephebase-summary-title)			
	Taxon A	Taxon B	
	Latin Name		Latin Name
Frankliniella occidentalis		Frankliniella occidentalis	
(https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms="Frankliniella occidentalis"#gephebase-summary-title)		(https://www.gephebase.org/search-criteria?/and+Taxon and Synonyms="Frankliniella occidentalis"#gephebase-summary-title)	
	Common Name		Common Name
western flower thrips		western flower thrips	
	Synonyms		Synonyms
Euthrips occidentalis; Frankliniella brunnescens; Frankliniella californica; Frankliniella occidentalis brunnescens; western flower thrips; Frankliniella occidentalis (Pergande, 1895); Frankliniella occidentalis brunnescens Priesner, 1932		Euthrips occidentalis; Frankliniella brunnescens; Frankliniella californica; Frankliniella occidentalis brunnescens; western flower thrips; Frankliniella occidentalis (Pergande, 1895); Frankliniella occidentalis brunnescens Priesner, 1932	
	Rank		Rank
species		species	
	Lineage		Lineage
cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Paraneoptera; Thysanoptera; Terebrantia; Thripidae; Thripidae; Thripinae; Frankliniella		cellular organisms; Eukaryota; Opisthokonta; Metazoa; Eumetazoa; Bilateria; Protostomia; Ecdysozoa; Panarthropoda; Arthropoda; Mandibulata; Pancrustacea; Hexapoda; Insecta; Dicondylia; Pterygota; Neoptera; Paraneoptera; Thysanoptera; Terebrantia; Thripidae; Thripidae; Thripinae; Frankliniella	
	Parent		Parent
Frankliniella () - (Rank: genus)		Frankliniella () - (Rank: genus)	
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 45059)		(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 45059)	
	NCBI Taxonomy ID		NCBI Taxonomy ID
133901		133901	
(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 133901)		(https://www.ncbi.nlm.nih.gov/Taxonomy/Browser/wwwtax.cgi?id= 133901)	
	is Taxon A an Intraspecies?		is Taxon B an Intraspecies?
No		No	

GENOTYPIC CHANGE

	Generic Gene Name		UniProtKB Plutella xylostella
CHS1		A3KCN0 (http://www.uniprot.org/uniprot/A3KCN0)	
	Synonyms		GenebankID or UniProtKB
CHS1; PxCHS1B		0	
	String		
-			
	Sequence Similarities		
-			
	GO - Molecular Function		
GO:0016758 : transferase activity, transferring hexosyl groups			
(https://www.ebi.ac.uk/QuickGO/term/GO:0016758)			
	GO - Biological Process		
-			
	GO - Cellular Component		
GO:0016021 : integral component of membrane			

(<https://www.ebi.ac.uk/QuickGO/term/GO:0016021>)

Presumptive Null

No ([https://www.gephebase.org/search-criteria?/and+Presumptive Null=^No^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Presumptive+Null+No^#gephebase-summary-title))

Molecular Type

Coding ([https://www.gephebase.org/search-criteria?/and+Molecular Type=^Coding^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Molecular+Type+Coding^#gephebase-summary-title))

Aberration Type

SNP ([https://www.gephebase.org/search-criteria?/and+Aberration Type=^SNP^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Aberration+Type+SNP^#gephebase-summary-title))

SNP Coding Change

Nonsynonymous

Molecular Details of the Mutation

isoleucine to methionine

Experimental Evidence

Candidate Gene ([https://www.gephebase.org/search-criteria?/and+Experimental Evidence=^Candidate Gene^#gephebase-summary-title](https://www.gephebase.org/search-criteria?/and+Experimental+Evidence+Candidate+Gene^#gephebase-summary-title))

	Taxon A	Taxon B	Position
Codon	ATC	ATG	-
Amino-acid	Ile	Met	-

Main Reference

Benzoylurea resistance in western flower thrips *Frankliniella occidentalis* (Thysanoptera: Thripidae): the presence of a point mutation in chitin synthase 1. (2017) (<https://pubmed.ncbi.nlm.nih.gov/30364015>)

Authors

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Abstract

We examined the susceptibility of field strains (BO-1, BO-2, TO-1, and YH-1) and one laboratory strain (H-1) of the western flower thrip, *Frankliniella occidentalis*, to benzoylureas. LC values of novaluron were determined as 0.64 µg/ppm against laboratory strain and 2.1-130 µg/ppm against field strains. In the presence of piperonyl butoxide, a cytochrome P450 inhibitor, the insecticidal activity of novaluron tended to be enhanced. To examine whether point mutations in chitin synthase 1 (CHS1) discovered in an etoxazole-resistant strain of *Tetranychus urticae* and a benzoylurea-resistant strain of *Plutella xylostella* exist in *F. occidentalis*, the nucleotide sequence of CHS1 was analyzed. We found a nonsynonymous substitution that corresponded to the location of the mutations found in *T. urticae* and *P. xylostella* in the field strains of *F. occidentalis* but not in the laboratory strain, indicating that this point mutation might be associated with the benzoylurea resistance exhibited by the field strains.

Additional References

RELATED GEPHE

Related Genes

2 (nAChR, para (kdr)) ([https://www.gephebase.org/search-criteria?/or+Taxon ID=^133901^/and+Trait=Xenobiotic resistance/and+groupHaplotypes=true#gephebase-summary-title](https://www.gephebase.org/search-criteria?/or+Taxon+ID+133901^/and+Trait=Xenobiotic+resistance/and+groupHaplotypes=true#gephebase-summary-title))

Related Haplotypes

No matches found.

EXTERNAL LINKS

COMMENTS