

**Table S1.** Primers used for qRT-PCR analyses.

<b>Gene name</b>	<b>Forward primer</b>	<b>Reverse primer</b>
<i>α-tub</i>	ACTACGCTCGTGGCCACTATAC AA	ACCAGATCCAGTTCCACCTCCA AA
β-actin	CAGCCATGTATGTTGCCATC	AAATCACGACCAGCCAAATC
T2_Unigene_BMK.252 4	ATTGAACACTTGCCTCGGTAT	CCCCTTGAAAATGTAACCTTCGT
CL8369Contig1	CAACTCGTGTATCTTGGTTCTCT	ATGCCCGATGTTTACTTTACC
CL1378Contig1	TAGCTCCTCTTGGTAGTCTTGT	GATAGCTTTACCTCCGACAACA
T2_Unigene_BMK.842 6	TAGCTCCTCTTGGTAGTCTTGT	ATAGCTTTACCTCCGACAACA
T1_Unigene_BMK.156 10	GTTTCCAAAATCCGAGTCAGT	TTTAGGTTACCAATTTGACCG
CL121Contig1	ATTGAAGCTGAAACTGCCGAAA C	ACTTGAGGCTAAAATGAAACCA C
T2_Unigene_BMK.298 2	TTCTCTAGGCAATTGTACTCTC	ACTTTAGACTACGCCAAGCA
CL5336Contig1	GCTCCTCAAAAAGATATTTGTC C	AAACAAATGTGAATTCAGGG C
T2_Unigene_BMK.712 2	TGTCTCATTTC AAGCGTGGT	TATTCCTCCGATGTAGCCACT
T1_Unigene_BMK.744 1	TGTATTGCGTTATCCGAGCTT	CAGCCAATGAGCGTTCAGT
CL9149Contig1	TTAGCAGTGATAGACGACCCAA	ATCCAATCGTGACTTGTGCAT
CL7517Contig1	GGATACTTATTGGCTCGAACCT	TGACCACTCTTTTGCTCGTT
T2_Unigene_BMK.360 3	ATACTTATTGGCTCGGACCT	AGATTCTTTATGTTGACCGCTCT TT
CL1681Contig1	TGATCCAGACGATGAAACCTC	ATCGGCATCCAATTCACCAC
CL7152Contig1	CAATGAGCAGCAACAGCGA	GCTTGTGACTCGGTTCCCT
T2_Unigene_BMK.746 8	AAATTATCGGCTCCAGTCCCA	CCTTGCTGGAGTTACTTCTCGT
T2_Unigene_BMK.370 2	AGAATTAACTGTTGTCCGTCCC	ACACAATTTACTCCCGTTTGCT
T2_Unigene_BMK.659 2	TTTTGTCCGAGAAAGCCTTGT	CTAACCGCTGCTCACTGTGTCAC T
CL9567Contig1	AGGCTCCATCAACCTTACCTTC	ATAACACGGATAGGTTGAACAG G
T1_Unigene_BMK.269 0	ATATCTACAAATGATGCCGCT	GGGCATCTGAGCAATAAC
CL2236Contig1	AAACATTGGCTTGATGACGA	ACTCCTTTGGCTGATTTCGTTG
CL5455Contig1	TCCTTTCAAACCAGGCATTCCA	CTAGTGGAAAACCCGGTCCT
T2_Unigene_BMK.168 9	TCATTTGAGATTTGGCGTTCCT T	ATATTCTCAAAGGTGGACGCAA

CL2365Contig1	ACTCCAGCTTCATACGTCTCC	CGCTGATCTTCTTTGATGCTGTC T
CL8324Contig1	TGGACACATCAGGCATT	AAAGCCCTGGATAAACAC
T1_Unigene_BMK.968	ATGCTGCAGGGATAACTACAAC	CACACTTTATACGTCGCTGTC
1		
T3_Unigene_BMK.539	GTCTTCATTAACTTGGCTTGTCT	TTCTTCACAGGCAACAAGCTC
1		
T2_Unigene_BMK.859	TTCTTCACAGGCAACAAGCTC	TCATTAACTTGGCTTGTCTGG
6		
CL8591Contig1	TAACTTGCTGCTACCGGA	GAAAGCACCTAAACCAAGTCCA
T3_Unigene_BMK.570	ACCCATTTAAAATAGCCTCGCA	ATGAACCAGCAGTTTTGATTCC
9		
T2_Unigene_BMK.129	CCGTGATGATCCTTATGCTTG	GATCTTTGCTCTTCTCGCCTT
38		
CL10295Contig1	GATTTCCAAAACGTCCGGCAG	CCAAACAGAGGATTCGGCAAC
CL3394Contig1	TCGACTCGCAAACGCCACT	ATTACTAACCCAACACTACGCTGT GA
CL7961Contig1	AATGGAAGAAACACGGAAC	GGTTTGATTCCAGCAGTT
CL8740Contig1	TTTCGCAAGCATTTCGTCCC	GAGCCAATTCATTCAATCGTCC A
T2_Unigene_BMK.421	AATGTTTGATGAGCTGACTTTG	GTTCGGAATTCTGTCAACAACC
2		
T2_Unigene_BMK.172	AACCCTCCAGCTCAACAATC	GGTTTGCTTTTCATCTTTGGCT
24		
CL8128Contig1	CAAATTACCTCGAGAAAGCCAC	TTGACCCACATTGAGTCC
CL710Contig1	AAAGACGACAGTGATTATGCC	TGAAGTCAAGCCAAACAAATAG
T2_Unigene_BMK.632	ACAATCCCTACGCTTATGCTC	CCCATCCCCACATCATCTTTC
4		

---

**Table S2.** Comparison of CYP gene number in Insecta, Crustacea and *T. urticae*.

	CYP2 clan	mitochondrial CYP clan	CYP3 clan	CYP4 clan	Total
<b>Insecta</b>					
<i>Drosophila melanogaster</i>	7	11	36	32	88
<i>Anopheles gambiae</i>	10	9	40	46	105
<i>Aedes aegypti</i>	12	9	82	57	160
<i>Bombyx mori</i>	7	12	30	36	85
<i>Apis mellifera</i>	8	6	28	4	46
<i>Nasonia vitripennis</i>	7	7	48	30	92
<i>Tribolium castaneum</i>	8	9	72	45	134
<i>Acyrtosiphon pisum</i>	10	8	23	23	64
<i>Pediculus humanus</i>	8	8	11	9	36
<b>Crustacea</b>					
<i>Daphnia pulex</i>	20	6	12	37	75
<b>Acari</b>					
<i>Tetranychus urticae</i>	48	5	10	23	86
<i>T. cinnabarinus</i>	49	3	7	22	81

Data are derived from Grbic *et al.* and this study.

**Table S3.** Gene numbers of CYP sequences of *T. cinnabarinus*.

gene ID	gene ID	gene ID	gene ID	gene ID
CL6302Contig1	CL7962Contig1	T2_Unigene_BM K.15594	T2_Unigene_B MK.2540	T1_Unigene_B MK.12473
CL7880Contig1	T2_Unigene_B MK.5372	T1_Unigene_B MK.16633	CL8013Contig1	T2_Unigene_B MK.3737
CL10156Contig1	T2_Unigene_B MK.14385	CL7701Contig1	T3_Unigene_B MK.3421	CL5611Contig1
CL1143Contig1	T2_Unigene_B MK.8419	T2_Unigene_BM K.16031	T2_Unigene_B MK.11945	CL5259Contig1
CL2950Contig1	T2_Unigene_B MK.14948	CL1520Contig1	T3_Unigene_B MK.5800	T2_Unigene_B MK.6710
T3_Unigene_B MK.5585	T2_Unigene_B MK.11299	CL533Contig2	T2_Unigene_B MK.8805	CL7566Contig1
T2_Unigene_B MK.16778	T3_Unigene_B MK.9327	CL891Contig1	CL4296Contig1	T3_Unigene_B MK.1196
CL299Contig1	T2_Unigene_B MK.14798	T1_Unigene_BM K.15369	T2_Unigene_B MK.14016	T1_Unigene_B MK.3580
T2_Unigene_B MK.8914	T1_Unigene_B MK.9503	CL7269Contig1	CL2243Contig1	CL2387Contig1
CL5888Contig1	T2_Unigene_B MK.5358	T3_Unigene_BM K.2483	CL8423Contig1	T1_Unigene_B MK.8630
T2_Unigene_B MK.7768	CL539Contig1	T1_Unigene_BM K.12554	CL6061Contig1	T1_Unigene_B MK.9148
T1_Unigene_B MK.5609	CL3603Contig1	CL3793Contig1	CL9736Contig1	T2_Unigene_B MK.2805
CL934Contig1	T1_Unigene_B MK.2070	CL8789Contig1	CL8083Contig1	CL1685Contig1
CL8897Contig1	CL9195Contig1	T3_Unigene_BM K.1479	T2_Unigene_B MK.5369	CL8107Contig1
CL3234Contig1	T2_Unigene_B MK.3919	CL8768Contig1	T2_Unigene_B MK.13135	T2_Unigene_B MK.12265
T1_Unigene_B MK.8438	T3_Unigene_B MK.15246	CL9813Contig1	CL2486Contig1	CL5098Contig1
T2_Unigene_B MK.7326				

**Table S4.** An overview of GSTs and the number of genes belonging to different subgroups.

GSTfa	<i>D.</i>	<i>A.Gam</i>	<i>A.melli</i>	<i>N.</i>	<i>T.</i>	<i>B.</i>	<i>H.</i>	<i>T.urti</i>	<i>T.</i>
mily	<i>melanog</i>	<i>biae</i>	<i>fera</i>	<i>vitripe</i>	<i>castan</i>	<i>mo</i>	<i>sapi</i>	<i>cae</i>	<i>cinnabar</i>
	<i>aster</i>			<i>nnis</i>	<i>eum</i>	<i>ri</i>	<i>ens</i>		<i>inus</i>
alpha	-	-	-	-	-	-	5	-	-
delta	11	12	1	5	3	4	-	16	9
epsilon	14	8	-	-	19	8	-	-	-
mu	-	-	-	-	-	-	5	12	10
pi	-	-	-	-	-	-	1	-	-
omega	5	1	1	2	4	4	2	2	3
sigma	1	1	4	8	7	2	1	-	-
theta	4	2	1	3	1	1	2	1	3
zeta	2	1	1	1	1	2	1	-	2
unkno	-	3	-	-	-	2	-	-	7
wn									
kappa	-	-	-	-	-	-	-	1	1
Total	37	28	8	19	35	23	17	31	35

Data are derived from Grbic *et al.* and this study.

**Table S5.** Gene numbers of GST sequences of *T. cinnabarinus*.

gene ID	gene ID	gene ID	gene ID	gene ID
T2_Unigene_BM K.3207	T2_Unigene_B MK.8773	CL7870Contig1	CL677Contig1	T1_Unigene_B MK.3507
CL1968Contig1	CL7748Contig1	CL2232Contig1	CL5326Contig1	CL8336Contig1
T2_Unigene_BM K.1887	T1_Unigene_B MK.3657	CL1977Contig1	T3_Unigene_BM K.16184	T1_Unigene_B MK.6540
CL755Contig1	T1_Unigene_B MK.3259	T1_Unigene_BM K.3656	CL7599Contig1	T3_Unigene_B MK.3671
T2_Unigene_BM K.4442	CL8422Contig1	T1_Unigene_BM K.17845	CL5410Contig1	CL2068Contig1
CL4394Contig1	T3_Unigene_B MK.3480	T2_Unigene_BM K.1888	CL4707Contig1	T1_Unigene_B MK.4118
T2_Unigene_BM K.17617	T1_Unigene_B MK.7739	T1_Unigene_BM K.4706	T2_Unigene_BM K.3986	T2_Unigene_B MK.2893

**Table S6.** Gene numbers of CCE sequences of *T. cinnabarinus*.

gene ID	gene ID	gene ID	gene ID
T2_Unigene_BMK.3207	CL8507Contig1	T1_Unigene_BMK.811 6	CL4302Contig1
CL4095Contig1	T2_Unigene_BMK.853 5	CL1454Contig1	CL8507Contig1
T1_Unigene_BMK.4410	CL9410Contig1	T3_Unigene_BMK.264 7	CL7512Contig1
T3_Unigene_BMK.4715	CL9457Contig1	CL3357Contig1	T3_Unigene_BMK.10832
T3_Unigene_BMK.5460	T3_Unigene_BMK.105 49	CL3647Contig1	T3_Unigene_BMK.5460
CL8135Contig1	T3_Unigene_BMK.134 02	CL8507Contig1	T1_Unigene_BMK. 17676
T2_Unigene_BMK.8420	T3_Unigene_BMK.134 92	T2_Unigene_BMK.252 4	T2_Unigene_BMK.5720

**Table S7.** Gene numbers of differential expressed unigene sequences of *T. cinnabarinus* after exposure to  $\beta$ -Sitosterol.

gene ID	gene ID	gene ID	gene ID	gene ID
CL10201Contig1	CL5455Contig1	CL9534Contig1	T2_Unigene_BMK. 12 938	T2_Unigene_BMK. 6 592
CL10295Contig1	CL5462Contig1	CL9567Contig1	T2_Unigene_BMK. 13 937	T2_Unigene_BMK. 7 122
CL121Contig1	CL5765Contig1	T1_Unigene_BMK. 14 313	T2_Unigene_BMK. 14 070	T2_Unigene_BMK. 7 273
CL124Contig2	CL710Contig1	T1_Unigene_BMK. 15 610	T2_Unigene_BMK. 15 551	T2_Unigene_BMK. 7 468
CL1378Contig1	CL7152Contig1	T1_Unigene_BMK. 19 95	T2_Unigene_BMK. 16 222	T2_Unigene_BMK. 8 426
CL1478Contig1	CL7387Contig1	T1_Unigene_BMK. 26 90	T2_Unigene_BMK. 16 89	T2_Unigene_BMK. 8 596
CL1681Contig1	CL7517Contig1	T1_Unigene_BMK. 28 37	T2_Unigene_BMK. 17 115	T2_Unigene_BMK. 8 948
CL187Contig2	CL7961Contig1	T1_Unigene_BMK. 32 79	T2_Unigene_BMK. 17 224	T2_Unigene_BMK. 9 070
CL2236Contig1	CL8023Contig1	T1_Unigene_BMK. 50 27	T2_Unigene_BMK. 17 291	T3_Unigene_BMK. 2 860
CL2285Contig1	CL8128Contig1	T1_Unigene_BMK. 58 29	T2_Unigene_BMK. 20 99	T3_Unigene_BMK. 5 391
CL2338Contig1	CL8324Contig1	T1_Unigene_BMK. 74 41	T2_Unigene_BMK. 24 68	T3_Unigene_BMK. 5 709
CL2365Contig1	CL8332Contig1	T1_Unigene_BMK. 96 81	T2_Unigene_BMK. 26 29	T3_Unigene_BMK. 5 786
CL2399Contig1	CL8369Contig1	T1_Unigene_BMK. 99 80	T2_Unigene_BMK. 29 82	T3_Unigene_BMK. 6 006
CL2518Contig1	CL8591Contig1	T2_Unigene_BMK. 11 334	T2_Unigene_BMK. 36 03	T3_Unigene_BMK. 8 083
CL3120Contig1	CL8619Contig1	T2_Unigene_BMK. 11 446	T2_Unigene_BMK. 37 02	T3_Unigene_BMK. 9 46
CL3394Contig1	CL8740Contig1	T2_Unigene_BMK. 11 922	T2_Unigene_BMK. 42 12	
CL502Contig1	CL9149Contig1	T2_Unigene_BMK. 11 961	T2_Unigene_BMK. 47 6	
CL5296Contig1	CL9211Contig1	T2_Unigene_BMK. 12 082	T2_Unigene_BMK. 61 63	
CL5336Contig1	CL9273Contig1	T2_Unigene_BMK. 12 583	T2_Unigene_BMK. 63 24	