

# Supplementary Materials: The First Cry2Ac-Type Protein Toxic to *Helicoverpa armigera*: Cloning and Overexpression of *Cry2ac7* Gene from SBS-BT1 Strain of *Bacillus thuringiensis*

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**Table S1.** Universal set of primers used for genotyping of *Bt* isolates for *cry 1*, *cry2* and *cry 4* genes.

Sr. no.	Primer Pairs	Primer Sequence (5'→3')	Gene Amplified	Reference
1	Un1(d) Un1(r)	5'-CATGATTCATGCGGCAGATAAAAC-3' 5'-TTGTGACACTTCTGCTTCCCATT-3'	<i>cry1</i> (Partial)	Ben-Dov et al. (1997)
2	Un2 (d) Un2 (r)	GTTATTCTTAATGCAGATGAATGGG CGGATAAAATAATCTGGGAAATAGT	<i>cry2</i> (Partial)	Ben-Dov et al. (1997)
3	Un4(d) Un4(r)	5'-GTTATTCTTAATGCAGATGAATGGG-3' 5'-GCGTGACATACCCATTTCAGGTC-3'	<i>cry4</i> (Partial)	Ben-Dov et al. (1997)
4	1Ac F 1Ac R	5' GTATGCTTCTGTAACCCCGATTCACCTC 3' 5' CCTGCAGTCCCCTAAAATTCTAACACCTACTA 3	<i>Cry1Ac</i> (Partial)	Alberola et al. (1999)
5	2Aa F 2Aa R	5' GGATATTGAGTGAATTATGGGGGATA 3' 5' CCGCTATAATTAACCCTGGCACTATTCAATGA 3	<i>Cry2Aa</i> (Partial)	Alberola et al. (1999)
6	2Ab F 2Ab R	5' CACAGCAGACCCAATCATTACTTCACAAGA 3' 5' CTGTAAAAGCACCCTCTTAACCCTAAA 3'	<i>Cry2Ab</i> (Partial)	Alberola et al. (1999)
7	2Ac F 2Ac R	GGAGTGTCTCTAGCCGCATAGGTCAAG ACCATAATATTCATAAGCTCAAATTGTGGATTG	<i>cry2Ac</i> (Partial)	Alberola et al. (1999)
8	2AcT F 2AcT R	ATGAATACTGTATTGAATAACGGAAG CCTTAATAAAGTGGTGGGAAGATTAG	<i>cry2Ac</i> (Complete)	This study
9	67F 1671R	TGAAAACCTGAACGAAACAAAC CTCTCAAAACTGAACAAAACGAAA	16S rDNA (Complete)	Sacchi et al. (2002)

**Table S2.** Various local isolates of *B. thuringiensis* harboring *cry2* gene.

Sr. No.	Catalogue No.	PCR Based Detection			
		<i>cry1</i>	<i>cry1Ac</i>	<i>cry2</i>	<i>cry4</i>
1	HD29	+	-	Ab, Ac, Ad	-
2	CMBL-BT1	+	-	Aa, Ab, Ac	+
3	CMBL-BT2	+	-	Ab, Ac, Ad	+
4	CMBL-BT3	+	-	Ab, Ac	+
5	CMBL-BT4	+	-	Ac	+
6	CMBL-BT5	+	-	Ab, Ac, Ad	+
7	SBS-BT1	-	-	Ab, Ac	-
8	SBS-BT2	-	-	Aa	+
9	SBS-BT3	-	-	+	-
10	SBS-BT4	-	-	+	+
11	SBS-BT5	-	-	+	+
12	SBS-BT6	-	-	Ab, Ac	+

**Table S3.** Internal primers used for sequencing full length genes.

Serial No.	Internal Primers	Primer Sequence (5'→3')	Gene Amplified	Reference
1	2Ac 1	GCACAGGCAGCCAATTTAC	All for sequencing <i>cry2Ac</i> (Partial)	This study
2	2Ac 2	GAGGTGGAGTGTCATCTAGC		This study
3	2Ac 3	GAGTGGCATGTATTGGAGATACGG		This study
4	2Ac 4	GTAAATTGGCTGCCTGTGC		This study
5	2Ac 5	GCTAGATGACACTCCACCTC		This study
6	2Ac 6	CCGTATCTCCAATACATGCCACTC		This study
7	2Ad 1	CCCTAACCGAAACGCTGTTC	All for sequencing <i>cry2Ad</i> (Partial)	This study
8	2Ad 2	GGAGGAATTACATCTGGTAG		This study
9	2Ad 3	CCGGCGCTAAATGAATC		This study
10	2Ad 4	GGAACAGCGTTTCGGTTAGGG		This study
11	2Ad 5	CTACCAGATGTAATTCCTCT		This study
12	2Ad 6	GATTCATTTAGCGCCGG		This study
13	16S 1	GAAAGTCTGACGGAGCAACGC	All for sequencing <i>16S rDNA</i> (Partial)	This study
14	16S 2	GGTCTTGACATCCTCTGAC		This study
15	16S 3	GATCAAGGGTTGCGCTCGTTGC		This study
16	16S 4	GCGTTGCTCCGTCAGACTTTC		This study
17	16S 5	GTCAGAGGATGTCAAGACC		This study
18	16S 6	GCAACGAGCGCAACCCTTGATC		This study