**Supplementary Information**

**TITLE:** Diversity and distribution of *cry* genes in native *Bacillus thuringiensis* strains isolated from wild ecological areas of East-Mediterranean region of Turkey

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**Table S1.** Locations and types of*cry*genes found in isolates from soil samples.

**Table S2.** Specifications of *cry* primers.

**Table S1.** Locations and types of*cry*genes found in isolates from soil samples.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number of isolates** | **Locations** | **Altitude (m)** | | **Type of *cry* genes found** | **Total number of *cry* genes** |
| 1 | Tufanbeyli- | 1372 | *cry* (1Ab/Ac, 1C, 1Ac, 5,9C,11A/B) | | 8 |
| 2 | Saimbeyli-Gürcüler | 702 | *cry* (1C, cry1Ad, cry1Ab/Ac, 2) | | 5 |
| 3 | Kozan-Horzum | 727 | *cry* (2, 5, 9A) | | 3 |
| 4 | Kozan-Akkaya | 790 | *cry* (1Ab/Ac, cry5) | | 2 |
| 5 | Feke-Merkez | 602 | *cry*5 | | 1 |
| 6 | Tufanbeyli- | 1582 | *Cry* (1C, 1Ab/Ac, 1Aa/Ad, 1B) | | 5 |
| 7 | Tufanbeyli-Şar | 1455 | - | | - |
| 8 | Ceyhan-Suluca | 44 | *cry* (1Ac, 1Aa/Ad) | | 3 |
| 9 | Ceyhan-Misis yolu | 21 | - | | - |
| 10 | Adana-Demirciler | 47 | *cry* (1Ab/Ac, 1Aa/Ad, 5) | | 4 |
| 11 | İmamoğlu-Sağkaya | 62 | - | | - |
| 12 | Ceyhan-Kıvrıklı | 52 | - | | - |
| 13 | İmamoğlu-Sağkaya | 59 | - | | - |
| 14 | Ceyhan-Kıvrıklı | 40 | - | | - |
| 15 | İmamoğlu-Adana | 108 | *cry* (1Ab/Ac, 2, 5, 9C) | | 4 |
| 16 | Adana-DSİ bahçesi | 76 | *cry* (5, 1Aa/Ad, 1C, 5, 11A/B) | | 5 |
| 17 | Ceyhan-Yılankale | 29 | - | | - |
| 18 | Adana-ÇÜ Kampüsü | 24 | - | | - |
| 19 | İmamoğlu-merkez | 78 | - | | - |
| 20 | Adana-TİGEM | 31 | - | | - |
| 21 | Ceyhan-İmamoğlu | 30 | - | | - |
| 22 | İmamoğlu-Aladağ | 108 | - | | - |
| 23 | İmamoğlu- | 85 | *cry* (1Ab/Ac, 5) | | 2 |
| 24 | İmamoğlu- | 80 | *cry* (1Ab/Ac, 1Aa/Ad, 2, 5) | | 4 |
| 25 | İmamoğlu-Nalbant | 63 | *cry* (1C, 1Ac, 1Aa/Ad, 2) | | 5 |
| 26 | Yumurtalık- | 16 | *cry* (1Ab/Ac, 1Aa/Ad, 3-7-8, 5, 9C) | | 6 |
| 27 | Yumurtalık-Esenler | 11 | *cry* (1Aa/Ad, 1B, 1Ad, 1Ac, 2, 5, 9C) | | 9 |
| 28 | Yumurtalık-merkez | 8 | *cry*1C | | 1 |
| 29 | Ceyhan-Doruk | 87 | - | | - |
| 30 | İmamoğlu-Ayvalı | 80 | - | | - |
| 31 | Kozan-ÇuNurören | 44 | *cry* (9C, 11A/B) | | 2 |
| 32 | İmamoğlu-Kozan | 25 | - | | - |
| 33 | Ceyhan-Narlık | 96 | *cry* (1Ac, 1Aa/Ad, 2) | | 3 |
| 34 | Ceyhan-Mercimek | 26 | - | | - |
| 35 | Yumurtalık-Belören | 10 | *cry* 3-7-8 | | 1 |
| 36 | Ceyhan-Merkez | 17 | *cry* (1Aa/Ad, 2, 9C) | | 3 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number of isolates** | **Locations** | **Altitude (m)** | | **Type of *cry* genes found** | **Total number of *cry* genes** |
| 37 | Yumurtalık-Bebeli | 9 | - | | - |
| 38 | Karataş-Bebeli | 102 | *cry* (1Aa/Ad, 1Ac) | | 2 |
| 39 | Yumurtalık- | 11 | *cry* (1Ab/Ac, 1Aa/Ad, 1C, 5, 9C) | | 7 |
| 40 | Kozan-Adana çıkışı | 26 | - | |  |
| 41 | Yumurtalık- | 45 | *cry* (1Ab/Ac, 1B, 2) | | 3 |
| 42 | Ceyhan-Hamzalı | 57 | *cry* (1Aa/Ad, 9C) | | 4 |
| 43 | Yumurtalık- | 52 | - | | - |
| 44 | Yumurtalık- | 41 | - | | - |
| 45 | Kozan-Kayhan | 66 | *cry* (1C, 1Ac, 2, 9C) | | 5 |
| 46 | Kozan-Ayşehoca | 38 | *cry* (1Ac, 1Aa/Ad, 2, 5) | | 6 |
| 47 | Kozan- | 43 | *cry* 1Aa/Ad | | 1 |
| 48 | Yumurtalık- | 2 | *cry* (1C, 1Ac, 1Aa/Ad, 2) | | 6 |
| 49 | Kozan-Anavarza | 172 | *cry* (5, 9A, 9C, 1C, 1Ab/Ac, 1Aa/Ad, 1B, 2) | | 8 |
| 50 | Adana-Kürkçüler | 44 | *cry* (1Ab/Ac, 4A) | | 2 |
| 51 | Saimbeyli- | 779 | *cry* 5 | | 1 |
| 52 | Adana-Mersin | 87 | *cry* (1Ad, 1Ac, 2, 9A) | | 5 |
| 53 | Karataş-merkez | 1 | *cry* (1Aa/Ad, 9C, 11A/B) | | 3 |
| 54 | Karataş-merkez | 50 | *cry* 2 | | 1 |
| 55 | Karataş-Yemişli | 3 | *cry* (2, 5, 9C) | | 4 |
| 56 | Adana-Real | 40 | *cry* (2, 3-7-8, 1Ab/Ac, 1C, 1Aa/Ad) | | 8 |
| 57 | Karataş-Yemişli | 3 | - | | - |
| 58 | Karataş-Yüzbaşı | 4 | *cry* (1Ac, 1Aa/Ad, 2, 11A/B) | | 5 |
| 59 | Karataş-merkez | 13 | *cry* (5, 9C) | | 2 |
| 60 | Adana-ÇÜ | 107 | - | | - |
| 61 | Adana-Havutlu | 22 | *cry* 3-7-8 | | 1 |
| 62 | Karataş-merkez | 6 | *cry* (1Ab/Ac, 2, 9C) | | 4 |
| 63 | Karataş-Gökçeli | 7 | - | | - |
| 64 | Karataş-Gökçeli | 5 | *cry* (1Ab/Ac, 1Aa/Ad, 1Ad, 1D) | | 4 |
| 65 | Adana-Batı çıkışı | 66 | *cry* (1Ab/Ac, 1Aa/Ad, 1C, 1Ac, 2) | | 7 |
| 66 | Kozan-Devlet | 179 | - | | - |
| 67 | Kozan-Baraj | 315 | - | | - |
| 68 | Kozan-merkez | 147 | - | | - |
| 69 | Kozan-Sanayi | 109 | *cry* (1Ab/Ac, 1Ac, 1Aa/Ad, 9C ) | | 7 |
| 70 | Tufanbeyli- | 1395 | - | | - |
| 71 | Feke-Kozan çıkışı | 560 | - | | - |
| 72 | Feke-Köleli | 563 | *cry* 9A | | 1 |
| 73 | Feke-Yeşilvadi | 583 | *cry* (5, 9C, 11A/B, 1Ab/Ac, 1B, 1C, 1Ac, | | 15 |
| 74 | Saimbeyli- | 971 | *cry* (1Ab/Ac, 1C, 1Aa/Ad, 5, 11A/B) | | 7 |
| 75 | Saimbeyli- | 983 | - | | - |
| 76 | Feke-Tırtat | 574 | - | | - |
| 77 | Tufanbeyli- | 1397 | - | | - |
| 78 | Saimbeyli-Feke | 969 | *cry* (1Ad, 1Aa/Ad) | | 2 |
| 79 | Saimbeyli- | 995 | *cry* (1Aa/Ad, 5, 9C) | | 3 |
| 80 | Tufanbeyli-Şar | 1365 | - | | - |

**Table S2.** Specifications of *cry* primers.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Primers** | | |  | | **Base pairs (bp)** | **Tm (oC)** | **Sequence** | **References** |
| *cry* | *1Ab* F |  | | 216 | | 47 | 5’- AACAACTATCTGTTCTTGAC-3’ | Ceron *et al.* 1994 |
| *1Ac* R |  | | 42 | 5’- CTCTTATTATACTTACACTAC-3’ | Ceron *et al.* 1994 |
| *1C* F |  | | 130 | | 49 | 5’- AAAGATCTGGAACACCTTT-3’ | Ceron *et al.* 1994 |
| *1C* R |  | | 46 | 5’- CAAACTCTAAATCCTTTCAC-3’ | Ceron *et al.* 1994 |
| *1B* F |  | | 367 | | 49 | 5’- CTTCATCACGATGGAGTAA-3’ | Ceron *et al.* 1994 |
| *1B* R |  | | 48 | 5’- CATAATTTGGTCGTTCTGTT-3’ | Ceron *et al.* 1994 |
| *1Ac* F |  | | 180 | | 42 | 5’- GTTAGATTAAATAGTAGTGG-3’ | Ceron *et al.* 1994 |
| *1Ac* R |  | | 48 | 5’- TGTAGCTGGTACTGTATTG-3’ | Ceron *et al.* 1994 |
| *1Ad* F |  | | 171 | | 48 | 5’- CAGCCGATTTACCTTCTA-3’ | Ceron *et al.* 1994 |
| *1Ad* R |  | | 53 | 5’- TTGGAGCTCTCAAGGTGTAA-3’ | Ceron *et al.* 1994 |
| *1Aa* F |  | | 246 | | 52 | 5’- TTATACTTGGTTTCAGGCCC-3’ | Ceron *et al.* 1994 |
| *1Ad* R |  | | 53 | 5’- TTGGAGCTCTCAAGGTGTAA-3’ | Ceron *et al.* 1994 |
| *1D* F |  | | 290 | | 53 | 5’- CTGCAGCAAGCTATCCAA-3’ | Ceron *et al.* 1994 |
| *1D* R |  | | 51 | 5’- ATTTGAATTGTCAAGGCCTG -3’ | Ceron *et al.* 1994 |
| *cry2* | F |  | | 1556 | | 50 | 5’- TAAAGAAAGTGGGGAGTCTT-3’ | Masson *et al.*1998 |
| R |  | | 47 | 5’- AACTCCATCGTTATTTGTAG -3’ | Masson *et al.*1998 |
| *cry3-7-8* | 3-7-8 |  | | 652-733 | | 52 | 5’- TAACCGTTTTCGCAGAGA-3’ | Ceron *et al.* 1995 |
| 3-7-8 |  | | 57 | 5’- TCCGCACTTCTATGTGTCCAAG-3’ | Ceron *et al.* 1995 |
| *cry4* | *A* F |  | | 1290 | | 53 | 5’- GGTGCTTCCTATCTTTGGC-3’ | Carozzi *et al.* 1991 |
| *A* R |  | | 54 | 5’- TGACCAGGTCCCTTGATTAC-3’ | Carozzi *et al.* 1991 |
| *cry5* | F |  | | 322 | | 55 | 5’- TAAGCAAAGCGCGTAACCTC-3’ | Ceron *et al.* 1994 |
| R |  | | 55 | 5’- GCTCCCCTCGATGTCAATC-3’ | Ceron *et al.* 1994 |
| *Spe-cry9* | *C* F |  | | 306 | | 50 | 5’- CTGGTCCGTTCAATCC-3’ | Bravo *et al.* 1998 |
| *C* R |  | | 51 | 5’- CCGCTTCCAATAACATCTTTT-3’ | Bravo *et al.* 1998 |
| *Spe-cry9* | *A* F |  | | 571 | | 55 | 5’- GTTGATACCCGAGGCACA-3’ | Bravo *et al.* 1998 |
| *A* R |  | | 51 | 5’- CCGCTTCCAATAACATCTTTT-3’ | Bravo *et al.* 1998 |
| *Gral-cry11* | *A* F |  | | 305 | | 54 | 5’-TTAGAAGATACGCCAGATCAAGC-3’ | Bravo *et al.* 1998 |
| *B* R |  | | 52 | 5’- CATTTGTACTTGAAGTTGTAATCCC-3’ | Bravo *et al.* 1998 |

F: Forward

R: Reverse