**Table 1:** Effector haplotypes in necrotrophic fungal pathogens. *ToxA* haplotypes were reported in *Parastagonospora nodorum* (*ToxA2*-*toxa18* and *ToxA20*-*ToxA23*); *Parastagonospora pseudonodorum* (*ToxA2, ToxA6* and *ToxA15*); *Bipolaris sorokiniana* (*ToxA1* and *ToxA19*); and *Pyrenophora tritici-repentis* (*ToxA1* and *ToxA24*). *ToxB* haplotypes were reported in *Py. tritici-repentis* (*ToxB1*-*ToxB5*) and its sister species *Pyrenophora bromi* (*ToxB6*-*ToxB11*). GenBank accession numbers and reference isolates are also indicated for each haplotype. Old names and associated references for *ToxA* and *ToxB* were also indicated.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Effector haplotype** | **Species** | **Reference isolate** | **Accession number** | **Reference** | **Old name** |
| ***ToxA1*** | *Py. tritici-repentis* | Pt-lC-BFP | AF004369 | Ciuffetti et al. 1997 | H15 (a, b, c)  H21(d)  H23(e)  PtrH1(f) |
| *B. sorokiniana* | BRIP10943 | KX816408 | McDonald et al. 2018 | BsToxA1(g)  AusBsToxA(h)  BsH1(f) |
| ***ToxA2*** | *Pa. nodorum* | Sn01Aus.A1 | EF108451 (\*) | Stukenbrock and McDonald 2007 | H1 |
| *Pa. pseudonodorum* | AI829 | JX997420 | McDonald et al. 2013 |
| ***ToxA3*** | *Pa. nodorum* | SnSa95.8 | EF108458 (\*) | Stukenbrock and McDonald 2007 | H2 |
| ***toxa4*** | *Pa. nodorum* | SnSA95.113 | EF108456 (\*) | Stukenbrock and McDonald 2007 | H3 |
| ***ToxA5*** | *Pa. nodorum* | Sn95SA.103 | EF108455 (\*) | Stukenbrock and McDonald 2007 | H4 |
| ***ToxA6*** | *Pa. nodorum* | NNDKXE02-1 | EF108454 (\*) | Stukenbrock and McDonald 2007 | H5 |
| *Pa. pseudonodorum* | AP1156 | JX997421 | McDonald et al. 2013 |
| ***ToxA7*** | *Pa. nodorum* | SnTJ1-3 | EF108463 (\*) | Stukenbrock and McDonald 2007 | H6 |
| ***ToxA8*** | *Pa. nodorum* | SnSA95.134 | EF108457 (\*) | Stukenbrock and McDonald 2007 | H7 |
| ***ToxA9*** | *Pa. nodorum* | SnCA1-3 | EF108461 (\*) | Stukenbrock and McDonald 2007 | H8 |
| ***ToxA10*** | *Pa. nodorum* | SnSA95.23 | EF108459 (\*) | Stukenbrock and McDonald 2007 | H9 |
| ***ToxA11*** | *Pa. nodorum* | Sn01AUS.A2 | EF108452 (\*) | Stukenbrock and McDonald 2007 | H10 |
| ***ToxA12*** | *Pa. nodorum* | Sn01AUS.B2 | EF108453 (\*) | Stukenbrock and McDonald 2007 | H11 |
| ***ToxA13*** | *Pa. nodorum* | SnKZ30-5 | EF108462 (\*) | Stukenbrock and McDonald 2007 | H12 |
| ***ToxA14*** | *Pa. nodorum* | SnKZ3-1-6 | EF108460 (\*) | Stukenbrock and McDonald 2007 | H13 |
| ***ToxA15*** | *Pa. pseudonodorum* | AI825 | JX997416 | McDonald et al. 2013 | H15 |
| *Pa. nodorum* | IRAN\_FN313 | NA | Ghaderi et al. 2020 |
| ***ToxA16*** | *Pa. nodorum* | AS1298 | JX997419 | McDonald et al. 2013 | H14 |
| ***ToxA17*** | *Pa. nodorum* | AD260 | JX997418 | McDonald et al. 2013 | H16 |
| ***toxa18*** | *Pa. nodorum* | AF385 | JX997417 | McDonald et al. 2013 | H17 |
| ***ToxA19*** | *B. sorokiniana* | WAI2674 | KX816409 | McDonald et al. 2018 | BsToxA2 (g)  TexBsToxA (h)  H2 (d)  BsH2 (f) |
| ***ToxA20*** | *Pa. nodorum* | IRAN\_Fdez15 | NA | Ghaderi et al. 2020 | H18 |
| ***ToxA21*** | *Pa. nodorum* | IRAN\_FN14 | NA | Ghaderi et al. 2020 | H19 |
| ***ToxA22*** | *Pa. nodorum* | IRAN\_FKBG\_4 | NA | Ghaderi et al. 2020 | H20 |
| ***ToxA23*** | *Pa. nodorum* | G211-5 | MT052949 | Hafez et al. 2020 | H21 |
| ***ToxA24*** | *Py. tritici-repentis* | K1 | MZ508320 | Hafez et al. 2022 | PtrH2 |
| ***ToxB1*** | *Py. tritici-repentis* | Alg3-24 | AF483831.1 | Strelkov and Lamari 2003 | *ToxB* (g) |
| ***toxb2*** | *Py. tritici-repentis* | 90-2 | AF483832.1 | Strelkov and Lamari 2003 | *toxb* (g) |
| ***toxb3*** | *Py. tritici-repentis* | D308 | AY243461.2 | Strelkov et al. 2005 | *toxb* (g) |
| ***toxb4*** | *Py. tritici-repentis* | Ls13-14 | MN864562.1 | Guo et al. 2020 | *toxb* (g) |
| ***ToxB5*** | *Py. tritici-repentis* | Alg215 | RXHK00000000 | Moolhuijzen et al. 2022 | *ToxB* (g) |
| ***ToxB6* (h)** | *Py. bromi* | SM101 | EF452437.1 | Andrie et al. 2008 | Pb(SM101) ToxB1 |
| ***ToxB7* (i)** | *Py. bromi* | TW123 | EF452442.1 | Andrie et al. 2008 | Pb(TW123) ToxB |
| ***ToxB8* (i)** | *Py. bromi* | SM106 | EF452439.1 | Andrie et al. 2008 | Pb(SM106) ToxB1 |
| ***ToxB9* (j)** | *Py. bromi* | SM106 | EF452440.1 | Andrie et al. 2008 | Pb(SM106) ToxB2 |
| ***toxb10* (k)** | *Py. bromi* | Bf-1 | EF452435.1 | Andrie et al. 2008 | Pb(Bf-1) ToxB1 |
| ***ToxB11*(j)** | *Py. bromi* | SM101 | EF452438.1 | Andrie et al. 2008 | Pb(SM101) ToxB2 |

(a) Stukenbrock and McDonald (2007)

(b) Kamel et al (2019)

(c)Aboukhaddour et al (2021)

(d) Ghaderi et al. (2020)

(e) Hafez et al. (2020)

(f) Hafez et al. (2022)

(g) McDonald et al. (2018)

(h) Friesen et al. (2018)

(g) No haplotype numbers were previously assigned to *ToxB* or its homolog (*toxb*).

(h-k) Heterologously expressed protein from these haplotypes was infiltrated at different concentrations (9.5, 19 & 38 ng/µl.) into the 6B662 wheat line, and chlorotic symptoms were observed as reported by Andrie and Ciuffetti 2011 and summarized below:

(h) Induce chlorosis similar to that induced by Ptr ToxB at concentrations 9.5, 19 & 38 ng/µl.

(i) Only induce chlorosis when infiltrated at a concentration of 38 ng/µl.

(j) Gave weak chlorosis at 9.5 ng/μl, but chlorosis symptoms intensified at the higher concentrations of 19 and 38 ng/μl, but never reached the levels of chlorosis caused by Ptr ToxB.

(k) Gave no chlorosis symptoms at any concentration.

(\*) Intron-exon junctions for *ToxA* sequences submitted to GenBank from Stukenbrock and McDonald (2007) were corrected here. These sequences should contains “T” (not “A”) at position 405 in relation to the start codon of *ToxA* intron-less ORF.