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| --- | --- | --- | --- |
| No | Pyrrolizidine alkaloid | Native populations \* | Invasive populations \* |
| Barcelona（n=5） | Fribourg ( n=5 ) | Óbidos ( n=5 ) | Potsdam ( n=5 ) | Puławy ( n=5 ) | StAndrews ( n=5 ) | Dali.sts ( n=5 ) | Dl.hsj ( n=5 ) | Lj.lsh ( n=5 ) | Lj.xyl ( n=4 ) | Slj.djh ( n=5 ) | Slj.myz ( n=5 ) |
| 1 | senecionine | 28±25 | 40±26 | 47±27 | 25±24 | 20±16 | 32±17 | 34±22 | 24±15 | 32±29 | 53±35 | 22±24 | 13.5±13.6  |
| 2 | senecionine N-oxide | 205±227 | 485±514 | 452±295 | 217±194 | 170±161 | 41±263 | 347±200 | 309±291 | 244±184 | 529±230 | 102±99 | 57±41 |
| 3 | integerrimine | 3.8±3.6 | 5.3±3.8  | 5.8±3.7  | 4.2±3.4  | 4.7±3.4  | 6.5±4.8  | 4.9±3.6 | 5.7±4.4  | 3.8±3.0  | 10.6±6.5  | 3.2±3.5  | 1.7±1.9  |
| 4 | integerrimine N-oxide | 37±42 | 87±90 | 66±42 | 44±37 | 42±34 | 98±76 | 66±41 | 93±93 | 36±29 | 123±58 | 14.3±15.2  | 7.8±5.0  |
| 5 | senecivernine | 0.5±1.1 | <LOD | 1.1±0.8  | <LOD | <LOD | 2.1±1.2  | <LOD | <LOD | 0.1±0.3  | <LOD | 0.3±0.6  | <LOD |
| 6 | retrorsine  | 1.2±1.2 | 2.5±1.8  | 5.5±4.4  | 16±27 | 1.2±0.6  | 0.9±0.5  | 0.2±0.3 | 0.4±0.5  | 1.3±0.7  | 1.3±0.6  | 1.2±1.4  | 2.0±2.7  |
| 7 | retrorsine N-oxide  | 12±14 | 28±17 | 65±37 | 162±236 | 14±12 | 19.0±9.6  | 6.5±7.0 | 4.5±3.0  | 15±12 | 17.4±8.9  | 9.6±8.6  | 17±23 |
| 8 | seneciphylline | 28±37 | 20±16 | 20±13 | 9.5±7.1  | 15±13 | 30±19  | 13.4±9.3 | 19±14  | 16±14 | 11.5±8.3  | 12±14 | 7.7±7.7  |
| 9 | seneciphylline N-oxide | 281±437 | 223±270 | 187±110 | 86±77 | 126±107 | 343±226 | 123±75 | 222±207  | 125±104  | 117±67  | 43±47 | 28±19 |
| 10 | spartioidine | 2.3±2.9 | 2.2±1.6  | 2.4±1.6  | 1.8±1.4  | 4.5±3.5  | 7.7±5.5  | 2.2±1.4 | 4.8±3.8  | 1.8±1.3  | 2.4±1.3  | 1.0±1.2  | 0.8±0.7  |
| 11 | spartioidine N-oxide | 27±39 | 33±38 | 20±11 | 17±18 | 34±26 | 96±68  | 22±12 | 59±56 | 12.4±10.0  | 22.1±8.6  | 5.7±6.3  | 3.4±2.0  |
| 12 | riddelliine N-oxide | 1.0±1.0 | 1.0±0.7  | 2.5±2.0  | 10.9±19.7  | 1.2±0.8  | 1.6±1.0  | <LOD | 0.1±0.2  | 1.1±1.2  | 0.1±0.3  | 0.3±0.4  | 1.1±2.0  |
| 13 | unknown N-oxide 1 | <LOD | 0.8±1.2  | 0.1±0.2  | 0.9±1.8  | 0.8±1.2  | 6.0±6.1  | 0.6±1.1 | 1.3±2.3  | 0.5±0.6  | 0.3±0.4  | 0.1±0.3  | <LOD |
| 14 | unknown N-oxide 2 | 1.3±2.1 | 6.3±10.6  | 2.7±2.3  | 2.5±5.2  | 2.4±3.1  | 13.8±12.4  | 3.4±3.6 | 4.3±4.7  | 2.9±3.5  | 0.8±0.3  | 0.3±0.6  | 0.6±0.6  |
| 15 | unknown N-oxide 3 | 1.2±1.2 | 2.6±2.4  | 2.5±1.4  | 1.9±1.5  | 0.9±0.5  | 2.2±0.9  | 1.8±1.4 | 2.1±2.0  | 1.0±1.2  | 2.5±0.5  | 0.4±0.5  | 0.4±0.4  |
| 16 | unknown N-oxide 4 | 16±20 | 32±21 | 23±11  | 18±18 | 21±14 | 100±34 | 34±21 | 50±29  | 18.6±9.2  | 29.8±8.9  | 7.1±5.8  | 10.1±5.2  |
| 17 | unknown N-oxide 5 | 56±68 | 111±89 | 73±33 | 45±42 | 44±35 | 156±52 | 78±45 | 80±57 | 63±37 | 55±12 | 28±24 | 29±20 |
| 18 | unknown N-oxide 6 | 0.9±0.8 | 3.5±3.3  | 3.4±1.5  | 3.0±2.7  | 4.3±2.8  | 8.6±6.8  | 5.3±4.1 | 2.4±1.7  | 1.0±0.9  | 2.5±0.8  | 0.9±0.9  | 1.7±1.5  |
| 19 | unknown N-oxide 7 | 2.3±3.6 | 3.4±3.3  | 1.5±0.9  | 2.0±2.7  | 3.7±2.9  | 23.1±11.0  | 2.5±1.5 | 6.7±4.7  | 1.9±1.0  | 2.0±0.9  | 0.9±0.9  | 1.1±1.0  |
| 20 | unknown N-oxide 8 | 11.5±16.1 | 10.0±10.4  | 7.9±5.6  | 3.3±4.0  | 6.1±4.0  | 24.9±10.9  | 5.3±2.7  | 10.4±8.2  | 6.0±3.2  | 2.1±1.7  | 4.1±4.4  | 4.9±5.1  |
| Total PA concentration | 716±919 | 1097±1081 | 989±538 | 674±513  | 516±411 | 1384±599 | 750±426 | 899±775 | 583±417  | 982±380 | 255±254 | 187±142 |