**Supplementary Table 1.** Contents of major and trace elements in the studied maritime and continental Antarctic lichens (μg / g dry weight)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Element | Maritime Antarctic | | | | | Continental Antarctic | | |
| *U. aurantiaco-atra*  (n = 5) | *P.*  *muscigena*  (n = 3) | *P.*  *caesia*  (n = 4) | *R.*  *terebrata*  (n = 3) | *T.*  *brialmontii*  (n = 3) | *U.*  *aprina*  (n = 3) | *U.*  *decussata*  (n = 3) | *U.*  *sphacelata*  (n = 3) |
| N | 6770.0±750.0 | 19410.0±350.1 | 47740.5±875.6 | 13540.0±165.7 | 37920.0±430.4 | 21100.0±300.0 | 11170.0±300.9 | 4970.0±640.5 |
| Ca | 5635.0±100.5 | 5985.0±380.5 | 2595.0±157.3 | 1650.0±230.0 | 2240.0±120.5 | 716.0±200.0 | 78.0±20.3 | 1720.0±380.3 |
| K | 1280.0±160.8 | 4145.0±180.8 | 5245.0±364.5 | 1705.0±97.5 | 4280.0±100.3 | 3565.0±300.5 | 1835.0±200.6 | 1220.0±100.5 |
| P | 275.0±20.3 | 1570.0±128.7 | 3960.0±278.5 | 452.0±37.6 | 1760.0±97.8 | 1460,0±220.6 | 530.0±19.6 | 251.0±51.2 |
| Mg | 2120.0±140.2 | 3975.0±235.5 | 1645.0±320.7 | 5330.0±120.4 | 1350.0±87.5 | 899.0±120.5 | 378.0±75.3 | 281.0±35.7 |
| Na | 400.0±75.5 | 1420.0±177.0 | 1090.0±305.2 | 1675.0±105.8 | 2175.0±120.5 | 365.0±75.3 | 222.0±70.3 | 199.0±40.6 |
| Mn | 4.8±0.7 | 235.0±23,6 | 59.0±7.6 | 7.5±1.2 | 31.0±5.8 | 22.0±2.0 | 14.0±3.0 | 7.9±1.0 |
| Fe | 240.3±15.4 | 9270.0±226.7 | 1425.0±153.4 | 234.0±28.9 | 959.0±137.3 | 1095.0±131.0 | 1620.0±160.0 | 560.0±35.6 |
| B | 1.9±0.1 | 6.2±0.3 | 4.1±0.2 | 2.7±0.7 | 11.0±1.6 | 2.1±0.6 | 1.6±0.8 | 1.1±0.1 |
| Zn | 4.0±0.6 | 24.0±3.5 | 41.0±4.5 | 5.5±1.3 | 38.0±7.9 | 38.0±15.0 | 24.0±3.7 | 10.0±1.1 |
| Cu | 1.6±0.8 | 34.0±4.5 | 12.0±1.6 | 3.4±1.2 | 19.0±5.3 | 7.1±1.3 | 15.0±1.3 | 2.3±0.5 |
| Pb | 0.097± 0.001 | 0.292±0.003 | 0.030±0.001 | 0.012±0.001 | 0.014±0.001 | 0.061±0.003 | 0.148±0.007 | 0.269±0.001 |
| Hg | 0.360± 0.002 | 0.047±0.001 | 0.059±0.003 | 0.421±0.004 | 0.119±0.001 | 0.386±0.001 | 0.189±0.070 | 3.33±0.01 |
| Cd | 0.017± 0.001 | 0.268±0.002 | 0.572±0.003 | 0.052±0.001 | 1.120±0.003 | 0.023±0.001 | 0.038±0.002 | 0.011±0.001 |
| As | < 0.05 | 11.36±0.75 | 1.156±0.003 | 0.505±0.001 | 2.187±0.014 | < 0.05 | 0.211±0.001 | < 0.05 |

**Supplementary Table 2**. Antioxidant activity measured in Antarctic lichen thalli (μg / g dry weight); AW and AL - water- and lipid-soluble antioxidative capacity in lichen extracts; n = 3 for each lichen species.

|  |  |  |  |
| --- | --- | --- | --- |
| Lichen species | Antioxidant activity, μg / g dry weight | | |
| AW | AL | |
| Maritime Antarctic | | | |
| *U. aurantiaco-atra* | 1780 ± 230 | 750 ± 90 | |
| *P. muscigena* | 250 ± 70 | 750 ± 120 | |
| *P. caesia* | 500 ± 95 | | 4010 ± 169 |
| *R. terebrata* | 1390 ± 320 | | 500 ± 87 |
| *T. brialmontii* | 14740 ± 750 | | 11260 ± 220 |
|  | Continental Antarctic | |  |
| *U. aprina* | 2500 ± 230 | | 1500 ± 300 |
| *U. decussata* | 190 ± 70 | | 500 ± 95 |
| *U. sphacelata* | 630 ± 87 | | 500 ± 97 |