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

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| --- | --- | --- |
| 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.

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| --- | --- |
| 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 |