**Table S2:** Fatty acid (mg/ kg DW macroalgae) profile of *L. hyperborea* collected all seasons during the years 2016 and 2017.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Fatty acids** | **Year 2016** | | | |  | **Year 2017** | | | |
| **Winter** | **Spring** | **Summer** | **Autumn** |  | **Winter** | **Spring** | **Summer** | **Autumn** |
| **Saturated fatty acids (SFA)** |  |  |  |  |  |  |  |  |  |
| C4:0 | 0.80±0.23 | nd | nd | nd |  | 0.14±0.01 | nd | nd | 0.67±0.03 |
| C6:0 | nd | nd | nd | nd |  | 0.04±0.00 | nd | nd | nd |
| C8:0 | 0.09±0.00 | 0.12±0.01 | 0.06±0.00 | 0.07±0.00 |  | 0.05±0.00 | 0.08±0.00 | 0.15±0.00 | 0.13±0.00 |
| C9:0 | nd | nd | nd | nd |  | nd | nd | nd | nd |
| C10:0 | 0.15±0.00 | 0.14±0.00 | 0.07±0.00 | 0.08±0.00 |  | 0.10±0.01 | 0.10±0.00 | 0.16±0.01 | 0.15±0.00 |
| C12:0 | 0.39±0.00 | 0.22±0.00 | 0.11±0.00 | 0.06±0.01 |  | 0.21±0.00 | 0.53±0.00 | 0.21±0.00 | 0.11±0.02 |
| C14:0 | 3.69±0.01 | 6.07±0.00 | 3.29±0.00 | 3.84±0.01 |  | 3.88±0.01 | 5.19±0.01 | 4.17±0.00 | 4.10±0.03 |
| C15:0 | 0.18±0.00 | 0.31±0.00 | 0.28±0.00 | 0.23±0.01 |  | 0.22±0.01 | 0.32±0.00 | 0.35±0.00 | 0.28±0.00 |
| C16:0 | 13.52±0.02 | 18.01±0.02 | 10.43±0.06 | 11.40±0.00 |  | 13.06±0.08 | 15.96±0.09 | 14.19±0.02 | 16.75±0.09 |
| C17:0 | 4.25±0.00 | 4.24±0.00 | 4.17±0.00 | 4.11±0.00 |  | 4.04±0.00 | 4.11±0.00 | 4.11±0.00 | 4.06±0.00 |
| C18:0 | 0.56±0.00 | 0.65±0.00 | 0.42±0.00 | 0.47±0.00 |  | 0.48±0.00 | 0.63±0.01 | 0.56±0.00 | 0.98±0.01 |
| C20:0 | 0.63±0.00 | 0.52±0.00 | 0.59±0.00 | 0.78±0.00 |  | 0.63±0.00 | 0.47±0.00 | 0.82±0.01 | 0.93±0.00 |
| C21:0 | nd | nd | 0.02±0.02 | nd |  | nd | nd | nd | nd |
| C22:0 | 0.02±0.00 | 0.05±0.00 | nd | 0.01±0.01 |  | 0.02±0.02 | nd | 0.01±0.01 | 0.03±0.01 |
| C24:0 | 0.12±0.00 | 0.17±0.01 | 0.10±0.00 | 0.12±0.00 |  | 0.07±0.00 | 0.13±0.02 | 0.15±0.01 | 0.11±0.00 |
| **Σ SFA** | **24.41±0.27 A b** | **30.49±0.04 A a** | **19.54±0.09 B d** | **21.16±0.05 B c** |  | **22.92±0.14 A d** | **27.52±0.12 B b** | **24.88±0.06 A c** | **28.30±0.19 A a** |
| **Monounsaturated fatty acids (MUFA)** |  |  |  |  |  |  |  |  |  |
| C14:1 | 0.05±0.00 | 0.05±0.00 | 0.03±0.00 | 0.06±0.00 |  | 0.04±0.00 | 0.04±0.00 | 0.04±0.00 | 0.05±0.00 |
| C16:1, *cis*9 (ω7) | 5.29±0.02 | 5.12±0.04 | 2.72±0.02 | 3.67±0.00 |  | 4.57±0.00 | 3.73±0.01 | 3.68±0.00 | 4.10±0.07 |
| C18:1, *trans*9 (ω9) | nd | 0.04±0.00 | 0.02±0.02 | 0.04±0.00 |  | 0.03±0.00 | 0.02±0.02 | 0.04±0.00 | 0.04±0.00 |
| C18:1, *cis*9 (ω9) | 8.45±0.01 | 13.60±0.01 | 9.63±0.02 | 9.92±0.00 |  | 8.42±0.01 | 12.46±0.03 | 12.32±0.01 | 16.19±0.08 |
| C18:1 (ω7) | 1.37±0.00 | 1.28±0.04 | 0.83±0.01 | 0.65±0.01 |  | 0.99±0.01 | 1.39±0.01 | 0.91±0.00 | 1.20±0.04 |
| C20:1, *cis*11 (ω9) | 0.06±0.00 | 0.05±0.01 | 0.03±0.03 | 0.04±0.01 |  | 0.06±0.00 | 0.04±0.00 | 0.05±0.01 | 0.07±0.00 |
| C22:1 (ω9) | nd | nd | nd | nd |  | nd | nd | nd | nd |
| C24:1, *cis*15 (ω9) | nd | nd | nd | nd |  | nd | nd | nd | nd |
| **Σ MUFA** | **15.22±0.04 A b** | **20.13±0.11 A a** | **13.25±0.09 B d** | **14.37±0.02 B c** |  | **14.11±0.03 B d** | **17.69±0.06 B b** | **17.03±0.03 A c** | **21.64±0.20 A a** |
| **Polyunsaturated fatty acids (PUFA)** |  |  |  |  |  |  |  |  |  |
| C18:2, *trans*9, 12 (ω6) | nd | nd | nd | nd |  | nd | nd | nd | nd |
| C18:2, *cis*9,12 (ω6) | 2.26±0.00 | 2.94±0.01 | 1.13±0.02 | 1.56±0.01 |  | 1.80±0.03 | 1.80±0.00 | 1.50±0.00 | 2.86±0.01 |
| C18:3, *cis*6,9,12 (ω6) | 0.32±0.01 | 0.45±0.01 | 0.20±0.00 | 0.23±0.00 |  | 0.22±0.00 | 0.34±0.00 | 0.30±0.00 | 0.41±0.00 |
| C18:3 (ω3) | 2.54±0.01 | 4.54±0.00 | 1.14±0.01 | 1.50±0.02 |  | 1.84±0.06 | 2.56±0.01 | 1.61±0.01 | 2.05±0.04 |
| C20:3, *cis*8, 11, 14 (ω6) | 0.13±0.00 | 0.28±0.03 | 0.09±0.00 | 0.07±0.00 |  | 0.20±0.12 | 0.22±0.01 | 0.12±0.01 | 0.22±0.00 |
| C20:3, *cis*11, 14, 17 (ω3) | nd | 0.17±0.00 | 0.06±0.00 | 0.09±0.00 |  | 0.07±0.00 | 0.12±0.00 | 0.12±0.01 | 0.09±0.00 |
| C20:4 (ω6) | 4.59±0.03 | 9.57±0.00 | 4.90±0.00 | 4.11±0.01 |  | 2.56±0.01 | 7.78±0.02 | 6.17±0.01 | 6.19±0.04 |
| C20:5, *cis*5,8,11,14,17 (ω3) | 6.29±0.02 | 11.81±0.07 | 5.76±0.01 | 6.50±0.02 |  | 3.88±0.01 | 9.50±0.01 | 9.18±0.05 | 8.80±0.04 |
| C22:2, *cis*13, 16 | 0.25±0.01 | 0.77±0.00 | 0.30±0.00 | 0.24±0.00 |  | 0.19±0.00 | 0.67±0.00 | 0.41±0.02 | 0.33±0.01 |
| C22:5, *cis*7,10,13,16,19 (ω3) | 0.80±0.00 | 0.45±0.00 | 0.38±0.00 | 0.79±0.00 |  | 0.65±0.01 | 0.47±0.01 | 0.71±0.01 | 0.83±0.08 |
| C22:6, *cis*4,7,10,13,16,19 (ω3) | nd | 0.07±0.00 | nd | nd |  | nd | nd | nd | nd |
| **Σ PUFA** | **17.80±0.07 A b** | **31.04±0.13 A a** | **13.97±0.04 B d** | **15.09±0.06 B c** |  | **11.41±0.23 B b** | **23.46±0.07 B a** | **20.11±0.13 A b** | **21.79±0.21 A a** |
| **Σ ω6** | **7.29±0.04 A b** | **13.23±0.05 A a** | **6.33±0.02 B c** | **5.98±0.02 B d** |  | **4.78±0.15 B d** | **10.14±0.04 B a** | **8.09±0.03 A c** | **9.69±0.05 A b** |
| **Σ ω3** | **9.63±0.03 A b** | **17.04±0.08 A a** | **7.34±0.02 B c** | **8.87±0.04 B c** |  | **6.43±0.07 B c** | **12.64±0.03 B a** | **11.61±0.08 A b** | **11.77±0.15 A a** |
| **ω6/ω3** | **0.76** | **0.78** | **0.86** | **0.67** |  | **0.74** | **0.80** | **0.70** | **0.82** |
| **Overall ω6/ω3** | **0.77** |  |  |  |  |  |  |  |  |

Results are expressed as average ± standard deviation of the mean (SEM). Different letters indicate statistical differences (P < 0.05) in the proximate composition of each macroalgae between different seasons within the same year (lower case letters) or differences within the same season between the years 2016 and 2017 (upper case letters). Abbreviations in the table are as follow: nd (non-detected), ω3 (omega-3), ω6 (omega-6).