|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Appearance | Color | Texture | Flavor | Overall | Fishy odor | L\* | a\* | b\* | Hardness | Springiness |
| Appearance | 1 |  |  |  |  |  |  |  |  |  |  |
| Color | 0.972\*\* | 1 |  |  |  |  |  |  |  |  |  |
| Texture | 0.882\* | 0.770 | 1 |  |  |  |  |  |  |  |  |
| Flavor | 0.949\*\* | 0.856\* | 0.980\*\* | 1 |  |  |  |  |  |  |  |
| Overall | 0.933\*\* | 0.846\* | 0.989\*\* | 0.992\*\* | 1 |  |  |  |  |  |  |
| Fishy odor | -0.953\*\* | -0.870\* | -0.923\*\* | -0.977\*\* | -0.959\*\* | 1 |  |  |  |  |  |
| L\* | 0.929\*\* | 0.899\* | 0.755 | 0.858\* | 0.804 | -0.878\* | 1 |  |  |  |  |
| a\* | -0.045 | 0.043 | -0.056 | -0.122 | -0.057 | 0.217 | -0.290 | 1 |  |  |  |
| b\* | 0.958\*\* | 0.937\*\* | 0.795 | 0.892\* | 0.858\* | -0.928\*\* | 0.971\*\* | -0.297 | 1 |  |  |
| Hardness | 0.945\*\* | 0.939\*\* | 0.801 | 0.878\* | 0.858\* | -0.884\* | 0.945\*\* | -0.247 | 0.981\*\* | 1 |  |
| Springiness | 0.895\* | 0.802 | 0.883\* | 0.931\*\* | 0.894\* | -0.918\*\* | 0.935\*\* | -0.398 | 0.931\*\* | 0.922\*\* | 1 |

Supplementary Table S1. Correlation coefficients of color, texture, and sensory evaluation results of *Gelidium* seaweed

\*indicate significance at *p* < 0.05

\*\* indicate significance at *p* < 0.01

Supplementary Table S2. Volatile compounds of Fresh and untreated *Gelidium* seaweed

|  |  |  |  |
| --- | --- | --- | --- |
|  | Compound | RI | Concentration\* (ng/ml) |
| 1 | acetic acid | 600 | 46.9 |
| 2 | hexanal | 801 | 281 |
| 3 | 2-hexenal | 844 | 61.3 |
| 4 | heptanal | 895 | 499 |
| 5 | 1-octen-3-ol | 972 | 97.4 |
| 6 | octanal | 998 | 235 |
| 7 | 3,5-octadien-2-ol | 1037 | 62.3 |
| 8 | 2,6-nonadienal | 1148 | 43.3 |
| 9 | β-cyclocitral | 1213 | 46.2 |
| 10 | 2-decenal | 1241 | 28.5 |
| 11 | α-ionone  | 1412 | 254 |
| 12 | β-ionone | 1471 | 379 |

\*Semi-quantitated

Supplementary Table S3. Volatile compounds of dried *Gelidium* seaweed (three washing and sun drying cycle)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Compound | RI | Concentration\* (ng/ml) |
| 1 | hexanal | 824 | 178 |
| 2 | heptanal | 899 | 92.3 |
| 3 | 2-heptenal | 950 | 336 |
| 4 | octanal | 1001 | 295 |
| 5 | 2,4-heptadienal | 1010 | 200 |
| 6 | 3-ccten-2-one | 1040 | 250 |
| 7 | 2-octenal | 1061 | 307 |
| 8 | 1-octanol | 1073 | 191 |
| 9 | 3,5-octadien-2-one | 1089 | 94.4 |
| 10 | nonanal | 1103 | 332 |
| 11 | 2,6-nonadienal | 1151 | 28.4 |
| 12 | 2-nonenal | 1160 | 98.3 |
| 13 | 2,4-nonadienal | 1192 | 185 |
| 14 | β-cyclocitral | 1217 | 25.0 |
| 15 | 2-decenal | 1245 | 206 |
| 16 | 2,4-decadienal | 1290 | 179 |
| 17 | 2-undecenal | 1359 | 64.3 |
| 18 | dodecanal | 1397 | 25.0 |
| 19 | α-ionone | 1412 | 63.5 |
| 20 | β-ionone | 1470 | 22.4 |
| 21 | epoxy-β-ionone | 1479 | 28.1 |
| 22 | 1-pentadecene | 1484 | 21.9 |
| 23 | tridecanal | 1498 | 11.3 |
| 24 | octadecenal | 1559 | 25.2 |
| 25 | tetradecanal | 1599 | 27.6 |

\*Semi-quantitated

Supplementary Table S4. Volatile compounds of dried *Gelidium* seaweed (seven washing and drying cycles)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Compound | RI | Concentration\* (ng/ml) |
| 1 | hexanal | 801 | 138 |
| 2 | 2-hexenal | 844 | 29.6 |
| 3 | heptanal | 895 | 22.3 |
| 4 | 2-heptenal | 950 | 177 |
| 5 | octanal | 998 | 287 |
| 6 | 3-octen-2-one | 1033 | 55.3 |
| 7 | 2-octenal | 1057 | 61.6 |
| 8 | 1-octanol | 1070 | 49.5 |
| 9 | nonanone | 1087 | 8.90 |
| 10 | nonanal | 1100 | 252 |
| 11 | 2-nonenal | 1142 | 137 |
| 12 | nonadienal | 1188 | 108 |
| 13 | decanal | 1198 | 46.3 |
| 14 | β-cyclocitral | 1213 | 15.4 |
| 15 | 2-decenal | 1241 | 645 |
| 16 | 2,4-decadienal | 1286 | 150 |
| 17 | undecanal | 1298 | 56.0 |
| 18 | 2-undecenal | 1354 | 103 |
| 19 | undecanol | 1363 | 32.3 |
| 20 | dodecanal | 1397 | 61.7 |
| 21 | dodecenal | 1456 | 69.0 |
| 22 | octadecenal | 1462 | 28.2 |
| 23 | epoxy-β-ionone | 1473 | 10.1 |
| 24 | pentadecene | 1481 | 68.7 |
| 25 | tridecanal | 1498 | 54.0 |
| 26 | octadecenal | 1559 | 25.7 |
| 27 | tetradecanal | 1599 | 12.1 |

\*Semi-quantitated.

Supplementary Table S5. Volatile compounds of *Gelidium* seaweed (seven washing and halogen lamp drying cycles)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Compound | RI | Concentration\* (ng/ml) |
| 1 | hexanal | 801 | 233 |
| 2 | 2-hexenal | 844 | 31.8 |
| 3 | 2,4-hexadien-1-ol | 860 | 7.45 |
| 4 | 2-heptanone | 881 | 12.1 |
| 5 | heptanal | 895 | 35.6 |
| 6 | 2-heptenal | 945 | 281 |
| 7 | 1-octen-3-one | 969 | 44.2 |
| 8 | 1-octen-3-ol | 972 | 29.9 |
| 9 | 2,4-heptadienal | 990 | 184 |
| 10 | octanal | 998 | 169 |
| 11 | 3-octen-2-one | 1033 | 315 |
| 12 | 2-octenal | 1057 | 235 |
| 13 | 3,5-octadien-2-one | 1067 | 44.8 |
| 14 | 1-octanol | 1070 | 143 |
| 15 | 3,5-octadien-2-one | 1086 | 53.7 |
| 16 | nonanal | 1099 | 292 |
| 17 | 2-nonenal | 1142 | 77.8 |
| 18 | 2,6-nonadienal | 1148 | 14.3 |
| 19 | decanal | 1198 | 20.8 |
| 20 | 2,4-nonadienal | 1188 | 374 |
| 21 | β-cyclocitral | 1213 | 18.2 |
| 22 | 2-decenal | 1241 | 112 |
| 23 | 2,4-decadienal | 1286 | 284 |
| 24 | undecanal | 1298 | 6.77 |
| 25 | dodecanal | 1397 | 23.3 |
| 26 | α-ionone | 1412 | 35.7 |
| 27 | β-ionone | 1413 | 14.4 |
| 28 | epoxy-β-ionone | 1473 | 18.2 |
| 29 | tridecanal | 1498 | 34.3 |

\*Semi-quantited.

Supplementary Table S6. Volatile compounds of *Gelidium* seaweed (nine washing and halogen lamp drying cycles)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Compound | RI | Concentration\* (ng/ml) |
| 1 | hexanal | 796 | 156 |
| 2 | 2-hexenal | 844 | 26.7 |
| 3 | 2-heptanone | 881 | 5.41 |
| 4 | heptanal | 895 | 22.3 |
| 5 | 2-heptenal | 945 | 246 |
| 6 | 1-octen-3-one | 969 | 17.4 |
| 7 | 1-octen-3-ol | 972 | 13.1 |
| 8 | octanal | 998 | 138 |
| 9 | 2,4-heptadienal | 1008 | 112 |
| 10 | 3-octen-2-one | 1033 | 147 |
| 11 | 3,5-octadien-2-one | 1036 | 8.98 |
| 12 | 2-octenal | 1057 | 179 |
| 13 | 1-octanol | 1070 | 45.4 |
| 14 | 3,5-octadien-2-one | 1089 | 20.7 |
| 15 | nonanal | 1098 | 286 |
| 16 | 2-nonenal | 1142 | 161 |
| 17 | 2,6-nonadienal | 1147 | 4.76 |
| 18 | 2,4-nonadienal | 1188 | 302 |
| 19 | decanal | 1198 | 37.8 |
| 20 | β-cyclocitral | 1212 | 8.10 |
| 21 | 2-decenal | 1241 | 474 |
| 22 | 2,4-decadienal | 1286 | 184 |
| 23 | undecanal | 1298 | 21.2 |
| 24 | 2-undecenal | 1354 | 21.3 |
| 25 | undecanal | 1397 | 36.6 |
| 26 | α-ionone | 1412 | 11.9 |
| 27 | 1-pentadecene | 1480 | 36.9 |
| 28 | tridecanal | 1498 | 36.6 |

\*Semi-quantitated.

Supplementary Table S7. Volatile compounds of *Gelidium* seaweed (twelve washing and halogen lamp drying cycles)

|  |  |  |  |
| --- | --- | --- | --- |
|  | Compound | RI | Concentration\* (ng/ml) |
| 1 | hexanal | 801 | 142 |
| 2 | 2-hexenal | 844 | 22.3 |
| 3 | heptanal | 895 | 15.0 |
| 4 | 1-ccten-3-one | 969 | 7.36 |
| 5 | octanal | 998 | 139 |
| 6 | 3-octen-2-one | 1033 | 99.5 |
| 7 | 2-octenal | 1057 | 110 |
| 8 | 1-octanol | 1070 | 14.8 |
| 9 | nonanal | 1099 | 305 |
| 10 | 2-nonenal | 1142 | 214 |
| 11 | decanal | 1198 | 59.5 |
| 12 | 2,4-nonadienal | 1188 | 264 |
| 13 | β-cyclocitral | 1213 | 7.43 |
| 14 | 2-decenal | 1241 | 526 |
| 15 | 2,4-decadienal | 1286 | 126 |
| 16 | undecanal | 1298 | 47.6 |
| 17 | 2-undecenal | 1354 | 95.5 |
| 18 | dodecanal | 1397 | 43.2 |
| 19 | α-ionone | 1412 | 12.2 |
| 20 | 2-dodecenal | 1456 | 60.4 |
| 21 | 1-pentadecene | 1480 | 64.1 |
| 22 | tridecanal | 1498 | 42.2 |

\*Semi-quantitated.