Table S1 Volatile component of esters in 9 varieties of muskmelon

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Compound Name | Component RT | Formula | CAS | Relative content/% | | | | | | | | |
| GTMB | XZM-1 | ZZX | NSM | HMC | BPC | XZM-25 | JX | 20-123 |
| Acetic acid, methyl ester | 1.53 | C3H6O2 | 79-20-9 |  |  | 3.36 | 0.26 |  |  |  |  |  |
| Ethyl Acetate | 1.99 | C4H8O2 | 141-78-6 |  |  | 13.02 | 0.30 | 0.32 |  |  |  |  |
| Methyl propionate | 2.08 | C4H8O2 | 554-12-1 |  |  | 0.15 |  |  |  |  |  |  |
| Butanoic acid, 2-methyl-, methyl ester | 4.93 | C6H12O2 | 868-57-5 |  |  | 0.16 |  |  |  |  |  |  |
| Carbonocyanidic acid, ethyl ester | 6.22 | C4H5NO2 | 623-49-4 |  |  |  |  |  |  |  | 2.35 |  |
| Butanoic acid, 2-methyl-, ethyl ester | 7.48 | C7H14O2 | 7452-79-1 |  |  | 0.04 |  |  |  |  |  |  |
| Propanoic acid, 2-oxo-, methyl ester | 8.99 | C4H6O3 | 600-22-6 | 2.65 |  |  |  |  |  |  |  |  |
| 2-Chloroethyl benzoate | 18.69 | C9H9ClO2 | 939-55-9 |  |  |  | 0.17 | 0.33 |  |  |  |  |
| Hexanoic acid, hexyl ester | 19.10 | C12H24O2 | 6378-65-0 |  |  |  |  |  | 0.29 | 0.54 | 2.19 | 0.63 |
| Butanoic acid, hexyl ester | 19.22 | C10H20O2 | 2639-63-6 |  |  | 0.38 |  |  |  |  | 3.19 | 0.55 |
| Octanoic acid, ethyl ester | 19.27 | C10H20O2 | 106-32-1 |  | 0.19 |  |  |  |  |  |  |  |
| Acetic acid, octyl ester | 19.67 | C10H20O2 | 112-14-1 | 0.26 | 1.04 | 2.87 |  |  | 1.04 | 1.21 | 2.02 | 1.58 |
| Acetic acid, hexyl ester | 19.70 | C8H16O2 | 142-92-7 |  | 1.04 |  |  |  |  |  |  |  |
| 1,2,3-Propanetriol, 1-acetate | 20.45 | C5H10O4 | 106-61-6 |  |  |  |  |  |  |  | 2.98 |  |
| n-Heptyl isocyanate | 22.28 | C8H15NO | 4747-81-3 |  |  | 22.33 | 29.82 |  |  |  |  |  |
| 2-methyl-Propanoic acid 3-hydroxy-2,2,4-trimethylpentyl ester | 22.68 | C12H24O3 | 77-68-9 | 0.80 |  |  |  |  |  |  |  |  |
| 2-Propenoic acid, 2-methyl-, ethenyl ester | 26.21 | C6H8O2 | 4245-37-8 |  |  |  |  |  |  |  | 5.38 |  |
| Dihydroactinidiolide | 28.11 | C11H16O2 | 17092-92-1 |  | 0.04 |  |  |  |  | 0.06 |  | 0.12 |
| 2,2,4-Trimethyl-1,3-pentanediol diisobutyrate | 29.34 | C16H30O4 | 6846-50-0 | 4.25 |  | 0.25 |  |  |  |  |  |  |
| Isopropyl palmitate | 38.66 | C19H38O2 | 142-91-6 | 0.27 | 0.11 | 0.07 | 0.08 |  |  |  | 3.06 |  |
| Hexanedioic acid, bis(2-ethylhexyl) ester | 45.05 | C22H42O4 | 103-23-1 |  | 4.87 | 3.47 | 1.91 | 1.37 | 41.04 | 0.61 | 4.71 | 2.87 |

Table S2 Volatile component of aldehydes in 9 varieties of muskmelon

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Compound Name | Component RT | Formula | CAS | Relative content/% | | | | | | | | |
| GTMB | XZM-1 | ZZX | NSM | HMC | BPC | XZM-25 | JX | 20-123 |
| Acetaldehyde | 1.26 | C2H4O | 75-07-0 |  |  | 1.81 | 3.41 | 14.09 |  |  |  |  |
| Propanal | 1.39 | C3H6O | 123-38-6 |  | 3.36 |  |  |  |  |  |  |  |
| 2-Butenal | 2.41 | C4H6O | 4170-30-3 |  |  |  | 0.19 |  |  |  |  |  |
| (E)-2-Pentenal | 4.34 | C5H8O | 1576-87-0 |  | 0.36 | 0.12 |  |  |  |  |  |  |
| 3-methyl-2-Butenal | 4.38 | C5H8O | 107-86-8 |  |  | 0.12 |  |  |  |  |  |  |
| 3-methyl-Pentanal | 5.74 | C6H12O | 15877-57-3 |  |  | 0.17 |  |  |  |  |  |  |
| Hexanal | 5.79 | C6H12O | 66-25-1 |  |  |  | 0.10 | 0.21 |  |  |  |  |
| (E)-2-Hexenal | 7.65 | C6H10O | 6728-26-3 |  | 0.36 | 0.21 |  |  | 0.55 |  |  |  |
| 2-Hexenal | 7.90 | C6H10O | 505-57-7 |  |  |  |  |  |  | 0.51 |  |  |
| (Z)-2-Heptenal | 11.36 | C7H12O | 57266-86-1 |  |  | 0.14 |  |  |  |  |  |  |
| Benzaldehyde | 11.66 | C7H6O | 100-52-7 |  | 3.21 | 2.07 | 0.29 | 1.38 | 5.91 | 2.61 |  | 2.87 |
| Octanal | 13.11 | C8H16O | 124-13-0 | 0.55 | 26.67 | 4.28 | 12.07 | 11.33 | 17.00 | 27.60 | 11.95 | 23.93 |
| 2,5-Furandicarboxaldehyde | 16.00 | C6H4O3 | 823-82-5 | 0.32 |  |  |  |  |  |  | 0.61 |  |
| Pentanal | 16.24 | C5H10O | 110-62-3 |  |  |  |  |  |  |  | 1.53 |  |
| (E,Z)-2,6-Nonadienal | 18.00 | C9H14O | 557-48-2 | 1.43 | 2.91 | 4.89 |  | 2.15 |  |  |  | 10.59 |
| (E,E)-2,6-Nonadienal | 18.21 | C9H14O | 17587-33-6 |  |  |  |  | 2.15 | 6.21 |  |  |  |
| 3-ethyl-Benzaldehyde | 18.28 | C9H10O | 34246-54-3 |  |  |  |  |  |  |  | 0.15 | 0.18 |
| (E)-2-Nonenal | 18.66 | C9H16O | 18829-56-6 |  | 10.21 |  |  |  | 0.95 |  | 0.61 | 1.62 |
| 2-methyl-Propanal | 19.04 | C4H8O | 78-84-2 |  |  |  | 20.25 |  |  |  |  |  |
| Decanal | 20.01 | C10H20O | 112-31-2 |  |  |  | 0.97 | 2.04 | 0.26 | 0.40 | 0.23 | 0.44 |
| 5-Acetoxymethyl-2-furaldehyde | 20.22 | C8H8O4 | 10551-58-3 | 15.89 |  |  |  |  |  |  |  |  |
| Dodecanal | 24.35 | C12H24O | 112-54-9 | 0.26 |  |  |  |  |  |  |  |  |
| Hexadecanal | 34.57 | C16H32O | 629-80-1 | 0.19 |  |  |  |  |  |  |  |  |

Table S3 Volatile component of alcohols in 9 varieties of muskmelon

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Compound Name | Component RT | Formula | CAS | Relative content/% | | | | | | | | |
| GTMB | XZM-1 | ZZX | NSM | HMC | BPC | XZM-25 | JX | 20-123 |
| Ethanol | 1.28 | C2H6O | 64-17-5 |  |  | 1.28 | 1.87 |  |  |  |  |  |
| Methyl Alcohol | 2.80 | CH4O | 67-56-1 | 9.17 | 1.23 |  | 3.02 |  |  |  | 1.73 |  |
| 2-methyl-1-Butanol | 3.88 | C5H12O | 137-32-6 |  |  | 0.18 |  |  |  |  |  |  |
| 2-ethoxy-Ethanol | 4.91 | C4H10O2 | 110-80-5 |  |  |  |  | 0.41 |  |  |  |  |
| 3-Furanmethanol | 7.87 | C5H6O2 | 4412-91-3 |  |  |  |  |  |  |  | 4.55 |  |
| 2-Furanmethanol | 8.12 | C5H6O2 | 98-00-0 | 2.05 |  |  |  |  |  |  |  |  |
| 1-Hexanol | 8.19 | C6H14O | 111-27-3 |  |  | 0.23 |  |  |  |  |  |  |
| (1S,2R)-(+)-2-Amino-1,2-diphenylethanol | 11.81 | C14H15NO | 23364-44-5 |  |  |  | 1.35 |  |  |  |  |  |
| 1,4-Butanediol | 12.22 | C4H10O2 | 110-63-4 |  |  |  |  |  |  | 0.41 |  | 0.25 |
| 2-ethyl-1-Hexanol | 13.90 | C8H18O | 104-76-7 |  | 3.28 | 1.52 |  |  |  |  |  |  |
| 2-Propyl-1-pentanol | 13.91 | C8H18O | 58175-57-8 |  |  |  |  |  |  |  |  | 2.30 |
| 1-phenyl-1,2-Propanediol | 14.17 | C9H12O2 | 1855-09-0 |  |  |  |  |  | 2.36 |  |  | 1.07 |
| (R\*,R\*)-(.+/-.)-1,2-diphenyl-1,2-Ethanediol | 14.17 | C14H14O2 | 655-48-1 |  |  |  |  |  |  | 1.02 |  |  |
| 1-phenyl-1,2-Propanediol | 14.26 | C9H12O2 | 1855-09-0 | 0.33 |  |  |  |  |  |  |  |  |
| 3-methyl-1-Heptanol | 14.34 | C8H18O | 1070-32-2 |  |  | 0.44 |  |  |  |  |  |  |
| 5-Methyl-1-heptanol | 14.34 | C8H18O | 7212-53-5 |  |  | 0.44 |  |  |  |  |  |  |
| (S)-(+)-5-Methyl-1-heptanol | 14.41 | C8H18O | 57803-73-3 |  | 1.66 |  |  | 1.02 | 2.66 |  |  | 8.24 |
| 1-Octanol | 14.84 | C8H18O | 111-87-5 |  | 2.17 |  |  |  | 1.67 | 25.57 |  | 1.83 |
| 4-Nonanol | 16.55 | C9H20O | 5932-79-6 |  | 1.26 | 1.84 | 2.76 | 3.27 | 1.80 | 7.31 |  | 4.03 |
| 2-methyl-3-Octanol | 16.55 | C9H20O | 26533-34-6 |  | 1.26 |  |  |  |  |  |  |  |
| 2-Nonanol | 16.55 | C9H20O | 628-99-9 | 1.21 | 11.90 | 12.81 | 10.58 | 34.96 | 7.63 | 15.10 | 6.90 | 15.43 |
| 3-Nonanol | 16.69 | C9H20O | 624-51-1 |  | 1.40 | 1.13 | 1.25 | 3.93 | 0.86 | 1.45 | 0.76 | 1.64 |
| 4-methyl-1-Heptanol | 17.34 | C8H18O | 817-91-4 |  | 0.67 |  |  |  |  |  |  |  |
| 2-Methyl-2-nonanol | 17.55 | C10H22O | 10297-57-1 |  | 0.67 |  |  |  |  |  |  |  |
| 3-(1,3-dimethylbutoxy)-2-Butanol | 17.58 | C10H22O2 | 74810-45-0 |  |  |  |  |  | 1.21 | 1.84 |  |  |
| 2-methyl-1-Octanol | 17.82 | C9H20O | 818-81-5 |  |  | 0.36 | 0.44 | 0.87 |  |  |  |  |
| 3-ethyl-3-Octanol | 18.01 | C10H22O | 2051-32-3 |  |  | 0.80 |  | 1.23 |  |  |  |  |
| 4-Ethyl-4-heptanol | 18.10 | C9H20O | 597-90-0 |  |  |  | 0.53 |  | 0.38 | 0.68 |  | 0.72 |
| 7-Tridecanol | 18.11 | C13H28O | 927-45-7 |  |  |  |  | 0.35 |  |  |  |  |
| 4-Decanol | 18.14 | C10H22O | 2051-31-2 |  | 1.31 | 2.50 | 2.77 | 3.01 |  | 1.47 |  | 2.81 |
| 2-Nonyn-1-ol | 18.21 | C9H16O | 5921-73-3 |  | 0.63 |  |  |  |  |  |  |  |
| (E,Z)-3,6-Nonadien-1-ol | 18.21 | C9H16O | 56805-23-3 |  | 0.63 | 2.12 |  |  |  |  | 0.55 |  |
| 2,6-dimethyl-3-Heptanol | 18.34 | C9H20O | 19549-73-6 |  |  |  |  |  | 1.65 |  | 0.59 |  |
| 2,2-dimethyl-3-Octanol | 18.48 | C10H22O | 19841-72-6 |  | 0.62 |  | 1.63 | 1.61 |  | 1.13 |  | 0.54 |
| 2,6-Nonadien-1-ol | 18.64 | C9H16O | 7786-44-9 |  |  | 0.88 |  |  |  |  |  |  |
| 2-Decen-1-ol | 18.66 | C10H20O | 22104-80-9 |  | 10.21 |  |  |  |  |  |  |  |
| (6Z)-Nonen-1-ol | 18.78 | C9H18O | 35854-86-5 |  |  | 6.41 |  |  |  | 0.50 |  |  |
| 11-Dodecenol | 18.83 | C12H24O | 35289-31-7 |  |  |  |  |  |  |  |  | 0.42 |
| 10-Dodecenol | 18.84 | C12H24O | 35237-63-9 |  |  |  |  |  |  | 0.44 |  |  |
| 9-Decen-1-ol | 18.87 | C10H20O | 13019-22-2 |  | 0.14 |  |  |  |  |  |  |  |
| 2-Methyl-5-nonanol | 19.08 | C10H22O | 29843-62-7 |  |  |  |  |  |  | 0.53 |  |  |
| 5-Decanol | 19.16 | C10H22O | 5205-34-5 |  | 0.48 | 0.54 | 0.64 | 1.05 |  | 1.13 |  | 1.32 |
| 3-Decanol | 19.54 | C10H22O | 1565-81-7 |  |  | 0.84 | 1.11 | 1.73 |  |  |  |  |
| Cyclodecanol | 19.64 | C10H20O | 1502-05-2 |  | 0.24 |  |  |  |  |  |  |  |
| 2-Ethylcyclohexanol | 19.64 | C8H16O | 3760-20-1 |  | 0.24 |  |  |  |  |  |  |  |
| 1-Nonanol | 26.38 | C9H20O | 143-08-8 | 0.33 |  |  |  |  |  |  |  |  |
| 4-methyl-2-propyl-1-Pentanol | 26.61 | C9H20O | 54004-41-0 |  |  |  |  |  |  |  | 4.82 |  |
| Tetrahydro-4H-pyran-4-ol | 29.23 | C5H10O2 | 2081-44-9 |  |  |  |  |  |  |  | 0.66 |  |
| (E)-2-Octen-1-ol | 30.78 | C8H16O | 18409-17-1 |  | 0.10 |  |  |  |  |  |  |  |
| octahydro-4a(2H)-Naphthalenemethanol | 31.30 | C11H20O | 99992-19-5 | 0.11 | 1.31 | 2.50 | 1.70 | 3.73 | 3.47 | 2.81 |  |  |

Table S4 Volatile component of ketones in 9 varieties of muskmelon

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Compound Name | Component RT | Formula | CAS | Relative content/% | | | | | | | | |
| GTMB | XZM-1 | ZZX | NSM | HMC | BPC | XZM-25 | JX | 20-123 |
| Acetone | 1.34 | C3H6O | 67-64-1 |  | 0.69 |  |  |  |  |  |  |  |
| 3-Pentanone | 2.14 | C5H10O | 96-22-0 |  |  |  |  |  |  |  | 0.16 |  |
| 1-hydroxy-2-Propanone | 3.45 | C3H6O2 | 116-09-6 | 2.18 |  |  |  |  |  |  |  | 1.69 |
| 2(5H)-Furanone | 6.43 | C4H4O2 | 497-23-4 | 1.27 |  |  |  |  |  |  |  |  |
| Cyclopentanone | 9.94 | C5H8O | 120-92-3 |  |  |  |  |  |  |  |  | 0.25 |
| 1,2-Cyclopentanedione | 10.44 | C5H6O2 | 3008-40-0 | 0.39 |  |  |  |  |  |  | 2.24 | 0.17 |
| Dihydroxyacetone | 10.77 | C3H6O3 | 96-26-4 | 2.21 |  |  |  |  |  |  |  |  |
| 2,4-Dihydroxy-2,5-dimethyl-3(2H)-furan-3-one | 12.27 | C6H8O4 | 10230-62-3 | 0.81 |  |  |  |  |  |  | 0.65 |  |
| 1-Penten-3-one | 14.06 | C5H8O | 1629-58-9 |  |  |  |  | 1.59 |  |  |  |  |
| 2,3-Benzofurandione | 14.35 | C8H4O3 | 4732-72-3 |  | 0.05 |  |  |  |  |  |  |  |
| 3-methyl-2,4(3H,5H)-Furandione | 17.09 | C5H6O3 | 1192-51-4 |  |  |  |  |  |  |  | 0.29 |  |
| 3-Methyl-4-nonanone | 17.25 | C10H20O | 35778-39-3 |  |  | 0.14 |  |  |  |  |  |  |
| 2,3-dihydro-3,5-dihydroxy-6-methyl-4H-  Pyran-4-one | 17.63 | C6H8O4 | 28564-83-2 | 9.02 |  |  |  |  |  |  | 10.76 |  |
| 2,5-Dimethyl-4-hydroxy-3-hexanone | 17.78 | C8H16O2 | 815-77-0 |  | 0.90 |  |  |  |  |  |  |  |
| 3-Decanone | 18.99 | C10H20O | 928-80-3 |  | 0.57 |  |  |  | 0.67 | 1.03 | 0.65 | 1.20 |
| Ketone, methyl 2-methyl-1,3-oxothiolan-2-yl | 20.69 | C6H10O2S | 33266-06-7 | 4.41 |  |  |  |  |  |  |  |  |
| (E)-5,9-Undecadien-2-one, 6,10-dimethyl | 26.08 | C13H22O | 3796-70-1 |  |  |  | 0.20 |  | 0.35 |  | 1.09 | 0.50 |
| (Z)-5,9-Undecadien-2-one, 6,10-dimethyl | 26.09 | C13H22O | 3879-26-3 |  | 0.19 |  |  | 0.38 |  |  |  |  |
| 4-(2,6,6-trimethyl-1-cyclohexen-1-yl)-3-Buten-2-one | 26.89 | C13H20O | 14901-07-6 |  |  |  |  |  |  |  | 0.73 |  |
| 6-Methyl-6-(5-methylfuran-2-yl)heptan-2-one | 26.97 | C13H20O2 | 50464-95-4 |  | 0.14 |  |  |  | 0.24 |  |  | 0.27 |
| 1,6-Dioxacyclododecane-7,12-dione | 28.11 | C10H16O4 | 777-95-7 | 0.28 |  |  |  |  |  |  |  |  |
| 2,5-bis(1,1-dimethylpropyl)-2,5-Cyclohexadiene-  1,4-dione | 30.96 | C16H24O2 | 4584-63-8 | 0.71 |  |  |  |  |  |  |  |  |
| 3,5-di-tert-Butyl-4-hydroxyacetophenone | 34.31 | C16H24O2 | 14035-33-7 | 1.62 |  |  |  |  |  |  |  |  |

Table S5 Volatile component of acids in 9 varieties of muskmelon

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Compound Name | Component RT | Formula | CAS | Relative content/% | | | | | | | | |
| GTMB | XZM-1 | ZZX | NSM | HMC | BPC | XZM-25 | JX | 20-123 |
| Formic acid | 2.51 | CH2O2 | 64-18-6 | 5.31 |  |  |  |  |  |  |  | 3.02 |
| Acetic acid | 2.97 | C2H4O2 | 64-19-7 | 8.55 | 1.21 | 2.69 | 0.33 | 1.31 |  |  | 20.53 | 6.17 |
| 4-hydroxy-Butanoic acid | 9.93 | C4H8O3 | 591-81-1 | 0.49 | 0.13 |  |  |  |  |  |  |  |
| hydroxy-Acetic acid | 10.06 | C2H4O3 | 79-14-1 | 13.90 |  |  |  |  |  |  |  |  |
| Butanoic acid, anhydride | 11.84 | C8H14O3 | 106-31-0 |  | 0.33 |  |  |  |  |  |  |  |
| Propanoic acid, anhydride | 13.93 | C6H10O3 | 123-62-6 |  |  |  |  |  | 1.42 |  |  |  |
| 2-Methylbutanoic anhydride | 17.74 | C10H18O3 | 1468-39-9 |  |  |  |  | 4.19 |  |  |  |  |
| (+)-Dibenzoyl-L-tartaric acid anhydride | 17.98 | C18H12O7 | 64339-95-3 |  |  |  |  |  |  | 1.77 | 0.91 |  |
| Benzoic acid | 18.24 | C7H6O2 | 65-85-0 | 0.44 |  | 0.16 |  |  |  | 1.76 |  |  |
| 6-(1,1-dimethylethyl)-2,3-dihydro-1,1-d  imethyl-1H-Indene-4-acetic acid | 32.16 | C17H24O2 | 55591-05-4 | 1.58 |  |  |  |  |  |  |  |  |
| Tetradecanoic acid | 33.25 | C14H28O2 | 544-63-8 |  |  |  |  |  |  |  |  | 0.09 |
| n-Hexadecanoic acid | 37.35 | C16H32O2 | 57-10-3 |  |  |  |  |  | 0.07 | 0.16 | 0.16 | 0.33 |

Table S6 Volatile component of phenols in 9 varieties of muskmelon

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Compound Name | Component RT | Formula | CAS | Relative content/% | | | | | | | | |
| GTMB | XZM-1 | ZZX | NSM | HMC | BPC | XZM-25 | JX | 20-123 |
| Eugenol | 23.64 | C10H12O2 | 97-53-0 |  |  | 0.22 |  |  |  |  |  |  |
| 2-(1,1-dimethylethyl)-4-(1-methylpropyl)-Phenol | 29.73 | C14H22O | 52184-13-1 | 0.27 |  |  |  |  |  |  |  |  |
| 2,6-Bis(1,1-dimethylethyl)-4-(1-oxopropyl)phenol | 30.32 | C17H26O2 | 14035-34-8 |  |  |  |  |  | 0.32 | 0.32 | 0.31 | 0.33 |
| 2,4,6-tri-tert-butyl-Phenol | 34.42 | C18H30O | 732-26-3 | 1.50 |  |  |  |  |  |  |  |  |
| 2,6-Bis(1,1-dimethylethyl)-4-(1-oxopropyl)phenol | 35.99 | C17H26O2 | 14035-34-8 | 4.98 |  |  |  |  |  |  |  |  |