The effects of preharvest 1-methylcyclopropene (1-MCP) treatment on the fruit quality parameters of cold-stored ‘Szampion’ cultivar apples

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Supplementary Table S1. Results of lightness L* coordinate of color of blush measured for ‘Szampion’ cultivar apples in preharvest period compared for group treated with 1-MCP and control group not treated with 1-MCP.

| Assessment | Preharvest 1-MCP treatment | No preharvest 1-MCP treatment | p    |
|------------|----------------------------|-------------------------------|------|
| 1st preharvest | Mean±SD 40.6±0.7 | 42.2±3.3 | 0.3808 |
|             | Median (min-max) 40.5 (39.9-41.4) | 42.4 (38.5-45.3) | |
| 2nd preharvest | Mean±SD 42.1±1.2 | 42.5±3.2 | 0.8322 |
|             | Median (min-max) 42.2 (40.8-43.2) | 42.6 (39.4-45.3) | |
| 3rd preharvest | Mean±SD 41.5±3.4 | 42.3±1.2 | 0.6469 |
|             | Median (min-max) 41.9 (37.0-45.0) | 42.4 (40.9-43.7) | |
| 4th preharvest | Mean±SD 42.0±1.0 | 38.4±3.8 | 0.1224 |
|             | Median (min-max) 42.4 (40.5-42.8) | 39.6 (32.9-41.6) | |
| 5th preharvest | Mean±SD 42.3±1.3 | 41.2±1.2 | 0.2579 |
|             | Median (min-max) 42.8 (40.4-43.3) | 40.8 (40.4-42.9) | |
| 6th preharvest | Mean±SD 41.0±1.0 | - | |
|             | Median (min-max) 40.8 (40.1-42.5) | - | |

* non-parametric distribution (verified using Shapiro-Wilk test – p ≤ 0.05); 1-MCP – 1-methylcyclopropene.
Supplementary Table S2. Results of a* coordinate of color measured for ‘Szampion’ cultivar apples in preharvest period compared for group treated with 1-MCP and control group not treated with 1-MCP.

| Assessment   | Preharvest 1-MCP treatment | No preharvest 1-MCP treatment | p     |
|--------------|----------------------------|-------------------------------|-------|
|              | Mean±SD                    | 36.1±1.1                      | 34.0±3.4 | 0.2747 |
| 1st preharvest | Median (min-max)           | 36.1 (34.9-37.3)              | 33.7 (30.9-37.6) |
| 2nd preharvest | Mean±SD                    | 34.0±2.2                      | 33.6±4.2 | 0.8731 |
| 3rd preharvest | Median (min-max)           | 34.1 (31.2-36.7)              | 32.7 (29.5-39.5) |
| 4th preharvest | Mean±SD                    | 31.3±3.6                      | 28.3±0.5 | 0.1528 |
| 5th preharvest | Median (min-max)           | 30.8 (27.5-36.0)              | 28.2 (27.9-29.0) |
| 6th preharvest | Mean±SD                    | 29.5±2.0                      | 30.2±2.3 | 0.6255 |
| 5th preharvest | Median (min-max)           | 29.0 (27.6-32.2)              | 29.6 (28.3-33.4) |
| 4th preharvest | Mean±SD                    | 29.0±0.8                      | 32.2±0.6 | 0.0007 |
| 6th preharvest | Median (min-max)           | 29.0 (28.1-29.9)              | 32.0 (31.6-33.0) |
| 5th preharvest | Mean±SD                    | 27.3±1.1                      | -       | -     |
| 6th preharvest | Median (min-max)           | 27.5 (25.9-28.4)              | -       | -     |

* non-parametric distribution (verified using Shapiro-Wilk test – p ≤ 0.05); 1-MCP – 1-methylcyclopropene.
Supplementary Table S3. Results of b* coordinate of color measured for ‘Szampion’ cultivar apples in preharvest period compared for group treated with 1-MCP and control group not treated with 1-MCP.

| Assessment | Preharvest 1-MCP treatment | No preharvest 1-MCP treatment | p       |
|------------|----------------------------|-------------------------------|---------|
| 1st preharvest | Mean±SD 21.4±0.6 | 18.6±1.2 | 0.0058 |
|             | Median (min-max) 21.5 (20.7-22.0) | 18.6 (17.1-20.0) |         |
| 2nd preharvest | Mean±SD 18.9±1.2 | 18.3±1.9 | 0.6241 |
|             | Median (min-max) 18.9 (17.8-20.1) | 17.8 (16.7-21.0) |         |
| 3rd preharvest | Mean±SD 13.7±1.9 | 11.0±0.6 | 0.3134 |
|             | Median (min-max) 13.2 (12.2-16.2) | 10.8 (10.5-11.7) |         |
| 4th preharvest | Mean±SD 12.2±1.8 | 12.4±1.0 | 0.8882 |
|             | Median (min-max) 11.5 (11.0-14.8) | 12.3 (11.4-13.4) |         |
| 5th preharvest | Mean±SD 11.9±1.1 | 12.4±0.5 | 0.4326 |
|             | Median (min-max) 12.2 (10.2-12.8) | 12.5 (11.7-12.9) |         |
| 6th preharvest | Mean±SD 10.5±0.4 | - | - |
|             | Median (min-max) 10.7 (10.0-10.9) | - | - |

* non-parametric distribution (verified using Shapiro-Wilk test – p ≤ 0.05); 1-MCP – 1-methylocyclopropene.
**Supplementary Table S4.** Results of ethylene production [µL kg⁻¹ h⁻¹] measured for 7 days for each preharvest period for ‘Szampion’ cultivar apples compared for groups treated with 1-MCP and control group not treated with 1-MCP.

| Assessment          | Preharvest 1-MCP treatment | No preharvest 1-MCP treatment | p     |
|---------------------|-----------------------------|-------------------------------|-------|
| **1st preharvest**  |                             |                               |       |
| 1st day             | 0.05±0.001                  | 0.04±0.004                    | 0.0256|
| 2nd day             | 0.17±0.162                  | 0.07±0.030                    | 0.4889|
| 3rd day             | 0.27±0.141                  | 0.13±0.002                    | 0.2635|
| 4th day             | 0.69±0.141                  | 5.16±2.898                    | 0.0615|
| 5th day             | 1.30±0.248                  | 10.29±5.933                   | 0.0639|
| 6th day             | 2.56±1.794                  | 24.73±15.058                  | 0.0705|
| 7th day             | 3.93±3.367                  | 61.34±25.809                  | 0.0254|
| **2nd preharvest**  |                             |                               |       |
| 1st day             | 0.10±0.049                  | 1.16±0.180                    | 0.0153|
| 2nd day             | 0.14±0.123                  | 5.71±0.999                    | 0.0160|
| 3rd day             | 0.25±0.104                  | 41.13±39.605                  | 0.2818|
| 4th day             | 0.40±0.100                  | 76.54±78.160                  | 0.3022|
| 5th day             | 0.65±0.077                  | 306.37±32.081                 | 0.0055|
| 6th day             | 0.74±0.259                  | 357.30±1.917                  | 0.0000|
| 7th day             | 2.52±1.594                  | 363.99±102.685                | 0.0381|
| **3rd preharvest**  |                             |                               |       |
| 1st day             | 1.38±1.195                  | 4.38±0.112                    | 0.0714|
| 2nd day             | 1.73±1.211                  | 56.09±3.748                   | 0.0026|
| 3rd day             | 1.44±0.347                  | 127.39±2.189                  | 0.0002|
| 4th day             | 2.41±1.591                  | 163.15±18.132                 | 0.0064|
| 5th day             | 3.70±2.399                  | 199.21±38.403                 | 0.0188|
| 6th day             | 5.1±4.448                   | 179.95±30.928                 | 0.0157|
| 7th day             | 5.56±4.171                  | 199.37±67.288                 | 0.0500|
| **4th preharvest**  |                             |                               |       |
| 1st day             | 0.07±0.047                  | 1.12±0.673                    | 0.1571|
| 2nd day             | 0.25±0.089                  | 13.09±11.234                  | 0.2473|
| 3rd day             | 2.26±0.882                  | 32.01±21.733                  | 0.1927|
| 4th day             | 18.17±11.925                | 77.94±33.728                  | 0.1419|
| 5th day             | 34.11±24.733                | 105.78±14.253                 | 0.0710|
| 6th day             | 37.18±15.867                | 102.54±5.677                  | 0.0317|
| 7th day             | 47.24±14.082                | 131.60±3.529                  | 0.0145|
| **5th preharvest**  |                             |                               |       |
| 1st day             | 6.34±8.318                  | 21.13±6.771                   | 0.1139|
| 2nd day             | 16.20±20.878                | 140.72±19.806                 | 0.0066|
| 3rd day             | 45.01±54.927                | 263.57±67.185                 | 0.0325|
| 4th day             | 134.79±131.299              | 361.38±122.273                | 0.1420|
| 5th day             | 224.37±174.213              | 408.34±96.882                 | 0.2133|
| 6th day             | 287.67±182.119              | 398.59±47.155                 | 0.3572|
| 7th day             | 342.78±175.205              | 361.78±33.061                 | 0.8551|

* non-parametric distribution (verified using Shapiro-Wilk test – p ≤ 0.05); 1-MCP – 1-methylcyclopropene.

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