

Table 2. Effect of some heat treatments, cold storage periods and their interaction on chilling injury and fruit decay percentage of ponkan tangerine fruits during cold storage period and the following shelf life after 3 and 6 days (2009 and 2010 Seasons).

| Treatments | | Chilling injury % (CI) | | | | | | Fruit Decay % (FD) | | | | | | |
|---|---|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--------|
| | | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | |
| | | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | |
| <i>Main effect of cold storage fruit period</i> | | | | | | | | | | | | | | |
| 10 days | | 0.0c | 0.0c | 1.63c | 1.40c | 1.83c | 1.63c | 0.00b | 0.00b | 1.87b | 1.70b | 2.03c | 1.82c | |
| 20 days | | 6.99b | 7.63b | 7.29b | 6.92b | 8.96b | 7.63b | 0.00b | 0.00b | 2.26b | 2.33b | 2.52b | 4.66b | |
| 30 days | | 15.88a | 17.20a | 17.08a | 15.98a | 22.40a | 20.65a | 7.92a | 6.91a | 5.06a | 7.33a | 5.58a | 10.52a | |
| <i>Main effect of treatments before storage at 2°C.</i> | | | | | | | | | | | | | | |
| Dipping in water 20°x 5 min. | | 7.54bc | 7.0c | 13.36a | 13.18a | 21.05a | 19.27a | 8.37a | 6.94a | 11.06a | 10.27a | 12.20a | 11.18a | |
| D. in IMZ 1000 ppm 20°x 5min | | 3.05d | 4.44d | 2.66d | 4.12c | 3.27d | 4.81c | 0.00c | 0.00c | 0.00d | 0.00c | 0.00d | 0.00c | |
| D. in heat water 52°C x 2 min. | | 5.38cd | 6.50c | 11.7ab | 10.34b | 12.66b | 11.62b | 2.44b | 2.46b | 2.50b | 0.00c | 2.66b | 0.00c | |
| D. in heat water 60°C x 20 Sec. | | 9.95b | 12.22b | 4.73c | 2.02d | 5.53c | 2.30d | 0.00c | 0.00c | 0.00d | 4.44b | 0.00d | 4.72b | |
| D. in heat water 70°Cx 10 Sec. | | 12.20a | 13.22a | 10.87b | 10.83b | 12.8b | 11.85b | 2.38b | 2.11b | 1.77c | 4.22b | 2.03c | 12.44a | |
| <i>Interaction (storage period X treatments).</i> | | | | | | | | | | | | | | |
| 10 days | X | 1 | 0.00e | 0.00e | 0.00g | 0.00f | 0.00g | 0.00f | 0.00c | 0.00c | 9.36c | 8.50c | 10.16c | 9.13c |
| | | 2 | 0.00e | 0.00e | 0.00g | 0.00f | 0.00g | 0.00f | 0.00c | 0.00c | 0.00f | 0.00e | 0.00f | 0.00d |
| | | 3 | 0.00e | 0.00e | 8.16ef | 7.00e | 9.16eg | 8.16e | 0.00c | 0.00c | 0.00f | 0.00e | 0.00f | 0.00d |
| | | 4 | 0.00e | 0.00e | 0.00g | 0.00f | 0.00g | 0.00f | 0.00c | 0.00c | 0.00f | 0.00e | 0.00f | 0.00d |
| | | 5 | 0.00e | 0.00e | 0.00g | 0.00f | 0.00g | 0.00f | 0.00c | 0.00c | 0.00f | 0.00e | 0.00f | 0.00d |
| 20 days | X | 1 | 0.00e | 0.00e | 11.03de | 10.33d | 13.0d | 11.16d | 0.00c | 0.00c | 11.33b | 9.33bc | 12.60b | 10.33c |
| | | 2 | 0.00e | 0.00e | 0.00g | 5.83e | 0.00g | 7.16e | 0.00c | 0.00c | 0.00f | 0.00e | 0.00f | 0.00d |
| | | 3 | 7.23d | 6.16d | 11.83d | 11.0cd | 12.70d | 11.83d | 0.00c | 0.00c | 0.00f | 0.00e | 0.00f | 0.00d |
| | | 4 | 11.75cd | 14.83bc | 6.66f | 0.00f | 7.93f | 0.00f | 0.00c | 0.00c | 0.00f | 0.00e | 0.00f | 0.00d |
| | | 5 | 16.0bc | 17.16b | 6.93f | 7.43e | 11.16de | 8.00e | 0.00c | 0.00c | 0.00f | 2.33d | 0.00f | 13.00b |
| 30 days | X | 1 | 22.63a | 21.00a | 29.06a | 29.23a | 50.16a | 46.66a | 25.13a | 20.83a | 12.50a | 13.00a | 13.83a | 14.10b |
| | | 2 | 9.16d | 13.33c | 8.00ef | 6.53e | 9.83ef | 7.26e | 0.00c | 0.00c | 0.00f | 0.00e | 0.00f | 0.00d |
| | | 3 | 8.93d | 13.33c | 15.10c | 13.03c | 16.13c | 14.86c | 7.33b | 7.40b | 7.50d | 0.00e | 8.00d | 0.00d |
| | | 4 | 18.1ab | 15.83bc | 7.53f | 6.06e | 8.66f | 6.90e | 0.00c | 0.00c | 0.00f | 13.33a | 0.00f | 14.16b |
| | | 5 | 20.6ab | 22.50a | 25.70b | 25.06b | 27.23b | 27.56b | 7.16b | 6.33b | 5.33e | 10.33b | 6.10e | 24.33a |

Means within each column followed by the same letter (s) are not significantly different at 5% level.

Table 4. Effect of some heat treatments, cold storage period and their interaction on fruit weight loss percentage and panel test index of ponkan tangarine fruits during cold storage period and the following shelf life after 3 and 6 days (2009 and 2010 Seasons).

| Treatments | Frui Weight loss % (FWL) | | | | | | Panel Test Index (PTI) | | | | | |
|--|--------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | After cold storage | | Shelf life 3 days | | Shelf life 6 days | |
| | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season |
| Main effect of cold storage fruit period | | | | | | | | | | | | |
| 10 days | 0.26b | 0.28c | 2.09b | 1.82c | 2.55b | 2.13b | 3.93a | 4.00a | 3.96a | 3.96a | 3.95a | 4.00a |
| 20 days | 0.62a | 0.54b | 3.38b | 2.65b | 3.83a | 4.08a | 3.83a | 3.83a | 3.86a | 3.86a | 3.96a | 3.90a |
| 30 days | 0.70a | 0.84a | 3.55a | 3.38a | 3.49a | 4.39a | 3.86a | 3.83a | 3.83a | 3.93a | 3.88a | 3.88a |
| Main effect of treatments before storage at 2°C . | | | | | | | | | | | | |
| Dipping in water 20°x 5 min. | 0.50a | 0.65a | 2.83a | 2.92a | 3.04a | 3.74a | 3.88a | 3.88a | 3.88a | 3.94a | 3.95a | 3.94a |
| D. in IMZ 1000 ppm 20°x 5 min. | 0.51a | 0.49ab | 2.23a | 2.21a | 2.76a | 2.85a | 3.83a | 3.88a | 3.88a | 3.94a | 3.94a | 3.91a |
| D. in heat water 52°C x 2 min. | 0.42a | 0.42b | 2.4a | 2.63a | 3.62a | 3.56a | 3.88a | 3.88a | 3.88a | 3.94a | 3.88a | 3.91a |
| D. in heat water 60°C x 20 Sec. | 0.65a | 0.53ab | 3.01a | 2.74a | 3.75a | 3.77a | 3.88a | 3.88a | 3.88a | 3.83a | 3.97a | 3.91a |
| D. in heat water 70°Cx 10 Sec. | 0.65a | 0.67a | 2.89a | 2.59a | 3.21a | 3.73a | 3.88a | 3.88a | 3.88a | 3.94a | 3.91a | 3.94a |
| Interaction (storage period X treatments). | | | | | | | | | | | | |
| 10 days X | 1 | 0.26cd | 0.24fgh | 1.79a | 2.07a | 2.13a | 2.33a | 4.00a | 4.00a | 4.00a | 4.00a | 4.00a |
| | 2 | 0.10d | 0.04h | 1.51a | 1.72a | 2.05a | 2.14a | 4.00a | 4.00a | 4.00a | 4.00a | 4.00a |
| | 3 | 0.26cd | 0.19gh | 1.72a | 1.52a | 2.42a | 1.65a | 3.83a | 4.00a | 3.83a | 4.00a | 4.00a |
| | 4 | 0.30cd | 0.34e-h | 2.51a | 1.76a | 3.64a | 2.51a | 3.83a | 4.00a | 4.00a | 3.83a | 4.00a |
| | 5 | 0.37cd | 0.58c-f | 2.93a | 2.04a | 2.55a | 2.00a | 4.00a | 4.00a | 4.00a | 4.00a | 4.00a |
| 20 days X | 1 | 0.34cd | 0.43c-g | 2.66a | 2.65a | 3.54a | 4.31a | 3.83a | 3.83a | 3.83a | 4.00a | 4.00a |
| | 2 | 0.90a | 0.68b-e | 2.10a | 2.36a | 3.17a | 2.93a | 3.66a | 3.83a | 3.83a | 3.83a | 4.00a |
| | 3 | 0.44b-d | 0.38d-h | 1.78a | 2.78a | 4.70a | 4.52a | 4.00a | 3.83a | 4.00a | 3.83a | 4.00a |
| | 4 | 0.90a | 0.72bcd | 2.68a | 2.55a | 3.84a | 4.17a | 3.83a | 3.83a | 3.83a | 3.83a | 3.91a |
| | 5 | 0.55abc | 0.50c-g | 2.67a | 2.93a | 3.90a | 4.46a | 3.83a | 3.83a | 3.83a | 3.83a | 3.91a |
| 30 days X | 1 | 0.90a | 1.28a | 4.05a | 4.06a | 3.46a | 4.57a | 3.83a | 3.83a | 3.83a | 3.83a | 3.91a |
| | 2 | 0.54abc | 0.74bc | 3.10a | 2.55a | 3.08a | 3.48a | 3.83a | 3.83a | 3.83a | 4.00a | 3.83a |
| | 3 | 0.56abc | 0.70bcd | 3.71a | 3.60a | 3.74a | 4.51a | 3.83a | 3.83a | 3.83a | 4.00a | 3.83a |
| | 4 | 0.74ab | 0.54c-f | 3.83a | 3.90a | 3.96a | 4.64a | 4.00a | 3.83a | 3.83a | 3.83a | 4.00a |
| | 5 | 0.77ab | 0.94b | 3.08a | 2.81a | 3.20a | 4.74a | 3.83a | 3.83a | 3.83a | 4.00a | 3.83a |

Means within each column followed by the same letter (s) are not significantly different at 5% level.

Table 5. Effect of some heat treatments, cold storage period and their interaction on pulp and peel percentages of ponkan tangerine fruits during cold Storage period and the following shelf life after 3 and 6 days (2009 and 2010 Seasons).

| Treatments | Pulp % | | | | | | Peel % | | | | | | |
|---|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------|
| | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | |
| | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | |
| Main effect of cold storage fruit period | | | | | | | | | | | | | |
| 10 days | 70.9a | 71.6a | 68.4b | 68.3b | 72.0a | 70.9a | 29.1a | 28.4a | 31.6a | 32.2a | 28.0a | 29.1a | |
| 20 days | 69.0a | 69.6a | 70.7a | 70.4b | 71.3a | 71.0a | 31.0a | 30.4a | 29.3b | 29.6b | 28.7a | 29.0a | |
| 30 days | 70.2a | 69.3a | 72.2a | 72.0a | 72.9a | 72.0a | 28.8a | 30.7a | 27.8b | 28.0b | 27.1a | 28.0a | |
| Main effect of treatments before storage at 2°C. | | | | | | | | | | | | | |
| Dipping in water 20°x 5 min. | 70.1a | 70.6a | 72.2a | 70.9a | 71.5a | 71.1a | 29.9a | 29.4a | 27.8b | 30.1a | 28.5a | 28.9a | |
| D. in IMZ 1000 ppm 20°x 5 min. | 70.5a | 69.4a | 68.1b | 71.4a | 71.9a | 70.4a | 29.4a | 30.6a | 31.9a | 28.6a | 28.1a | 29.6a | |
| D. in heat water 52°C x 2 min. | 68.7a | 69.5a | 70.0ab | 68.5a | 73.4a | 72.5a | 31.3a | 30.5a | 30.0ab | 31.5a | 26.6a | 27.5a | |
| D. in heat water 60°C x 20 Sec. | 71.5a | 70.8a | 71.5a | 69.7a | 70.8a | 70.7a | 28.5a | 29.2a | 28.5b | 30.3a | 29.2a | 29.3a | |
| D. in heat water 70°Cx 10 Sec. | 69.5a | 70.7a | 70.4ab | 70.6a | 72.8a | 71.8a | 30.5a | 29.3a | 29.6ab | 29.4a | 27.2a | 28.2a | |
| Interaction (storage period X treatments). | | | | | | | | | | | | | |
| 10 days X | 1 | 68.7a | 68.3a | 70.1b | 71.1a | 73.4a | 72.1a | 31.3a | 31.7a | 29.9b | 31.9a | 26.6a | 27.9a |
| | 2 | 70.1a | 71.3a | 62.6c | 69.7a | 72.7a | 71.0a | 29.9a | 28.7a | 37.4a | 30.3a | 27.3a | 29.0a |
| | 3 | 70.1a | 71.1a | 70.7b | 65.2a | 74.9a | 73.7a | 29.9a | 28.9a | 29.3b | 34.8a | 25.1a | 26.3a |
| | 4 | 72.7a | 72.8a | 70.8b | 68.0a | 69.0a | 69.9a | 27.3a | 27.2a | 29.2b | 32.0a | 31.0a | 30.1a |
| | 5 | 73.1a | 74.5a | 67.9b | 67.7a | 70.0a | 68.0a | 26.9a | 25.5a | 32.1b | 32.3a | 30.0a | 32.0a |
| 20 days X | 1 | 70.5a | 72.7a | 70.1b | 69.5a | 71.2a | 69.9a | 29.5a | 27.3a | 29.9b | 30.5a | 28.8a | 30.1a |
| | 2 | 68.2a | 70.7a | 69.4b | 72.6a | 70.4a | 68.9a | 31.8a | 29.3a | 30.6b | 27.4a | 29.6a | 31.1a |
| | 3 | 67.8a | 67.9a | 70.1b | 69.2a | 71.2a | 72.8a | 32.2a | 32.1a | 29.9b | 30.8a | 28.8a | 27.2a |
| | 4 | 70.7a | 70.1a | 71.5b | 68.7a | 72.9a | 71.6a | 29.3a | 29.9a | 28.5b | 31.3a | 27.1a | 28.4a |
| | 5 | 67.7a | 66.6a | 72.6ab | 71.8a | 71.0a | 71.7a | 32.3a | 33.4a | 27.4bc | 28.2a | 29.0a | 28.3a |
| 30 days X | 1 | 71.1a | 70.9a | 76.5a | 72.1a | 70.0a | 71.4a | 28.9a | 29.1a | 23.5c | 27.9a | 30.0a | 28.6a |
| | 2 | 73.1a | 66.1a | 72.3ab | 72.1a | 72.5a | 71.5a | 26.9a | 33.9a | 27.7bc | 29.9a | 27.5a | 28.8a |
| | 3 | 68.2a | 69.5a | 69.4b | 71.0a | 74.2a | 70.9a | 31.8a | 30.3a | 30.6b | 29.0a | 25.8a | 29.1a |
| | 4 | 71.3a | 69.3a | 72.3ab | 72.5a | 70.6a | 70.5a | 28.7a | 30.7a | 27.7bc | 27.5a | 29.4a | 29.5a |
| | 5 | 67.6a | 70.9a | 70.6b | 72.1a | 77.3a | 75.8a | 32.4a | 29.1a | 29.4b | 27.9a | 22.7a | 24.2a |

Means within each column followed by the same letter (s) are not significantly different at 5% level.

Table 6. Effect of some heat treatments, cold storage period and their interaction on juice percentage and juice volume/kg fruits (cm²) of ponkan tangerine fruits during cold storage period and the following shelf life after 3 and 6 days (2009 and 2010 Seasons).

| Treatments | | Juice % | | | | | | Juice volume/kg fruits(cm ²) | | | | | |
|--|---|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|--|------------------------|------------------------|------------------------|------------------------|------------------------|
| | | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | After cold storage | | Shelf life 3 days | | Shelf life 6 days | |
| | | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season |
| <i>Main effect of cold storage fruit period</i> | | | | | | | | | | | | | |
| 10 days | | 29.0a | 30.3a | 27.4b | 26.5b | 29.4b | 29.2b | 289a | 300a | 280b | 273b | 308b | 297b |
| 20 days | | 26.6a | 28.0a | 28.3ab | 28.3ab | 25.4c | 25.7c | 272a | 285a | 275b | 285ab | 257c | 253c |
| 30 days | | 28.8a | 28.8a | 30.4a | 30.0a | 32.2a | 30.4a | 291a | 292a | 309a | 301a | 329a | 310a |
| <i>Main effect of treatments before storage at 2°C .</i> | | | | | | | | | | | | | |
| Dipping in water 20°x 5 min. | | 27.7a | 29.1a | 28.7a | 27.3a | 27.5a | 27.8a | 280a | 294a | 287a | 276a | 287a | 282a |
| D. in IMZ 1000 ppm 20°x 5 min. | | 29.0a | 28.5a | 28.9a | 28.5a | 29.5a | 28.3a | 292a | 289a | 287a | 290a | 303a | 284a |
| D. in heat water 52°C x 2 min. | | 26.1a | 27.4a | 28.5a | 28.4a | 29.3a | 29.5a | 266a | 278a | 293a | 290a | 298a | 298a |
| D. in heat water 60°C x 20 Sec. | | 30.1a | 29.6a | 27.8a | 27.5a | 28.1a | 28.0a | 301a | 298a | 280a | 278a | 291a | 282a |
| D. in heat water 70°Cx 10 Sec. | | 27.6a | 30.5a | 29.4a | 29.6a | 30.6a | 28.5a | 281a | 302a | 294a | 298a | 312a | 287a |
| <i>Interaction (storage period X treatments).</i> | | | | | | | | | | | | | |
| 10 days X | 1 | 25.1a | 24.4a | 28.2a | 25.9a | 32.8a | 31.4ab | 257a | 243a | 287a | 267a | 344ab | 315ab |
| | 2 | 29.1a | 32.0a | 23.4a | 25.7a | 30.8bcd | 28.8abc | 290a | 317a | 240a | 267a | 320bcd | 293abc |
| | 3 | 26.6a | 30.7a | 29.1a | 26.9a | 29.2b-e | 33.2a | 270a | 307a | 303a | 273a | 303b-e | 340a |
| | 4 | 31.8a | 29.3a | 28.3a | 28.0a | 26.4c-f | 25.3bc | 313a | 293a | 287a | 290a | 283b-f | 257bc |
| | 5 | 32.1a | 35.0a | 27.9a | 26.1a | 27.9b-e | 27.5abc | 317a | 340a | 283a | 270a | 290b-f | 280abc |
| 20 days X | 1 | 29.4a | 31.3a | 27.1a | 25.8a | 21.4f | 24.5c | 293a | 313a | 260a | 253a | 227f | 243c |
| | 2 | 26.2a | 28.4a | 31.4a | 30.4a | 26.2def | 24.0c | 267a | 290a | 297a | 307a | 263c-f | 237c |
| | 3 | 25.6a | 24.6a | 26.4a | 27.9a | 25.8def | 25.4bc | 263a | 253a | 270a | 293a | 257def | 250bc |
| | 4 | 27.9a | 27.6a | 25.5a | 25.5a | 29.7b-e | 30.0abc | 287a | 283a | 250a | 250a | 300b-e | 293abc |
| | 5 | 23.7a | 27.9a | 30.9a | 32.1a | 24.0ef | 24.6c | 250a | 283a | 300a | 320a | 240ef | 240c |
| 30 days X | 1 | 28.5a | 31.5a | 30.8a | 30.2a | 28.3b-e | 27.7abc | 290a | 327a | 313a | 307a | 290b-f | 287abc |
| | 2 | 31.7a | 25.2a | 31.8a | 29.6a | 31.6bcd | 32.1a | 320a | 260a | 323a | 297a | 327bc | 323a |
| | 3 | 26.2a | 26.9a | 30.2a | 30.6a | 33.0bc | 30.0abc | 263a | 273a | 307a | 303a | 333b | 303abc |
| | 4 | 30.6a | 31.8a | 29.7a | 29.0a | 28.3b-e | 28.6abc | 303a | 317a | 303a | 293a | 290b-f | 297abc |
| | 5 | 27.0a | 28.7a | 29.4a | 30.6a | 39.9a | 33.4a | 277a | 283a | 300a | 303a | 407a | 340a |

Means within each column followed by the same letter (s) are not significantly different at 5% level.

Table 7. Effect of some heat treatments, cold storage period and their interaction on pulp and peel firmness of ponkan tangarine fruits during cold storage period and the following shelf life after 3 and 6 days (2009 and 2010 Seasons).

| Treatments | Pulp firmness(g/cm ²) | | | | | | Peel firmness(kg/cm ²) | | | | | | |
|---|-----------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------|
| | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | |
| | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | |
| <i>Main effect of cold storage fruit period.</i> | | | | | | | | | | | | | |
| 10 days | 162a | 161a | 193a | 201a | 157c | 152b | 3.04a | 2.84a | 2.47a | 2.07c | 2.53b | 2.60a | |
| 20 days | 142b | 141b | 167b | 154b | 186a | 182a | 1.82b | 1.81b | 2.22b | 2.36b | 2.65a | 2.65a | |
| 30 days | 156a | 150b | 109c | 106c | 171b | 176a | 1.79b | 1.67c | 2.54a | 2.78a | 2.39c | 2.49a | |
| <i>Main effect of treatments before storage at 2°C.</i> | | | | | | | | | | | | | |
| Dipping in water 20°x 5 min. | 148a | 145a | 150a | 163a | 156c | 156b | 2.15a | 2.11a | 2.92a | 2.90a | 2.62a | 2.82a | |
| D. in IMZ 1000 ppm 20°x 5min. | 148a | 151a | 155a | 142b | 159c | 161b | 2.03a | 1.98a | 2.53b | 2.53b | 2.44a | 2.44cb | |
| D. in heat water 52°C x 2 min. | 162a | 150a | 166a | 157a | 172bc | 160b | 2.16a | 2.01a | 2.21ab | 2.03d | 2.38a | 2.38d | |
| D. in heat water 60°C x 20 Sec. | 157a | 161a | 153a | 153ab | 181ab | 185a | 2.42a | 2.26a | 2.17b | 2.32bc | 2.57a | 2.58bc | |
| D. in heat water 70°Cx 10 Sec. | 151a | 147a | 158a | 153ab | 188a | 187a | 2.32a | 2.17a | 2.22ab | 2.24cd | 2.60a | 2.74ab | |
| <i>Interaction (storage period X treatments).</i> | | | | | | | | | | | | | |
| 10 days X | 1 | 163a | 140def | 180a | 230a | 145a | 133f | 2.70a | 2.66a | 3.20a | 2.53a | 2.61a | 2.81cd |
| | 2 | 162a | 161a-d | 200a | 184bc | 154a | 149ef | 2.73a | 2.80a | 2.66a | 2.43a | 2.63a | 2.60c-f |
| | 3 | 162a | 158a-e | 204a | 188bc | 158a | 143ef | 3.03a | 2.50a | 2.40a | 1.56a | 2.56a | 2.73cde |
| | 4 | 156a | 172ab | 195a | 206b | 154a | 157def | 3.30a | 3.03a | 2.10a | 1.96a | 2.46a | 2.43def |
| | 5 | 167a | 173a | 186a | 201b | 175a | 177a-e | 3.43a | 3.23a | 2.00a | 1.86a | 2.40a | 2.43def |
| 20 days X | 1 | 135a | 133ef | 170a | 153de | 173a | 193abc | 1.80a | 1.76a | 2.83a | 2.86a | 2.96a | 3.20ab |
| | 2 | 134a | 157a-e | 161a | 136ef | 173a | 163c-f | 1.73a | 1.73a | 2.00a | 2.20a | 2.50a | 2.40ef |
| | 3 | 147a | 148a-f | 166a | 168cd | 180a | 171cde | 1.63a | 1.76a | 1.96a | 1.96a | 2.46a | 2.40ef |
| | 4 | 160a | 146b-f | 153a | 155de | 207a | 208ab | 2.26a | 2.03a | 2.20a | 2.46a | 2.66a | 2.93bc |
| | 5 | 133a | 123f | 184a | 158de | 195a | 175b-e | 1.70a | 1.76a | 2.13a | 2.33a | 2.66a. | 2.33f |
| 30 days X | 1 | 145a | 162a-d | 102a | 106g | 150a | 143ef | 1.96a | 1.90a | 2.73a | 3.30a | 2.30a | 2.46def |
| | 2 | 148a | 133ef | 104a | 105g | 150a | 172cde | 1.63a | 1.43a | 2.93a | 2.96a | 2.20a | 2.33f |
| | 3 | 177a | 143c-f | 127a | 115fg | 178a | 166c-f | 1.83a | 1.76a | 2.26a | 2.56a | 2.13a | 1.83g |
| | 4 | 156a | 166abc | 110a | 100g | 181a | 191a-e | 1.70a | 1.73a | 2.23a | 2.53a | 2.60a | 2.36ef |
| | 5 | 152a | 146b-f | 103a | 102g | 196a | 210a | 1.83a | 1.53a | 2.53a | 2.53a | 2.73a | 3.46a |

Means within each column followed by the same letter (s) are not significantly different at 5% level.

Table 8. Effect of some heat treatments, cold storage period and their interaction on acidity and TSS percentages of ponkan tangerine fruits during cold storage period and the following shelf life after 3 and 6 days (2009 and 2010 Seasons).

| Treatments | Acidity % | | | | | | TSS % | | | | | | |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------|
| | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | |
| | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | |
| Main effect of cold storage fruit period | | | | | | | | | | | | | |
| 10 days | 0.658b | 0.683b | 0.687c | 0.656b | 0.835c | 0.818b | 9.80a | 10.0a | 10.7c | 10.6c | 10.1c | 10.1c | |
| 20 days | 0.696b | 0.745b | 1.025a | 0.968a | 0.674b | 0.769b | 10.7a | 10.5a | 11.6a | 11.7a | 11.4b | 11.3b | |
| 30 days | 0.827a | 0.866a | 0.845b | 0.883a | 1.015a | 1.036a | 10.6a | 10.2a | 11.3ab | 11.2ab | 11.6a | 11.5a | |
| Main effect of treatments before storage at 2°C . | | | | | | | | | | | | | |
| Dipping in water 20°x 5 min. | 0.782a | 0.768a | 0.874a | 0.868a | .881ab | .882ab | 10.3a | 10.0a | 11.5a | 11.6a | 10.9a | 10.8a | |
| D. in IMZ 1000 ppm 20°x 5 min. | 0.747a | 0.782a | 0.851a | 0.824a | .846abc | 0.924b | 10.4a | 10.1a | 11.0a | 11.0a | 10.9a | 10.6a | |
| D. in heat water 52°C x 2 min. | 0.704a | 0.724a | 0.831a | 0.796a | 0.952a | 0.960a | 10.2a | 10.2a | 10.9a | 11.4a | 11.3a | 11.1a | |
| D. in heat water 60°C x 20 Sec. | 0.733a | 0.823a | 0.900a | 0.852a | 0.811bc | .839ab | 10.6a | 10.4a | 11.1a | 10.9a | 11.1a | 11.2a | |
| D. in heat water 70°Cx 10 Sec. | 0.669a | 0.726a | 0.804a | 0.839a | 0.718c | 0.767b | 10.2a | 10.6a | 11.3a | 10.9a | 11.1a | 11.2a | |
| Interaction (storage period X treatments). | | | | | | | | | | | | | |
| 10 days X | 1 | 0.727a | 0.680a | 0.727a | 0.683a | 1.00a | .895bcd | 9.6a | 9.6a | 10.4a | 11.1a | 9.3e | 9.3e |
| | 2 | 0.640a | 0.747a | 0.620a | 0.617a | 0.747a | .703de | 9.7a | 10.1a | 11.4a | 11.2a | 9.4e | 9.6de |
| | 3 | 0.577a | 0.620a | 0.617a | 0.597a | 0.917a | .980abc | 10.2a | 10.0a | 10.1a | 10.2a | 9.2e | 10.2de |
| | 4 | 0.707a | 0.767a | 0.727a | 0.743a | 0.790a | .727de | 9.9a | 10.4a | 10.5a | 10.2a | 10.6d | 10.0de |
| | 5 | 0.640a | 0.600a | 0.743a | 0.640a | 0.723a | .787cd | 9.6a | 10.1a | 11.0a | 10.6a | 12.0bcd | 11.5abc |
| 20 days X | 1 | 0.770a | 0.683a | 1.173a | 1.237a | 0.703a | .770cd | 10.6a | 10.6a | 12.4a | 12.3a | 11.5bcd | 11.5abc |
| | 2 | 0.683a | 0.703a | 1.207a | 1.090a | 0.660a | .960abc | 11.5a | 10.4a | 10.7a | 10.7a | 11.0cd | 10.8bcd |
| | 3 | 0.790a | 0.723a | 0.983a | 0.913a | 0.747a | .747cde | 10.7a | 10.2a | 12.0a | 12.5a | 12.8a | 12.5a |
| | 4 | 0.640a | 0.830a | 0.990a | 0.873a | 0.747a | .833cd | 10.4a | 10.8a | 11.1a | 11.5a | 11.3bcd | 11.5abc |
| | 5 | 0.597a | 0.787a | 0.773a | 0.727a | 0.513a | .533e | 10.2a | 10.6a | 11.8a | 11.6a | 10.6d | 10.4cde |
| 30 days X | 1 | 0.850a | 0.940a | 0.727a | 0.683a | 0.940a | .980abc | 10.8a | 9.7a | 11.8a | 11.3a | 11.8abc | 11.6abc |
| | 2 | 0.917a | 0.897a | 0.727a | 0.767a | 1.130a | 1.110ab | 10.1a | 9.8a | 11.0a | 11.2a | 12.3ab | 11.5abc |
| | 3 | 0.747a | 0.830a | 0.893a | 0.877a | 1.193a | 1.153a | 9.9a | 10.5a | 10.7a | 11.4a | 11.8abc | 10.8bcd |
| | 4 | 0.853a | 0.873a | 0.983a | 0.940a | 0.897a | .957abc | 11.6a | 9.9a | 11.8a | 11.2a | 11.4bcd | 12.0ab |
| | 5 | 0.770a | 0.790a | 0.897a | 1.150a | 0.917a | .980abc | 10.8a | 11.2a | 11.2a | 10.7a | 10.6d | 11.6abc |

Means within each column followed by the same letter (s) are not significantly different at 5% level.

Table 9. Effect of some heat treatments, cold storage period and their interaction on TSS/acid ratio and vitamin C of ponkan tangerine fruits during cold storage period and the following shelf life after 3 and 6 days (2009 and 2010 Seasons).

| Treatment | TSS/acid ratio | | | | | | Vitamin C(ml/100ml juice) | | | | | | |
|--|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|---------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------|
| | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | After cold storage | | Shelf life 3 days | | Shelf life 6 days | | |
| | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | 1 st Season | 2 nd Season | |
| <i>Main effect of cold storage fruit period</i> | | | | | | | | | | | | | |
| 10 days | 15.2a | 15.0a | 16.9a | 16.7a | 12.5b | 12.8b | 35.4a | 34.0a | 34.6a | 32.9a | 26.7a | 28.0a | |
| 20 days | 15.7a | 14.4a | 12.0b | 12.8b | 17.4a | 15.4a | 30.4b | 30.8b | 29.0b | 29.2b | 23.8b | 22.7b | |
| 30 days | 13.2b | 12.0b | 13.6b | 13.2b | 11.7b | 11.3c | 23.2c | 23.7c | 23.6c | 22.9c | 22.4c | 21.2c | |
| <i>Main effect of treatments before storage at 2°C .</i> | | | | | | | | | | | | | |
| Dipping in water 20°x 5 min. | 13.5a | 13.5a | 14.3a | 14.5a | 12.8b | 12.6b | 30.5a | 30.5a | 29.7a | 28.7a | 24.8a | 24.3a | |
| D. in IMZ 1000 ppm 20°x 5min. | 14.5a | 13.2a | 15.1a | 14.4a | 13.5b | 11.8b | 31.6a | 30.9a | 28.3a | 29.1a | 23.4a | 23.1a | |
| D. in heat water 52°C x 2 min. | 15.0a | 14.4a | 14.2a | 15.2a | 12.5b | 12.2b | 30.1a | 29.0a | 29.9a | 30.3a | 26.2a | 25.6a | |
| D. in heat water 60°C x 20 Sec. | 14.7a | 13.0a | 12.8a | 13.1a | 14.1b | 13.7ab | 29.8a | 29.7a | 29.2a | 27.3a | 23.7a | 23.9a | |
| D. in heat water 70°Cx 10 Sec. | 15.6a | 15.0a | 14.4a | 14.2a | 16.5a | 15.5a | 26.3b | 27.5a | 28.3a | 26.4a | 23.3a | 22.9a | |
| <i>Interaction (storage period X treatments).</i> | | | | | | | | | | | | | |
| 10 days X | 1 | 13.6a | 14.1a | 15.6a | 16.5ab | 9.1a | 10.5def | 36.3a | 36.3a | 34.4a | 32.7a | 26.4a | 31.0a |
| | 2 | 15.2a | 13.5a | 21.1a | 18.5a | 12.7a | 13.7b-e | 39.4a | 37.5a | 36.6a | 37.2a | 26.2a | 25.2a |
| | 3 | 17.8a | 16.3a | 18.2a | 18.2a | 10.1a | 10.4ef | 33.3a | 30.9a | 31.6a | 33.3a | 29.0a | 29.0a |
| | 4 | 14.2a | 14.1a | 14.6a | 13.9abc | 13.8a | 14.6bcd | 35.7a | 33.9a | 33.3a | 30.0a | 24.3a | 27.6a |
| | 5 | 15.1a | 16.9a | 14.9a | 16.7ab | 16.8a | 14.7bc | 32.1a | 31.5a | 37.2a | 31.6a | 27.6a | 27.1a |
| 20 days X | 1 | 14.0a | 15.9a | 10.8a | 10.1c | 16.6a | 15.3bc | 32.7a | 33.3a | 31.9a | 31.4a | 25.3a | 23.1a |
| | 2 | 17.3a | 14.8a | 9.1a | 9.8c | 17.0a | 11.4c-f | 32.7a | 33.3a | 26.4a | 29.1a | 23.5a | 22.6a |
| | 3 | 13.6a | 14.1a | 12.5a | 14.2abc | 17.2a | 17.0ab | 32.2a | 31.1a | 31.0a | 30.5a | 26.2a | 25.7a |
| | 4 | 16.4a | 13.3a | 11.8a | 13.4abc | 15.5a | 13.8b-e | 30.0a | 29.4a | 30.0a | 28.2a | 23.1a | 23.5a |
| | 5 | 17.5a | 13.8a | 15.5a | 16.4ab | 20.9a | 19.6a | 24.4a | 27.2a | 25.9a | 26.8a | 20.9a | 18.6a |
| 30 days X | 1 | 13.0a | 10.4a | 16.3a | 16.9ab | 12.6a | 12.0c-f | 22.4a | 21.9a | 22.9a | 21.9a | 22.6a | 18.9a |
| | 2 | 11.1a | 11.2a | 15.2a | 14.7abc | 10.9a | 10.3ef | 22.8a | 21.9a | 21.9a | 20.9a | 20.6a | 21.4a |
| | 3 | 13.7a | 12.9a | 12.0a | 13.1abc | 10.1a | 9.4f | 24.8a | 25.2a | 27.1a | 27.2a | 23.4a | 22.2a |
| | 4 | 13.6a | 11.5a | 12.0a | 12.0abc | 12.8a | 12.6c-f | 23.8a | 25.7a | 24.3a | 23.8a | 23.9a | 20.5a |
| | 5 | 14.3a | 14.2a | 12.6a | 9.5c | 11.9a | 12.1c-f | 22.4a | 23.8a | 21.9a | 20.9a | 21.5a | 23.0a |

Means within each column followed by the same letter (s) are not significantly different at 5% level.