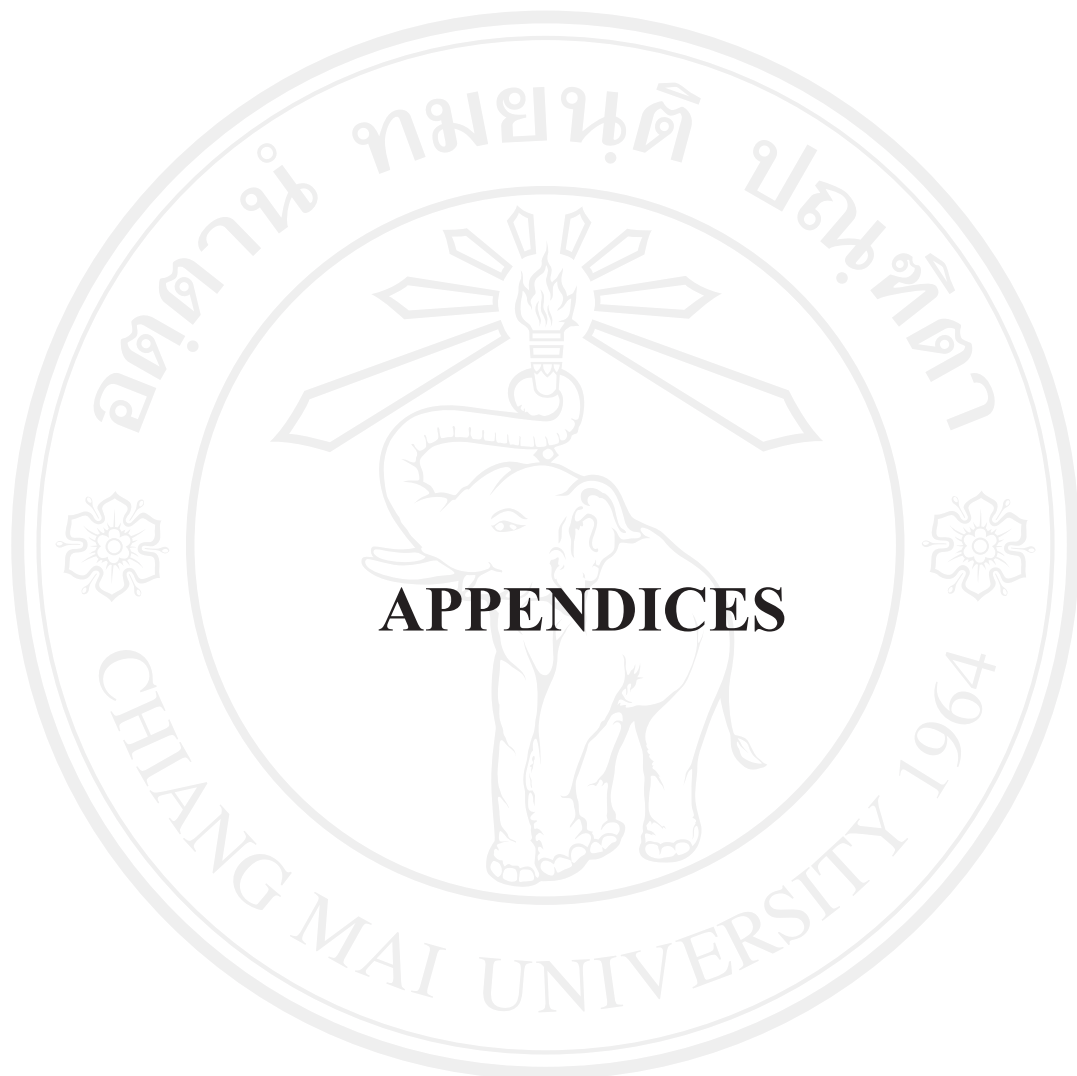


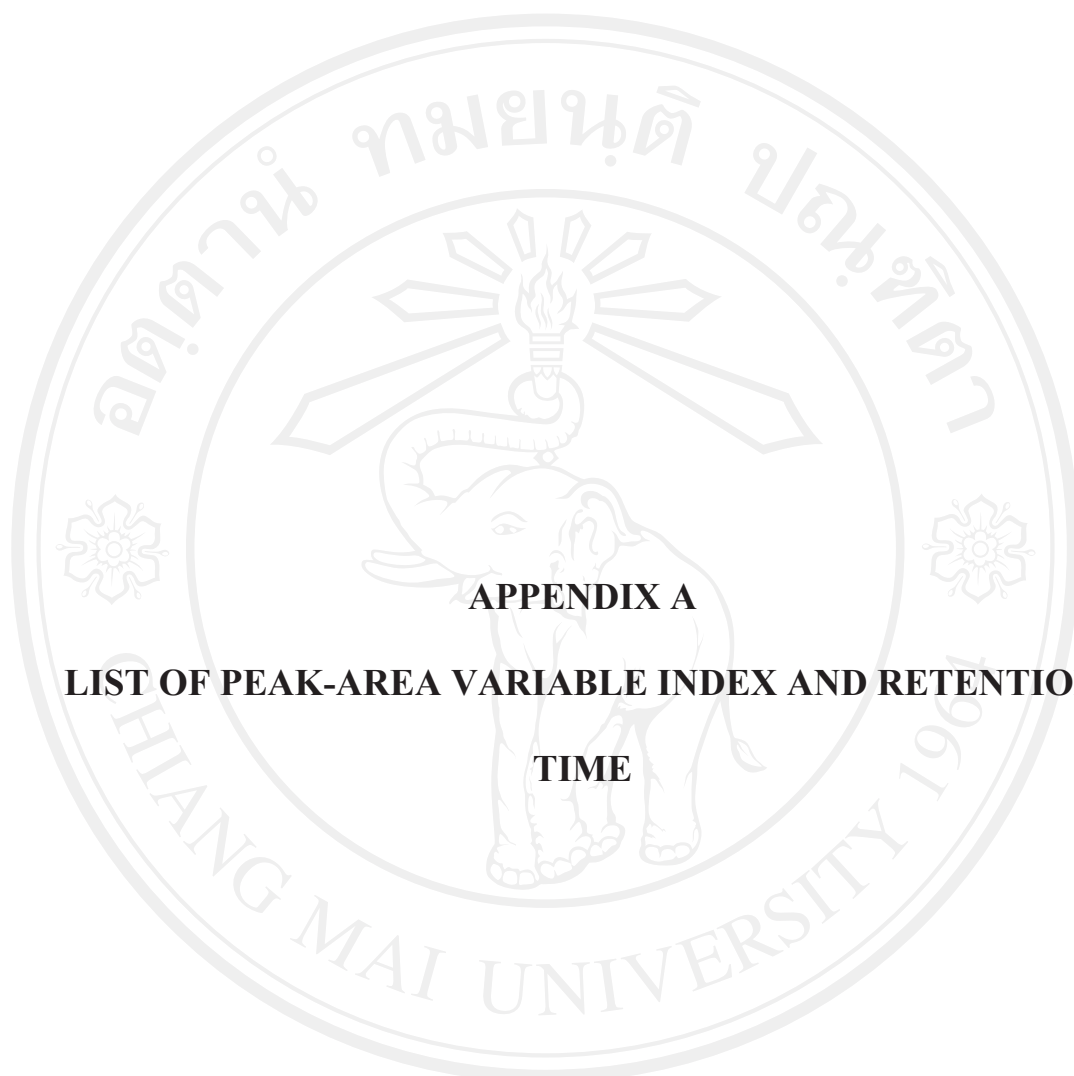


## APPENDICES

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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## **APPENDIX A**

### **LIST OF PEAK-AREA VARIABLE INDEX AND RETENTION TIME**

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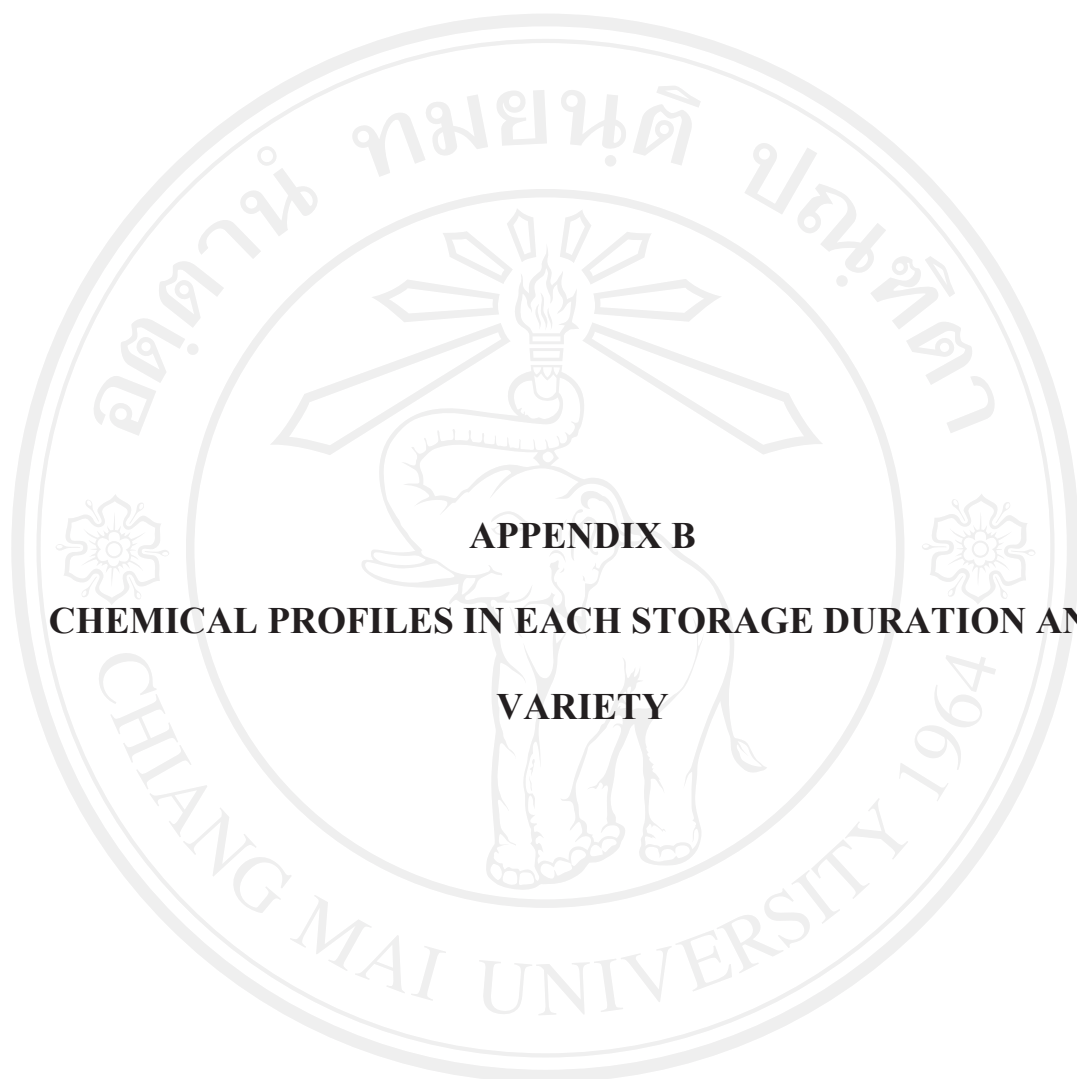
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**Table A Chemical retention time with peak-number index for 114 variables of peak-area data**

| Peak Number | Retention time | Peak Number | Retention time | Peak Number | Retention time | Peak Number | Retention time |
|-------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|
| 1           | 5.300-5.700    | 16          | 14.080-14.240  | 31          | 21.340-21.475  | 46          | 27.530-27.750  |
| 2           | 6.050-6.301    | 17          | 14.560-14.800  | 32          | 21.675-21.825  | 47          | 27.875-28.075  |
| 3           | 6.302-6.700    | 18          | 14.840-15.080  | 33          | 22.125-22.225  | 48          | 28.200-28.350  |
| 4           | 6.750-7.000    | 19          | 15.150-15.260  | 34          | 22.925-23.175  | 49          | 28.800-29.200  |
| 5           | 7.240-7.700    | 20          | 15.280-15.460  | 35          | 24.925-25.075  | 50          | 29.375-29.550  |
| 6           | 8.300-8.600    | 21          | 15.550-16.050  | 36          | 25.225-25.340  | 51          | 29.560-29.675  |
| 7           | 8.700-9.000    | 22          | 16.660-16.800  | 37          | 25.350-25.525  | 52          | 29.850-29.975  |
| 8           | 9.500-9.740    | 23          | 16.920-17.050  | 38          | 25.575-25.690  | 53          | 29.985-30.185  |
| 9           | 9.760-9.920    | 24          | 17.250-17.450  | 39          | 25.700-25.780  | 54          | 30.605-30.765  |
| 10          | 10.150-10.360  | 25          | 17.700-17.900  | 40          | 25.790-25.850  | 55          | 30.770-30.875  |
| 11          | 10.380-10.600  | 26          | 18.300-18.400  | 41          | 26.150-26.350  | 56          | 31.175-31.350  |
| 12          | 12.080-12.280  | 27          | 19.700-19.900  | 42          | 26.375-26.525  | 57          | 32.510-32.650  |
| 13          | 12.300-12.500  | 28          | 20.800-21.030  | 43          | 26.600-26.750  | 58          | 33.030-33.330  |
| 14          | 12.800-13.340  | 29          | 21.040-21.200  | 44          | 26.875-27.175  | 59          | 33.700-33.880  |
| 15          | 13.800-14.060  | 30          | 21.250-21.339  | 45          | 27.425-27.520  | 60          | 34.430-34.500  |

**Table A (cont)**

| Peak Number | Retention time | Peak Number | Retention time | Peak Number | Retention time | Peak Number | Retention time |
|-------------|----------------|-------------|----------------|-------------|----------------|-------------|----------------|
| 61          | 34.600-34.710  | 76          | 46.620-46.750  | 91          | 53.000-53.100  | 106         | 59.260-59.460  |
| 62          | 35.290-35.500  | 77          | 46.920-47.000  | 92          | 53.400-53.470  | 107         | 59.520-59.640  |
| 63          | 35.990-36.140  | 78          | 47.210-47.380  | 93          | 53.640-53.790  | 108         | 59.950-60.050  |
| 64          | 36.450-36.600  | 79          | 47.700-47.760  | 94          | 54.370-54.500  | 109         | 60.340-60.480  |
| 65          | 37.960-38.090  | 80          | 48.550-48.680  | 95          | 54.990-55.100  | 110         | 62.925-62.960  |
| 66          | 38.260-38.420  | 81          | 49.610-49.760  | 96          | 55.190-55.300  | 111         | 63.760-63.810  |
| 67          | 40.200-40.300  | 82          | 49.810-49.930  | 97          | 55.302-55.475  | 112         | 64.580-64.660  |
| 68          | 40.850-40.910  | 83          | 50.230-50.300  | 98          | 55.480-55.640  | 113         | 67.210-67.270  |
| 69          | 41.040-41.170  | 84          | 50.590-50.680  | 99          | 55.770-55.910  | 114         | 68.235-68.310  |
| 70          | 43.650-43.850  | 85          | 50.770-50.840  | 100         | 56.760-56.850  |             |                |
| 71          | 44.010-44.180  | 86          | 50.970-51.100  | 101         | 57.470-57.680  |             |                |
| 72          | 44.260-44.440  | 87          | 51.180-51.350  | 102         | 57.760-57.840  |             |                |
| 73          | 45.770-45.900  | 88          | 51.490-51.580  | 103         | 57.880-58.090  |             |                |
| 74          | 45.990-46.050  | 89          | 52.050-52.250  | 104         | 58.320-58.390  |             |                |
| 75          | 46.320-46.400  | 90          | 52.470-52.540  | 105         | 58.560-58.670  |             |                |



**APPENDIX B**  
**CHEMICAL PROFILES IN EACH STORAGE DURATION AND**  
**VARIETY**

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**Table B.1.1 Chemical profile data of variables for every 5 peaks at two weeks storage duration in each variety**

| Peak Number | Variety    |           |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|-----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |           |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample II | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 33.220     | 40.136    | 5.022      | 36.019    | 34.484   | 37.288    | 40.560     | 41.578    | 32.001         | 9.634     | 44.273     | 14.410    |
| 6           | 13.420     | 16.482    | 0.000      | 14.965    | 12.841   | 14.845    | 14.164     | 17.572    | 11.295         | 3.292     | 19.642     | 5.336     |
| 11          | 8.165      | 9.936     | 0.000      | 8.192     | 7.095    | 7.648     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 10.579     | 12.427    | 0.000      | 11.879    | 11.001   | 11.679    | 12.405     | 12.654    | 10.673         | 3.566     | 13.226     | 4.796     |
| 21          | 395.149    | 490.466   | 30.356     | 415.851   | 390.671  | 409.402   | 427.128    | 428.589   | 352.044        | 97.218    | 448.342    | 157.211   |
| 26          | 0.000      | 0.000     | 0.000      | 0.000     | 0.000    | 0.000     | 1.992      | 0.000     | 1.893          | 0.000     | 0.000      | 1.222     |
| 31          | 6.961      | 4.867     | 0.000      | 7.851     | 8.418    | 5.269     | 7.384      | 8.709     | 5.939          | 2.209     | 7.459      | 4.345     |
| 36          | 0.000      | 0.000     | 0.000      | 1.440     | 1.708    | 2.171     | 2.106      | 2.028     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 13.135     | 18.980    | 0.000      | 15.053    | 11.916   | 12.666    | 14.583     | 13.460    | 10.912         | 3.197     | 12.798     | 4.720     |
| 46          | 12.773     | 13.357    | 4.292      | 14.036    | 13.791   | 14.141    | 16.222     | 15.280    | 11.079         | 2.461     | 11.199     | 4.213     |
| 51          | 0.000      | 2.214     | 0.000      | 1.642     | 1.643    | 2.220     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 56          | 14.932     | 22.513    | 2.345      | 18.880    | 14.089   | 13.575    | 17.198     | 15.639    | 9.249          | 2.946     | 11.301     | 4.757     |
| 61          | 0.000      | 0.000     | 0.000      | 0.000     | 0.000    | 0.000     | 3.117      | 2.908     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 3.455      | 4.345     | 0.000      | 3.305     | 5.300    | 6.590     | 6.125      | 6.613     | 2.877          | 1.042     | 3.808      | 3.428     |
| 71          | 8.712      | 12.781    | 1.495      | 11.040    | 7.863    | 10.321    | 10.589     | 9.061     | 3.028          | 1.349     | 3.840      | 1.903     |
| 76          | 0.000      | 1.977     | 0.000      | 1.673     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 2.480      | 6.663     | 0.000      | 3.464     | 2.762    | 2.969     | 2.870      | 3.072     | 1.859          | 0.917     | 2.353      | 3.125     |
| 86          | 1.960      | 0.000     | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 2.801     | 0.000          | 0.000     | 2.348      | 2.404     |
| 91          | 0.000      | 0.000     | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 3.334     |
| 96          | 0.000      | 0.000     | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 3.439     |
| 101         | 0.000      | 6.709     | 1.561      | 2.762     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 1.017     | 0.000      | 19.206    |
| 106         | 0.000      | 0.000     | 0.000      | 0.000     | 0.000    | 1.770     | 0.000      | 0.000     | 2.621          | 1.733     | 4.184      | 39.438    |
| 111         | 13.279     | 3.094     | 0.000      | 1.809     | 0.000    | 0.000     | 0.000      | 0.000     | 2.124          | 1.337     | 4.976      | 55.540    |

**Table B.1.2 Chemical profile data of variables for every 5 peaks at four weeks storage duration in each variety**

| Peak Number | Variety    |           |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|-----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |           |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample II | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 42.110     | 8.827     | 35.859     | 36.868    | 45.157   | 48.663    | 48.198     | 21.691    | 42.889         | 39.017    | 12.872     | 33.253    |
| 6           | 16.380     | 0.000     | 14.571     | 14.075    | 16.146   | 19.901    | 18.901     | 6.787     | 16.098         | 16.051    | 5.170      | 13.306    |
| 11          | 12.123     | 0.000     | 9.704      | 9.379     | 0.000    | 0.000     | 0.000      | 4.155     | 0.000          | 0.000     | 1.837      | 0.000     |
| 16          | 14.100     | 0.000     | 13.905     | 12.477    | 15.857   | 16.188    | 17.659     | 6.885     | 16.453         | 14.710    | 5.543      | 13.853    |
| 21          | 561.384    | 51.652    | 484.336    | 451.241   | 552.243  | 700.642   | 688.771    | 239.389   | 560.114        | 540.436   | 187.069    | 478.583   |
| 26          | 0.000      | 0.000     | 1.721      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 31          | 9.146      | 0.000     | 8.577      | 7.528     | 7.274    | 0.000     | 0.000      | 2.113     | 8.084          | 7.033     | 3.232      | 7.268     |
| 36          | 0.000      | 0.000     | 2.209      | 1.930     | 2.019    | 0.000     | 2.616      | 2.361     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 16.888     | 0.000     | 14.780     | 14.093    | 15.373   | 15.562    | 16.758     | 7.269     | 15.800         | 16.745    | 5.415      | 13.632    |
| 46          | 17.707     | 0.000     | 16.405     | 14.827    | 19.298   | 29.053    | 27.279     | 9.908     | 17.056         | 15.374    | 6.152      | 15.527    |
| 51          | 0.000      | 0.000     | 1.966      | 1.733     | 2.319    | 0.000     | 2.531      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 56          | 23.618     | 0.000     | 20.622     | 19.854    | 27.256   | 38.060    | 38.756     | 13.940    | 15.907         | 20.929    | 6.488      | 15.583    |
| 61          | 0.000      | 0.000     | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 6.065      | 0.000     | 7.443      | 5.245     | 6.991    | 9.182     | 7.400      | 2.462     | 7.308          | 6.594     | 3.391      | 6.457     |
| 71          | 8.449      | 0.000     | 6.974      | 8.651     | 6.374    | 8.874     | 6.338      | 2.978     | 2.761          | 2.572     | 0.000      | 2.383     |
| 76          | 0.000      | 0.000     | 0.000      | 0.000     | 0.000    | 0.000     | 2.116      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 3.015      | 0.000     | 3.067      | 3.051     | 2.797    | 0.000     | 3.019      | 0.000     | 0.000          | 2.365     | 0.000      | 0.000     |
| 86          | 0.000      | 0.000     | 1.471      | 0.000     | 3.629    | 4.468     | 3.648      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000     | 1.444      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000     | 1.494      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 0.000      | 0.000     | 2.156      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 106         | 0.000      | 0.000     | 0.000      | 0.000     | 1.855    | 0.000     | 2.075      | 0.000     | 3.241          | 2.584     | 1.834      | 3.057     |
| 111         | 0.000      | 0.000     | 3.628      | 1.638     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |

**Table B.1.3 Chemical profile data of variables for every 5 peaks at six weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 41.427     | 35.274   | 34.941     | 43.177    | 13.064   | 16.504    | 40.430     | 55.625    | 41.688         | 35.382    | 45.485     | 36.412    |
| 6           | 20.904     | 14.508   | 15.235     | 20.609    | 3.809    | 6.226     | 15.149     | 27.837    | 19.921         | 15.421    | 19.224     | 16.271    |
| 11          | 11.341     | 10.646   | 10.956     | 11.485    | 3.431    | 4.362     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 14.402     | 13.900   | 13.161     | 14.913    | 5.077    | 6.565     | 14.209     | 15.476    | 15.410         | 24.085    | 13.910     | 12.969    |
| 21          | 539.429    | 537.939  | 534.005    | 602.286   | 174.544  | 227.243   | 569.295    | 591.171   | 659.937        | 594.148   | 727.049    | 541.107   |
| 26          | 0.000      | 0.000    | 0.000      | 3.040     | 0.000    | 0.000     | 0.000      | 2.178     | 0.000          | 4.308     | 0.000      | 0.000     |
| 31          | 8.453      | 9.171    | 0.000      | 8.010     | 2.287    | 0.000     | 0.000      | 7.307     | 7.507          | 7.785     | 9.203      | 6.765     |
| 36          | 0.000      | 0.000    | 0.000      | 0.000     | 1.652    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 14.565     | 14.624   | 14.713     | 20.239    | 5.443    | 7.185     | 15.490     | 16.759    | 16.844         | 14.666    | 18.673     | 13.911    |
| 46          | 20.565     | 19.780   | 18.889     | 24.796    | 6.726    | 8.470     | 18.373     | 20.239    | 31.399         | 22.259    | 42.776     | 19.633    |
| 51          | 2.398      | 0.000    | 1.898      | 6.534     | 0.000    | 0.000     | 0.000      | 2.500     | 0.000          | 0.000     | 3.622      | 0.000     |
| 56          | 20.911     | 20.770   | 21.266     | 37.512    | 7.119    | 9.079     | 17.616     | 23.755    | 23.389         | 18.183    | 30.552     | 17.141    |
| 61          | 0.000      | 0.000    | 1.961      | 8.499     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 3.434      | 3.589    | 3.515      | 20.915    | 1.469    | 0.000     | 3.609      | 4.213     | 5.166          | 5.853     | 6.192      | 5.486     |
| 71          | 7.332      | 7.466    | 6.562      | 27.612    | 1.726    | 2.270     | 4.694      | 4.707     | 0.000          | 0.000     | 0.000      | 0.000     |
| 76          | 0.000      | 0.000    | 0.000      | 33.299    | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 2.760      | 0.000    | 2.875      | 54.073    | 0.000    | 0.000     | 0.000      | 5.415     | 0.000          | 0.000     | 0.000      | 0.000     |
| 86          | 0.000      | 3.405    | 3.983      | 26.030    | 0.000    | 0.000     | 0.000      | 6.190     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000    | 0.000      | 28.565    | 0.000    | 0.000     | 0.000      | 17.101    | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000    | 0.000      | 28.992    | 0.000    | 0.000     | 0.000      | 8.178     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 27.251     | 21.136   | 19.044     | 250.242   | 18.426   | 11.492    | 15.206     | 66.978    | 9.754          | 11.218    | 12.877     | 9.496     |
| 106         | 5.024      | 0.000    | 0.000      | 186.262   | 1.406    | 0.000     | 0.000      | 63.678    | 0.000          | 2.897     | 0.000      | 0.000     |
| 111         | 2.952      | 0.000    | 1.914      | 249.779   | 1.126    | 0.000     | 0.000      | 69.650    | 0.000          | 0.000     | 0.000      | 0.000     |



**Table B.1.4 Chemical profile data of variables for every 5 peaks at eight weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 18.990     | 63.410   | 16.138     | 62.439    | 51.995   | 68.086    | 27.276     | 69.296    | 25.587         | 57.590    | 85.015     | 53.892    |
| 6           | 8.216      | 24.654   | 6.886      | 24.718    | 20.074   | 22.574    | 8.481      | 23.851    | 10.182         | 21.201    | 40.863     | 20.432    |
| 11          | 6.627      | 0.000    | 6.052      | 0.000     | 0.000    | 0.000     | 7.820      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 8.256      | 18.475   | 7.757      | 17.696    | 18.170   | 21.375    | 9.988      | 20.304    | 9.391          | 18.137    | 0.000      | 18.473    |
| 21          | 313.398    | 695.381  | 260.046    | 677.416   | 673.296  | 743.599   | 367.304    | 675.039   | 408.251        | 696.364   | 1392.999   | 677.295   |
| 26          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 5.708     | 3.880      | 0.000     |
| 31          | 3.063      | 10.184   | 3.187      | 10.747    | 9.840    | 13.021    | 3.149      | 10.875    | 0.000          | 9.315     | 17.478     | 11.830    |
| 36          | 1.308      | 0.000    | 0.000      | 2.285     | 0.000    | 0.000     | 1.643      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 8.654      | 19.507   | 7.949      | 17.331    | 18.681   | 20.668    | 10.947     | 18.198    | 11.537         | 18.693    | 33.254     | 18.403    |
| 46          | 7.978      | 21.639   | 7.686      | 19.227    | 22.214   | 22.050    | 12.151     | 21.512    | 10.440         | 18.638    | 31.396     | 14.496    |
| 51          | 1.402      | 0.000    | 0.000      | 2.541     | 0.000    | 0.000     | 1.483      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 56          | 12.098     | 31.436   | 10.526     | 23.946    | 23.498   | 23.814    | 12.662     | 22.589    | 9.631          | 16.945    | 22.230     | 14.544    |
| 61          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 2.524      | 5.546    | 2.189      | 4.818     | 6.278    | 6.779     | 3.008      | 6.074     | 3.370          | 8.700     | 13.705     | 5.899     |
| 71          | 3.364      | 6.013    | 2.772      | 6.521     | 4.287    | 4.824     | 2.754      | 4.847     | 0.000          | 0.000     | 3.861      | 0.000     |
| 76          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 1.591      | 0.000    | 0.000      | 2.374     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 4.178      | 0.000     |
| 86          | 1.609      | 4.209    | 0.000      | 3.365     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 1.516      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 106         | 1.704      | 0.000    | 0.000      | 2.392     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 111         | 1.380      | 0.000    | 1.746      | 2.028     | 0.000    | 0.000     | 1.587      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |

**Table B.1.5 Chemical profile data of variables for every 5 peaks at ten weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 34.035     | 28.379   | 32.343     | 81.849    | 5.719    | 41.016    | 49.690     | 50.465    | 43.981         | 31.516    | 27.901     | 27.807    |
| 6           | 9.612      | 7.768    | 16.474     | 35.383    | 0.000    | 14.287    | 16.475     | 16.638    | 13.390         | 10.174    | 7.750      | 8.429     |
| 11          | 8.876      | 7.052    | 7.563      | 0.000     | 0.000    | 9.429     | 12.167     | 11.387    | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 9.842      | 8.401    | 9.882      | 21.053    | 0.000    | 13.056    | 16.599     | 15.959    | 15.300         | 10.030    | 9.089      | 9.528     |
| 21          | 393.429    | 321.441  | 375.510    | 908.544   | 47.529   | 429.339   | 552.700    | 524.188   | 590.987        | 495.330   | 395.829    | 433.802   |
| 26          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 2.377     | 0.000          | 0.000     | 0.000      | 0.000     |
| 31          | 6.230      | 0.000    | 0.000      | 14.230    | 0.000    | 6.893     | 9.324      | 8.359     | 7.780          | 6.622     | 5.591      | 6.048     |
| 36          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 11.900     | 9.829    | 12.492     | 24.679    | 0.000    | 13.740    | 15.294     | 15.113    | 15.395         | 13.463    | 10.261     | 11.312    |
| 46          | 11.135     | 9.491    | 10.814     | 23.990    | 3.168    | 13.784    | 17.481     | 16.459    | 15.385         | 10.640    | 10.857     | 11.629    |
| 51          | 0.000      | 1.670    | 0.000      | 3.857     | 0.000    | 2.109     | 2.617      | 2.525     | 2.485          | 0.000     | 1.674      | 1.646     |
| 56          | 11.857     | 10.699   | 13.188     | 23.503    | 0.000    | 13.887    | 15.185     | 15.592    | 11.861         | 11.603    | 7.793      | 8.239     |
| 61          | 0.000      | 0.000    | 0.000      | 4.378     | 0.000    | 0.000     | 3.494      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 4.896      | 3.383    | 4.151      | 9.364     | 0.000    | 3.639     | 0.000      | 0.000     | 9.086          | 5.648     | 5.980      | 6.108     |
| 71          | 3.228      | 3.145    | 3.535      | 6.356     | 0.000    | 2.811     | 3.304      | 3.154     | 0.000          | 0.000     | 0.000      | 0.000     |
| 76          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 0.000      | 0.000    | 0.000      | 3.327     | 0.000    | 0.000     | 0.000      | 0.000     | 1.815          | 0.000     | 0.000      | 0.000     |
| 86          | 0.000      | 0.000    | 0.000      | 3.344     | 0.000    | 0.000     | 0.000      | 2.187     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 106         | 0.000      | 1.736    | 0.000      | 5.011     | 0.000    | 2.111     | 0.000      | 2.966     | 2.443          | 0.000     | 1.939      | 2.070     |
| 111         | 0.000      | 0.000    | 0.000      | 2.371     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |

**Table B.1.6 Chemical profile data of variables for every 5 peaks at twelve weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 44.821     | 39.729   | 33.750     | 36.268    | 59.364   | 48.946    | 14.930     | 41.018    | 46.622         | 38.810    | 43.894     | 51.914    |
| 6           | 17.276     | 15.295   | 9.977      | 11.262    | 17.123   | 15.911    | 3.402      | 10.929    | 15.855         | 11.958    | 14.980     | 15.324    |
| 11          | 11.845     | 9.899    | 9.555      | 10.711    | 0.000    | 0.000     | 3.527      | 10.471    | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 13.053     | 12.040   | 12.444     | 14.086    | 14.510   | 13.926    | 4.820      | 12.463    | 14.322         | 12.592    | 13.795     | 13.623    |
| 21          | 537.502    | 466.278  | 469.746    | 535.024   | 598.177  | 622.054   | 182.626    | 536.852   | 672.027        | 578.461   | 682.880    | 623.190   |
| 26          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 31          | 8.801      | 5.038    | 9.200      | 7.221     | 12.264   | 8.792     | 1.929      | 7.767     | 8.150          | 7.597     | 7.893      | 7.309     |
| 36          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 15.028     | 13.847   | 13.707     | 16.326    | 16.054   | 16.775    | 5.942      | 14.599    | 17.484         | 15.181    | 16.939     | 15.963    |
| 46          | 16.186     | 12.325   | 12.564     | 19.929    | 18.945   | 19.840    | 6.045      | 18.625    | 19.443         | 16.358    | 21.243     | 20.369    |
| 51          | 0.000      | 0.000    | 0.000      | 2.202     | 0.000    | 2.670     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 56          | 18.255     | 16.822   | 16.591     | 20.206    | 17.872   | 18.330    | 7.896      | 16.997    | 17.581         | 15.221    | 16.939     | 17.164    |
| 61          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 6.341      | 5.602    | 5.375      | 5.890     | 5.893    | 8.104     | 2.943      | 8.393     | 9.109          | 7.997     | 8.248      | 9.390     |
| 71          | 3.297      | 2.610    | 2.580      | 3.181     | 0.000    | 2.662     | 0.000      | 2.312     | 0.000          | 0.000     | 0.000      | 0.000     |
| 76          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 0.000      | 0.000    | 0.000      | 1.877     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 86          | 0.000      | 0.000    | 0.000      | 1.724     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 106         | 0.000      | 0.000    | 1.968      | 1.975     | 0.000    | 0.000     | 1.251      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 111         | 0.000      | 0.000    | 0.000      | 1.664     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |

**Table B.2.1 Peak-area normalized or adjusted variables for every 5 peaks at two weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 0.084      | 0.082    | 0.165      | 0.087     | 0.088    | 0.091     | 0.095      | 0.097     | 0.091          | 0.099     | 0.099      | 0.092     |
| 6           | 0.034      | 0.034    | 0.000      | 0.036     | 0.033    | 0.036     | 0.033      | 0.041     | 0.032          | 0.034     | 0.044      | 0.034     |
| 11          | 0.021      | 0.020    | 0.000      | 0.020     | 0.018    | 0.019     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 0.027      | 0.025    | 0.000      | 0.029     | 0.028    | 0.029     | 0.029      | 0.030     | 0.030          | 0.037     | 0.029      | 0.031     |
| 21          | 1.000      | 1.000    | 1.000      | 1.000     | 1.000    | 1.000     | 1.000      | 1.000     | 1.000          | 1.000     | 1.000      | 1.000     |
| 26          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.005      | 0.000     | 0.005          | 0.000     | 0.000      | 0.008     |
| 31          | 0.018      | 0.010    | 0.000      | 0.019     | 0.022    | 0.013     | 0.017      | 0.020     | 0.017          | 0.023     | 0.017      | 0.028     |
| 36          | 0.000      | 0.000    | 0.000      | 0.003     | 0.004    | 0.005     | 0.005      | 0.005     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 0.033      | 0.039    | 0.000      | 0.036     | 0.031    | 0.031     | 0.034      | 0.031     | 0.031          | 0.033     | 0.029      | 0.030     |
| 46          | 0.032      | 0.027    | 0.141      | 0.034     | 0.035    | 0.035     | 0.038      | 0.036     | 0.031          | 0.025     | 0.025      | 0.027     |
| 51          | 0.000      | 0.005    | 0.000      | 0.004     | 0.004    | 0.005     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 56          | 0.038      | 0.046    | 0.077      | 0.045     | 0.036    | 0.033     | 0.040      | 0.036     | 0.026          | 0.030     | 0.025      | 0.030     |
| 61          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.007      | 0.007     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 0.009      | 0.009    | 0.000      | 0.008     | 0.014    | 0.016     | 0.014      | 0.015     | 0.008          | 0.011     | 0.008      | 0.022     |
| 71          | 0.022      | 0.026    | 0.049      | 0.027     | 0.020    | 0.025     | 0.025      | 0.021     | 0.009          | 0.014     | 0.009      | 0.012     |
| 76          | 0.000      | 0.004    | 0.000      | 0.004     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 0.006      | 0.014    | 0.000      | 0.008     | 0.007    | 0.007     | 0.007      | 0.007     | 0.005          | 0.009     | 0.005      | 0.020     |
| 86          | 0.005      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.007     | 0.000          | 0.000     | 0.005      | 0.015     |
| 91          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.021     |
| 96          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.022     |
| 101         | 0.000      | 0.014    | 0.051      | 0.007     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.010     | 0.000      | 0.122     |
| 106         | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.004     | 0.000      | 0.000     | 0.007          | 0.018     | 0.009      | 0.251     |
| 111         | 0.034      | 0.006    | 0.000      | 0.004     | 0.000    | 0.000     | 0.000      | 0.000     | 0.006          | 0.014     | 0.011      | 0.353     |

**Table B.2.2 Peak-area normalized or adjusted variables for every 5 peaks at four weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 0.075      | 0.171    | 0.074      | 0.082     | 0.082    | 0.069     | 0.070      | 0.091     | 0.077          | 0.072     | 0.069      | 0.069     |
| 6           | 0.029      | 0.000    | 0.030      | 0.031     | 0.029    | 0.028     | 0.027      | 0.028     | 0.029          | 0.030     | 0.028      | 0.028     |
| 11          | 0.022      | 0.000    | 0.020      | 0.021     | 0.000    | 0.000     | 0.000      | 0.017     | 0.000          | 0.000     | 0.010      | 0.000     |
| 16          | 0.025      | 0.000    | 0.029      | 0.028     | 0.029    | 0.023     | 0.026      | 0.029     | 0.029          | 0.027     | 0.030      | 0.029     |
| 21          | 1.000      | 1.000    | 1.000      | 1.000     | 1.000    | 1.000     | 1.000      | 1.000     | 1.000          | 1.000     | 1.000      | 1.000     |
| 26          | 0.000      | 0.000    | 0.004      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 31          | 0.016      | 0.000    | 0.018      | 0.017     | 0.013    | 0.000     | 0.000      | 0.009     | 0.014          | 0.013     | 0.017      | 0.015     |
| 36          | 0.000      | 0.000    | 0.005      | 0.004     | 0.004    | 0.000     | 0.004      | 0.010     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 0.030      | 0.000    | 0.031      | 0.031     | 0.028    | 0.022     | 0.024      | 0.030     | 0.028          | 0.031     | 0.029      | 0.028     |
| 46          | 0.032      | 0.000    | 0.034      | 0.033     | 0.035    | 0.041     | 0.040      | 0.041     | 0.030          | 0.028     | 0.033      | 0.032     |
| 51          | 0.000      | 0.000    | 0.004      | 0.004     | 0.004    | 0.000     | 0.004      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 56          | 0.042      | 0.000    | 0.043      | 0.044     | 0.049    | 0.054     | 0.056      | 0.058     | 0.028          | 0.039     | 0.035      | 0.033     |
| 61          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 0.011      | 0.000    | 0.015      | 0.012     | 0.013    | 0.013     | 0.011      | 0.010     | 0.013          | 0.012     | 0.018      | 0.013     |
| 71          | 0.015      | 0.000    | 0.014      | 0.019     | 0.012    | 0.013     | 0.009      | 0.012     | 0.005          | 0.005     | 0.000      | 0.005     |
| 76          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.003      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 0.005      | 0.000    | 0.006      | 0.007     | 0.005    | 0.000     | 0.004      | 0.000     | 0.000          | 0.004     | 0.000      | 0.000     |
| 86          | 0.000      | 0.000    | 0.003      | 0.000     | 0.007    | 0.006     | 0.005      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000    | 0.003      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000    | 0.003      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 0.000      | 0.000    | 0.004      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 106         | 0.000      | 0.000    | 0.000      | 0.000     | 0.003    | 0.000     | 0.003      | 0.000     | 0.006          | 0.005     | 0.010      | 0.006     |
| 111         | 0.000      | 0.000    | 0.007      | 0.004     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |

**Table B.2.3 Peak-area normalized or adjusted variables for every 5 peaks at six weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 0.077      | 0.066    | 0.065      | 0.072     | 0.075    | 0.073     | 0.071      | 0.094     | 0.063          | 0.060     | 0.063      | 0.067     |
| 6           | 0.039      | 0.027    | 0.029      | 0.034     | 0.022    | 0.027     | 0.027      | 0.047     | 0.030          | 0.026     | 0.026      | 0.030     |
| 11          | 0.021      | 0.020    | 0.021      | 0.019     | 0.020    | 0.019     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 0.027      | 0.026    | 0.025      | 0.025     | 0.029    | 0.029     | 0.025      | 0.026     | 0.023          | 0.041     | 0.019      | 0.024     |
| 21          | 1.000      | 1.000    | 1.000      | 1.000     | 1.000    | 1.000     | 1.000      | 1.000     | 1.000          | 1.000     | 1.000      | 1.000     |
| 26          | 0.000      | 0.000    | 0.000      | 0.005     | 0.000    | 0.000     | 0.000      | 0.004     | 0.000          | 0.007     | 0.000      | 0.000     |
| 31          | 0.016      | 0.017    | 0.000      | 0.013     | 0.013    | 0.000     | 0.000      | 0.012     | 0.011          | 0.013     | 0.013      | 0.013     |
| 36          | 0.000      | 0.000    | 0.000      | 0.000     | 0.009    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 0.027      | 0.027    | 0.028      | 0.034     | 0.031    | 0.032     | 0.027      | 0.028     | 0.026          | 0.025     | 0.026      | 0.026     |
| 46          | 0.038      | 0.037    | 0.035      | 0.041     | 0.039    | 0.037     | 0.032      | 0.034     | 0.048          | 0.037     | 0.059      | 0.036     |
| 51          | 0.004      | 0.000    | 0.004      | 0.011     | 0.000    | 0.000     | 0.000      | 0.004     | 0.000          | 0.000     | 0.005      | 0.000     |
| 56          | 0.039      | 0.039    | 0.040      | 0.062     | 0.041    | 0.040     | 0.031      | 0.040     | 0.035          | 0.031     | 0.042      | 0.032     |
| 61          | 0.000      | 0.000    | 0.004      | 0.014     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 0.006      | 0.007    | 0.007      | 0.035     | 0.008    | 0.000     | 0.006      | 0.007     | 0.008          | 0.010     | 0.009      | 0.010     |
| 71          | 0.014      | 0.014    | 0.012      | 0.046     | 0.010    | 0.010     | 0.008      | 0.008     | 0.000          | 0.000     | 0.000      | 0.000     |
| 76          | 0.000      | 0.000    | 0.000      | 0.055     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 0.005      | 0.000    | 0.005      | 0.090     | 0.000    | 0.000     | 0.000      | 0.009     | 0.000          | 0.000     | 0.000      | 0.000     |
| 86          | 0.000      | 0.006    | 0.007      | 0.043     | 0.000    | 0.000     | 0.000      | 0.010     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000    | 0.000      | 0.047     | 0.000    | 0.000     | 0.000      | 0.029     | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000    | 0.000      | 0.048     | 0.000    | 0.000     | 0.000      | 0.014     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 0.051      | 0.039    | 0.036      | 0.415     | 0.106    | 0.051     | 0.027      | 0.113     | 0.015          | 0.019     | 0.018      | 0.018     |
| 106         | 0.009      | 0.000    | 0.000      | 0.309     | 0.008    | 0.000     | 0.000      | 0.108     | 0.000          | 0.005     | 0.000      | 0.000     |
| 111         | 0.005      | 0.000    | 0.004      | 0.415     | 0.006    | 0.000     | 0.000      | 0.118     | 0.000          | 0.000     | 0.000      | 0.000     |

**Table B.2.4 Peak-area normalized or adjusted variables for every 5 peaks at eight weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 0.061      | 0.091    | 0.062      | 0.092     | 0.077    | 0.092     | 0.074      | 0.103     | 0.063          | 0.083     | 0.061      | 0.080     |
| 6           | 0.026      | 0.035    | 0.026      | 0.036     | 0.030    | 0.030     | 0.023      | 0.035     | 0.025          | 0.030     | 0.029      | 0.030     |
| 11          | 0.021      | 0.000    | 0.023      | 0.000     | 0.000    | 0.000     | 0.021      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 0.026      | 0.027    | 0.030      | 0.026     | 0.027    | 0.029     | 0.027      | 0.030     | 0.023          | 0.026     | 0.000      | 0.027     |
| 21          | 1.000      | 1.000    | 1.000      | 1.000     | 1.000    | 1.000     | 1.000      | 1.000     | 1.000          | 1.000     | 1.000      | 1.000     |
| 26          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.008     | 0.003      | 0.000     |
| 31          | 0.010      | 0.015    | 0.012      | 0.016     | 0.015    | 0.018     | 0.009      | 0.016     | 0.000          | 0.013     | 0.013      | 0.017     |
| 36          | 0.004      | 0.000    | 0.000      | 0.003     | 0.000    | 0.000     | 0.004      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 0.028      | 0.028    | 0.031      | 0.026     | 0.028    | 0.028     | 0.030      | 0.027     | 0.028          | 0.027     | 0.024      | 0.027     |
| 46          | 0.025      | 0.031    | 0.030      | 0.028     | 0.033    | 0.030     | 0.033      | 0.032     | 0.026          | 0.027     | 0.023      | 0.021     |
| 51          | 0.004      | 0.000    | 0.000      | 0.004     | 0.000    | 0.000     | 0.004      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 56          | 0.039      | 0.045    | 0.040      | 0.035     | 0.035    | 0.032     | 0.034      | 0.033     | 0.024          | 0.024     | 0.016      | 0.021     |
| 61          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 0.008      | 0.008    | 0.008      | 0.007     | 0.009    | 0.009     | 0.008      | 0.009     | 0.008          | 0.012     | 0.010      | 0.009     |
| 71          | 0.011      | 0.009    | 0.011      | 0.010     | 0.006    | 0.006     | 0.007      | 0.007     | 0.000          | 0.000     | 0.003      | 0.000     |
| 76          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 0.005      | 0.000    | 0.000      | 0.004     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.003      | 0.000     |
| 86          | 0.005      | 0.006    | 0.000      | 0.005     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 0.005      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 106         | 0.005      | 0.000    | 0.000      | 0.004     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 111         | 0.004      | 0.000    | 0.007      | 0.003     | 0.000    | 0.000     | 0.004      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |



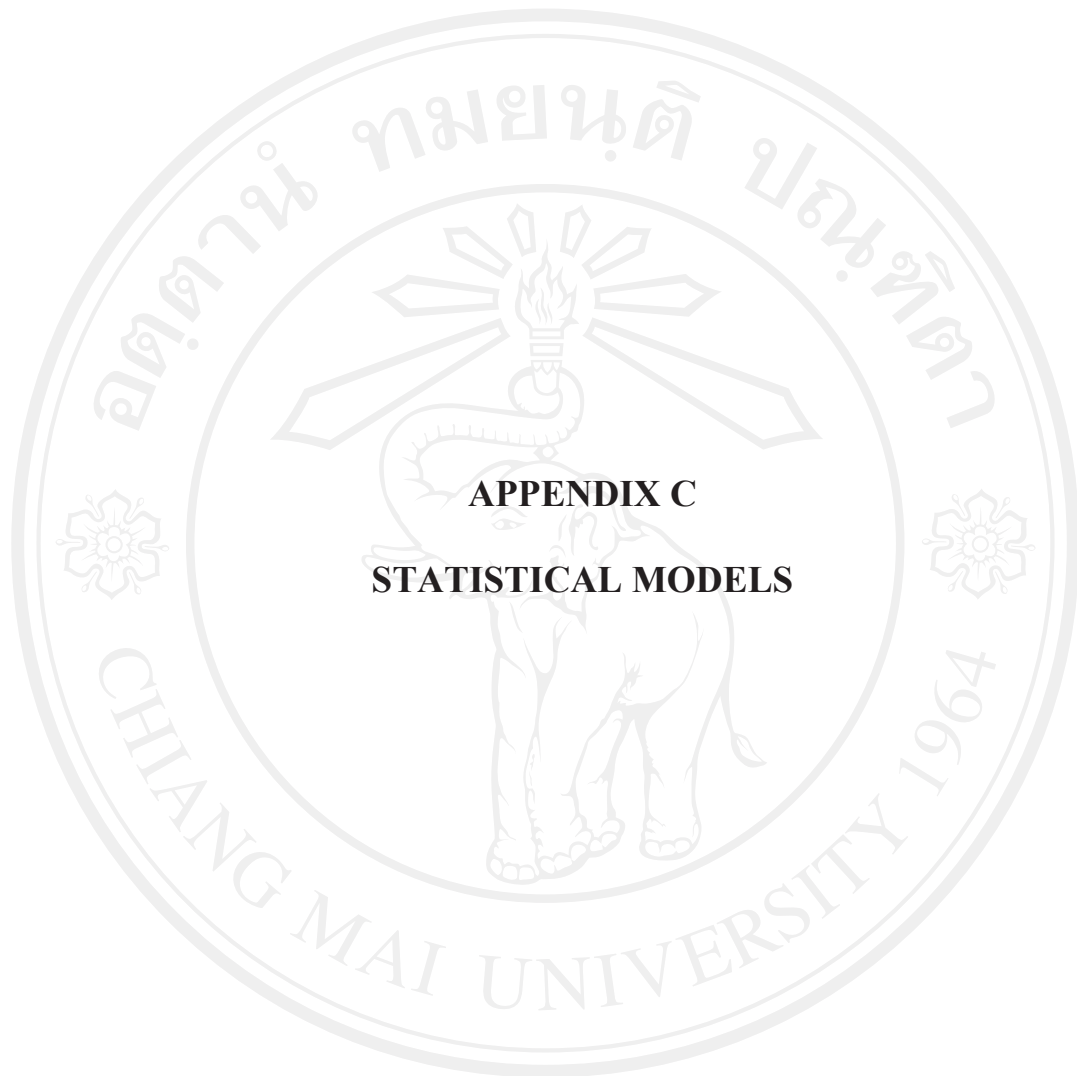
**Table B.2.5 Peak-area normalized or adjusted variables for every 5 peaks at ten weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 0.087      | 0.088    | 0.086      | 0.090     | 0.120    | 0.096     | 0.090      | 0.096     | 0.074          | 0.064     | 0.070      | 0.064     |
| 6           | 0.024      | 0.024    | 0.044      | 0.039     | 0.000    | 0.033     | 0.030      | 0.032     | 0.023          | 0.021     | 0.020      | 0.019     |
| 11          | 0.023      | 0.022    | 0.020      | 0.000     | 0.000    | 0.022     | 0.022      | 0.022     | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 0.025      | 0.026    | 0.026      | 0.023     | 0.000    | 0.030     | 0.030      | 0.030     | 0.026          | 0.020     | 0.023      | 0.022     |
| 21          | 1.000      | 1.000    | 1.000      | 1.000     | 1.000    | 1.000     | 1.000      | 1.000     | 1.000          | 1.000     | 1.000      | 1.000     |
| 26          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.005     | 0.000          | 0.000     | 0.000      | 0.000     |
| 31          | 0.016      | 0.000    | 0.000      | 0.016     | 0.000    | 0.016     | 0.017      | 0.016     | 0.013          | 0.013     | 0.014      | 0.014     |
| 36          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 0.030      | 0.031    | 0.033      | 0.027     | 0.000    | 0.032     | 0.028      | 0.029     | 0.026          | 0.027     | 0.026      | 0.026     |
| 46          | 0.028      | 0.030    | 0.029      | 0.026     | 0.067    | 0.032     | 0.032      | 0.031     | 0.026          | 0.021     | 0.027      | 0.027     |
| 51          | 0.000      | 0.005    | 0.000      | 0.004     | 0.000    | 0.005     | 0.005      | 0.005     | 0.004          | 0.000     | 0.004      | 0.004     |
| 56          | 0.030      | 0.033    | 0.035      | 0.026     | 0.000    | 0.032     | 0.027      | 0.030     | 0.020          | 0.023     | 0.020      | 0.019     |
| 61          | 0.000      | 0.000    | 0.000      | 0.005     | 0.000    | 0.000     | 0.006      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 0.012      | 0.011    | 0.011      | 0.010     | 0.000    | 0.008     | 0.000      | 0.000     | 0.015          | 0.011     | 0.015      | 0.014     |
| 71          | 0.008      | 0.010    | 0.009      | 0.007     | 0.000    | 0.007     | 0.006      | 0.006     | 0.000          | 0.000     | 0.000      | 0.000     |
| 76          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 0.000      | 0.000    | 0.000      | 0.004     | 0.000    | 0.000     | 0.000      | 0.000     | 0.003          | 0.000     | 0.000      | 0.000     |
| 86          | 0.000      | 0.000    | 0.000      | 0.004     | 0.000    | 0.000     | 0.000      | 0.004     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 106         | 0.000      | 0.005    | 0.000      | 0.006     | 0.000    | 0.005     | 0.000      | 0.006     | 0.004          | 0.000     | 0.005      | 0.005     |
| 111         | 0.000      | 0.000    | 0.000      | 0.003     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |



**Table B.2.6 Peak-area normalized or adjusted variables for every 5 peaks at twelve weeks storage duration in each variety**

| Peak Number | Variety    |          |            |           |          |           |            |           |                |           |            |           |
|-------------|------------|----------|------------|-----------|----------|-----------|------------|-----------|----------------|-----------|------------|-----------|
|             | Kor Kho 15 |          |            |           | KDML 105 |           |            |           | Pathum thani 1 |           |            |           |
|             | Sample I   | Sample I | Sample III | Sample IV | Sample I | Sample II | Sample III | Sample IV | Sample I       | Sample II | Sample III | Sample IV |
| 1           | 0.083      | 0.085    | 0.072      | 0.068     | 0.099    | 0.079     | 0.082      | 0.076     | 0.069          | 0.067     | 0.064      | 0.083     |
| 6           | 0.032      | 0.033    | 0.021      | 0.021     | 0.029    | 0.026     | 0.019      | 0.020     | 0.024          | 0.021     | 0.022      | 0.025     |
| 11          | 0.022      | 0.021    | 0.020      | 0.020     | 0.000    | 0.000     | 0.019      | 0.020     | 0.000          | 0.000     | 0.000      | 0.000     |
| 16          | 0.024      | 0.026    | 0.026      | 0.026     | 0.024    | 0.022     | 0.026      | 0.023     | 0.021          | 0.022     | 0.020      | 0.022     |
| 21          | 1.000      | 1.000    | 1.000      | 1.000     | 1.000    | 1.000     | 1.000      | 1.000     | 1.000          | 1.000     | 1.000      | 1.000     |
| 26          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 31          | 0.016      | 0.011    | 0.020      | 0.013     | 0.021    | 0.014     | 0.011      | 0.014     | 0.012          | 0.013     | 0.012      | 0.012     |
| 36          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 41          | 0.028      | 0.030    | 0.029      | 0.031     | 0.027    | 0.027     | 0.033      | 0.027     | 0.026          | 0.026     | 0.025      | 0.026     |
| 46          | 0.030      | 0.026    | 0.027      | 0.037     | 0.032    | 0.032     | 0.033      | 0.035     | 0.029          | 0.028     | 0.031      | 0.033     |
| 51          | 0.000      | 0.000    | 0.000      | 0.004     | 0.000    | 0.004     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 56          | 0.034      | 0.036    | 0.035      | 0.038     | 0.030    | 0.029     | 0.043      | 0.032     | 0.026          | 0.026     | 0.025      | 0.028     |
| 61          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 66          | 0.012      | 0.012    | 0.011      | 0.011     | 0.010    | 0.013     | 0.016      | 0.016     | 0.014          | 0.014     | 0.012      | 0.015     |
| 71          | 0.006      | 0.006    | 0.005      | 0.006     | 0.000    | 0.004     | 0.000      | 0.004     | 0.000          | 0.000     | 0.000      | 0.000     |
| 76          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 81          | 0.000      | 0.000    | 0.000      | 0.004     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 86          | 0.000      | 0.000    | 0.000      | 0.003     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 91          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 96          | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 101         | 0.000      | 0.000    | 0.000      | 0.000     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 106         | 0.000      | 0.000    | 0.004      | 0.004     | 0.000    | 0.000     | 0.007      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |
| 111         | 0.000      | 0.000    | 0.000      | 0.003     | 0.000    | 0.000     | 0.000      | 0.000     | 0.000          | 0.000     | 0.000      | 0.000     |



## APPENDIX C

### STATISTICAL MODELS

ลิขสิทธิ์มหาวิทยาลัยเชียงใหม่

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## CHAPTER IV: RESULTS AND DISCUSSIONS.

The classification models in each view are shown the classification model, eigenvalue, Wilks' lambda, and classification and prediction results.

### 1. The Classification Details from LDA Model with PCs.

**Table C.1.1: Discriminant functions in LDA model from principal components**

| Principle components | Function |        |
|----------------------|----------|--------|
|                      | 1        | 2      |
| PC1                  | -0.410   | -0.283 |
| PC2                  | -0.334   | -0.181 |
| PC3                  | 3.005    | 0.160  |
| PC4                  | -1.254   | -0.164 |
| PC5                  | 2.135    | -0.433 |
| PC6                  | 0.549    | 0.374  |
| PC7                  | -0.356   | 0.700  |
| PC8                  | 0.394    | 0.257  |
| PC9                  | 0.279    | 0.031  |
| PC10                 | 0.287    | -0.413 |
| PC11                 | 0.249    | -0.507 |
| PC12                 | -0.069   | 0.332  |
| PC13                 | 0.196    | 0.565  |
| PC14                 | -0.053   | 0.644  |
| PC15                 | 0.449    | 0.008  |
| PC16                 | 0.354    | 0.483  |
| PC17                 | 0.219    | 0.046  |
| (Constant)           | 0.000    | 0.000  |

**Table C.1.2: Eigenvalues**

| Function | Eigenvalue          | % of Variance | Cumulative % | Canonical Correlation |
|----------|---------------------|---------------|--------------|-----------------------|
| 1        | 16.151 <sup>a</sup> | 90.8          | 90.8         | 0.970                 |
| 2        | 1.631 <sup>a</sup>  | 9.2           | 100.0        | 0.787                 |

**Table C.1.3: Wilks' lambda**

| Test of Function(s) | Wilks' Lambda | Chi-square | df | p-value |
|---------------------|---------------|------------|----|---------|
| 1 through 2         | 0.022         | 232.373    | 34 | 0.000   |
| 2                   | 0.380         | 59.009     | 16 | 0.000   |

**Table C.1.4: Classification and prediction results**

|                              |       |                | Predicted Group Membership |          |                | Total |
|------------------------------|-------|----------------|----------------------------|----------|----------------|-------|
| Variety                      |       |                | Kor Kho 15                 | KDML 105 | Pathum thani 1 |       |
| Original                     | Count | Kor Kho 15     | 21                         | 3        | 0              | 24    |
|                              |       | KDML 105       | 4                          | 20       | 0              | 24    |
|                              |       | Pathum thani 1 | 0                          | 0        | 24             | 24    |
|                              | %     | Kor Kho 15     | 87.5                       | 12.5     | 0.0            | 100.0 |
|                              |       | KDML 105       | 16.7                       | 83.3     | 0.0            | 100.0 |
|                              |       | Pathum thani 1 | 0.0                        | 0.0      | 100.0          | 100.0 |
| Cross-validated <sup>a</sup> | Count | Kor Kho 15     | 19                         | 4        | 1              | 24    |
|                              |       | KDML 105       | 4                          | 20       | 0              | 24    |
|                              |       | Pathum thani 1 | 0                          | 0        | 24             | 24    |
|                              | %     | Kor Kho 15     | 79.2                       | 16.7     | 4.2            | 100.0 |
|                              |       | KDML 105       | 16.7                       | 83.3     | 0.0            | 100.0 |
|                              |       | Pathum thani 1 | 0.0                        | 0.0      | 100.0          | 100.0 |

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 90.3% of original grouped cases correctly classified.

c. 87.5% of cross-validated grouped cases correctly predicted.

## 2. The Classification Details from LDA Model with Significant Peak-area

Variables.

**Table C.2.1: Discriminant functions in LDA model from significant peak-area variables.**

| Peak Number | Retention Time | Function |          |
|-------------|----------------|----------|----------|
|             |                | 1        | 2        |
| 1           | 5.300-5.700    | -53.302  | -4.661   |
| 2           | 6.050-6.301    | 20.378   | -31.281  |
| 3           | 6.302-6.700    | 18.231   | -37.848  |
| 10          | 10.150-10.360  | 58.672   | -16.846  |
| 11          | 10.380-10.600  | 76.069   | -144.608 |
| 12          | 12.080-12.280  | 343.394  | 66.927   |
| 13          | 12.300-12.500  | 728.296  | -119.940 |
| 14          | 12.800-13.340  | -67.145  | -27.173  |
| 15          | 13.800-14.060  | -20.099  | 61.858   |
| 17          | 14.560-14.800  | 102.541  | 14.212   |
| 18          | 14.840-15.080  | -11.002  | -3.891   |
| 25          | 17.700-17.900  | 4.911    | -108.811 |
| 27          | 19.700-19.900  | -26.190  | 158.430  |
| 29          | 21.040-21.200  | -53.994  | 31.952   |
| 30          | 21.250-21.339  | -2.991   | 56.765   |
| 34          | 22.925-23.175  | 5.163    | -11.669  |
| 35          | 24.925-25.075  | 112.778  | 462.336  |
| 36          | 25.225-25.340  | -234.029 | 145.582  |
| 39          | 25.700-25.780  | 2.244    | 69.951   |
| 42          | 26.375-26.525  | 184.457  | 26.719   |
| 43          | 26.600-26.750  | -206.936 | 102.234  |
| 51          | 29.560-29.675  | -86.734  | -145.220 |
| 52          | 29.850-29.975  | 385.504  | -0.311   |
| 56          | 31.175-31.350  | 11.471   | -45.685  |
| 57          | 32.510-32.650  | 21.671   | -83.615  |
| 58          | 33.030-33.330  | -2.721   | 10.054   |
| 59          | 33.700-33.880  | 25.762   | -213.996 |
| 69          | 41.040-41.170  | -59.368  | -127.860 |
| 70          | 43.650-43.850  | -20.090  | 3.903    |
| 71          | 44.010-44.180  | -42.606  | 109.041  |
| 72          | 44.260-44.440  | 354.461  | -255.563 |
| 78          | 47.210-47.380  | -467.159 | 49.566   |
| 82          | 49.810-49.930  | 45.619   | 126.201  |
|             | (Constant)     | -5.096   | -14.665  |

**Table C.2.2: Eigenvalues**

| Function | Eigenvalue          | % of Variance | Cumulative % | Canonical Correlation |
|----------|---------------------|---------------|--------------|-----------------------|
| 1        | 92.048 <sup>a</sup> | 90.7          | 90.7         | 0.995                 |
| 2        | 9.489 <sup>a</sup>  | 9.3           | 100.0        | 0.951                 |

**Table C.2.3: Wilks' lambda**

| Test of Function(s) | Wilks' Lambda | Chi-square | df | p-value |
|---------------------|---------------|------------|----|---------|
| 1 through 2         | 0.001         | 364.821    | 66 | 0.000   |
| 2                   | 0.095         | 124.565    | 32 | 0.000   |

**Table C.2.4: Classification and prediction results**

|                              |       |                | Predicted Group Membership |          |                | Total |
|------------------------------|-------|----------------|----------------------------|----------|----------------|-------|
|                              |       |                | Kor Kho 15                 | KDML 105 | Pathum thani 1 |       |
| Original                     | Count | Kor Kho 15     | 24                         | 0        | 0              | 24    |
|                              |       | KDML 105       | 0                          | 24       | 0              | 24    |
|                              |       | Pathum thani 1 | 0                          | 0        | 24             | 24    |
|                              | %     | Kor Kho 15     | 100.0                      | 0.0      | 0.0            | 100.0 |
|                              |       | KDML 105       | 0.0                        | 100.0    | 0.0            | 100.0 |
|                              |       | Pathum thani 1 | 0.0                        | 0.0      | 100.0          | 100.0 |
| Cross-validated <sup>a</sup> | Count | Kor Kho 15     | 23                         | 1        | 0              | 24    |
|                              |       | KDML 105       | 2                          | 22       | 0              | 24    |
|                              |       | Pathum thani 1 | 0                          | 0        | 24             | 24    |
|                              | %     | Kor Kho 15     | 95.8                       | 4.2      | 0.0            | 100.0 |
|                              |       | KDML 105       | 8.3                        | 91.7     | 0.0            | 100.0 |
|                              |       | Pathum thani 1 | 0.0                        | 0.0      | 100.0          | 100.0 |

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 100.0% of original grouped cases correctly classified.

c. 95.8% of cross-validated grouped cases correctly predicted.

### 3. The Classification Details from SLDA Model with Peak-area Variables in the Time Range of 10-35 min.

**Table C.3.1: Discriminant functions in SLDA model from peak-area variables in the time range of 10-35 min.**

| Peak Number | Retention Time | Function |          |
|-------------|----------------|----------|----------|
|             |                | 1        | 2        |
| 11          | 10.380-10.600  | 4.465    | -131.261 |
| 13          | 12.300-12.500  | 769.081  | 140.541  |
| 14          | 12.800-13.340  | 6.622    | -186.667 |
| 24          | 17.250-17.450  | 551.862  | 99.373   |
| 27          | 19.700-19.900  | -9.216   | 117.568  |
| 28          | 20.800-21.030  | 11.801   | -1.306   |
| 32          | 21.675-21.825  | -65.117  | 440.888  |
| 34          | 22.925-23.175  | -42.643  | 25.231   |
| 45          | 27.425-27.520  | -325.432 | -57.792  |
| 47          | 27.875-28.075  | -306.570 | -39.011  |
| 52          | 29.850-29.975  | 571.096  | 132.236  |
| 56          | 31.175-31.350  | -54.793  | -41.614  |
| 58          | 33.700-33.880  | -45.856  | -150.256 |
|             | (Constant)     | 1.149    | -18.730  |

**Table C.3.2: Eigenvalues**

| Function | Eigenvalue          | % of Variance | Cumulative % | Canonical Correlation |
|----------|---------------------|---------------|--------------|-----------------------|
| 1        | 66.308 <sup>a</sup> | 94.4          | 94.4         | 0.993                 |
| 2        | 3.935 <sup>a</sup>  | 5.6           | 100.0        | 0.893                 |

**Table C.3.3: Wilks' lambda**

| Test of Function(s) | Wilks' Lambda | Chi-square | df | p-value |
|---------------------|---------------|------------|----|---------|
| 1 through 2         | 0.003         | 365.755    | 26 | 0.000   |
| 2                   | 0.203         | 100.571    | 12 | 0.000   |

**Table C.3.4: Classification and prediction results**

|                              |       |                | Predicted Group Membership |          |                | Total |
|------------------------------|-------|----------------|----------------------------|----------|----------------|-------|
|                              |       |                | Kor Kho 15                 | KDML 105 | Pathum thani 1 |       |
| Original                     | Count | Kor Kho 15     | 24                         | 0        | 0              | 24    |
|                              |       | KDML 105       | 1                          | 23       | 0              | 24    |
|                              |       | Pathum thani 1 | 0                          | 0        | 24             | 24    |
|                              | %     | Kor Kho 15     | 100.0                      | 0.0      | 0.0            | 100.0 |
|                              |       | KDML 105       | 4.2                        | 95.8     | 0.0            | 100.0 |
|                              |       | Pathum thani 1 | 0.0                        | 0.0      | 100.0          | 100.0 |
| Cross-validated <sup>a</sup> | Count | Kor Kho 15     | 23                         | 1        | 0              | 24    |
|                              |       | KDML 105       | 1                          | 23       | 0              | 24    |
|                              |       | Pathum thani 1 | 0                          | 0        | 24             | 24    |
|                              | %     | Kor Kho 15     | 95.8                       | 4.2      | 0.0            | 100.0 |
|                              |       | KDML 105       | 4.2                        | 95.8     | 0.0            | 100.0 |
|                              |       | Pathum thani 1 | 0.0                        | 0.0      | 100.0          | 100.0 |

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 98.6% of original grouped cases correctly classified.

c. 97.2% of cross-validated grouped cases correctly predicted.



#### 4. The Classification Details from LDA Model with Significant Peak-area

Variables in the Time Range of 10-35 min.

**Table C.4.1: Discriminant functions in LDA model from significant peak-area variables in the time range of 10-35 min.**

| Peak Number | Retention Time | Function |          |
|-------------|----------------|----------|----------|
|             |                | 1        | 2        |
| 10          | 10.150-10.360  | 32.823   | -3.701   |
| 11          | 10.380-10.600  | 29.973   | -116.893 |
| 12          | 12.080-12.280  | 246.143  | 2.314    |
| 13          | 12.300-12.500  | 617.371  | 40.218   |
| 14          | 12.800-13.340  | -101.898 | -151.459 |
| 15          | 13.800-14.060  | -17.519  | 33.309   |
| 17          | 14.560-14.800  | 100.992  | 20.893   |
| 18          | 14.840-15.080  | -22.233  | -3.192   |
| 25          | 17.700-17.900  | -54.813  | -33.394  |
| 27          | 19.700-19.900  | 13.443   | 136.825  |
| 29          | 21.040-21.200  | -46.820  | 66.784   |
| 30          | 21.250-21.339  | 21.610   | 53.060   |
| 34          | 22.925-23.175  | -12.264  | -3.344   |
| 35          | 24.925-25.075  | -168.778 | 330.024  |
| 36          | 25.225-25.340  | 15.455   | -0.043   |
| 39          | 25.700-25.780  | 5.345    | 41.365   |
| 42          | 26.375-26.525  | 362.527  | 108.746  |
| 43          | 26.600-26.750  | -434.781 | 38.444   |
| 51          | 29.560-29.675  | -255.150 | -131.086 |
| 52          | 29.850-29.975  | 577.471  | -8.558   |
| 56          | 31.175-31.350  | 0.803    | -82.502  |
| 57          | 32.510-32.650  | 35.404   | -79.437  |
| 58          | 33.030-33.330  | -2.063   | 21.403   |
| 59          | 33.700-33.880  | -33.836  | -268.400 |
|             | (Constant)     | -3.268   | -17.417  |

**Table C.4.2: Eigenvalues**

| Function | Eigenvalue          | % of Variance | Cumulative % | Canonical Correlation |
|----------|---------------------|---------------|--------------|-----------------------|
| 1        | 61.504 <sup>a</sup> | 92.1          | 92.1         | 0.992                 |
| 2        | 5.287 <sup>a</sup>  | 7.9           | 100.0        | 0.917                 |

**Table C.4.3: Wilks' lambda**

| Test of Function(s) | Wilks' Lambda | Chi-square | df | p-value |
|---------------------|---------------|------------|----|---------|
| 1 through 2         | 0.003         | 343.487    | 48 | 0.000   |
| 2                   | 0.159         | 105.712    | 23 | 0.000   |

**Table C.5.4: Classification and prediction results**

|                              |       |                | Predicted Group Membership |          |                | Total |
|------------------------------|-------|----------------|----------------------------|----------|----------------|-------|
|                              |       |                | Kor Kho 15                 | KDML 105 | Pathum thani 1 |       |
| Original                     | Count | Kor Kho 15     | 24                         | 0        | 0              | 24    |
|                              |       | KDML 105       | 1                          | 23       | 0              | 24    |
|                              |       | Pathum thani 1 | 0                          | 0        | 24             | 24    |
|                              | %     | Kor Kho 15     | 100.0                      | 0.0      | 0.0            | 100.0 |
|                              |       | KDML 105       | 4.2                        | 95.8     | 0.0            | 100.0 |
|                              |       | Pathum thani 1 | 0.0                        | 0.0      | 100.0          | 100.0 |
| Cross-validated <sup>a</sup> | Count | Kor Kho 15     | 24                         | 0        | 0              | 24    |
|                              |       | KDML 105       | 2                          | 22       | 0              | 24    |
|                              |       | Pathum thani 1 | 0                          | 0        | 24             | 24    |
|                              | %     | Kor Kho 15     | 100.0                      | 0.0      | 0.0            | 100.0 |
|                              |       | KDML 105       | 8.3                        | 91.7     | 0.0            | 100.0 |
|                              |       | Pathum thani 1 | 0.0                        | 0.0      | 100.0          | 100.0 |

a. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.

b. 98.6% of original grouped cases correctly classified.

c. 97.2% of cross-validated grouped cases correctly predicted.

## CURRICULUM VITAE

|                      |                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Name</b>          | Mr. Krit Prasittichok                                                                                                                                                                                                                                                                                                                                                 |
| <b>Date of Birth</b> | 8 <sup>th</sup> July 1985                                                                                                                                                                                                                                                                                                                                             |
| <b>Education</b>     | <ol style="list-style-type: none"> <li>1. High School, Nakhon Sawan School, Nakhon Sawan, Thailand (1999-2004)</li> <li>2. B.Sc. (Statistics), Chiang Mai University, Chiang Mai, Thailand (2005-2008)</li> </ol>                                                                                                                                                     |
| <b>Scholarship</b>   | Research Professional Development Project under the Science Achievement Scholarship of Thailand (SAST) (2005-2007 and 2010)                                                                                                                                                                                                                                           |
| <b>Publication</b>   | <p>K. Prasittichok, S. Prasitwattanaseree, and S. Wongpornchai, "Classification of Thai Fragrant Rice (<i>Oryza sativa</i>) Using Gas Chromatographic Profiles in Conjunction with Statistical Methods", 14<sup>th</sup> Annual Symposium on Computational Science and Engineering (ANSCSE14), Mae Fah Luang University, Chiang Rai, Thailand, March 23-26, 2010.</p> |