

# Trans Fatty Acid Content Analysis

## 1. Analytical Condition

### YL 6500 Series

Capillary Column : SP-2560(100m\*0.25mm\*0.2um)

Injector : Capillary 280 °C Column flow 1ml/min

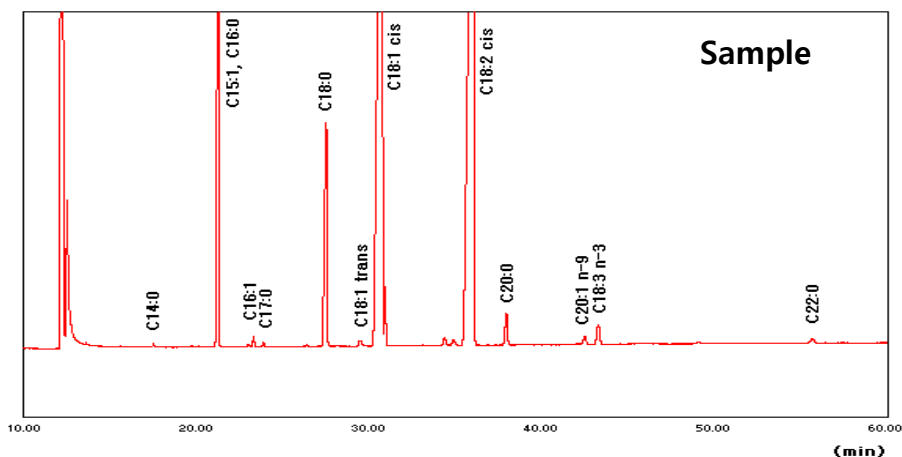
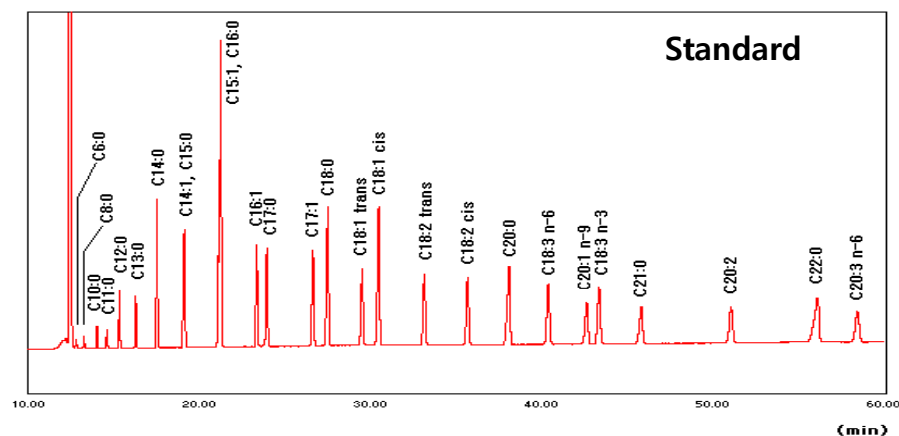
Detector : FID 280 °C

Oven program : 180 °C(40min)-> 3°C/min -> 230°C(10min)

Split ratio 50:1

Injection Volume : 1ul

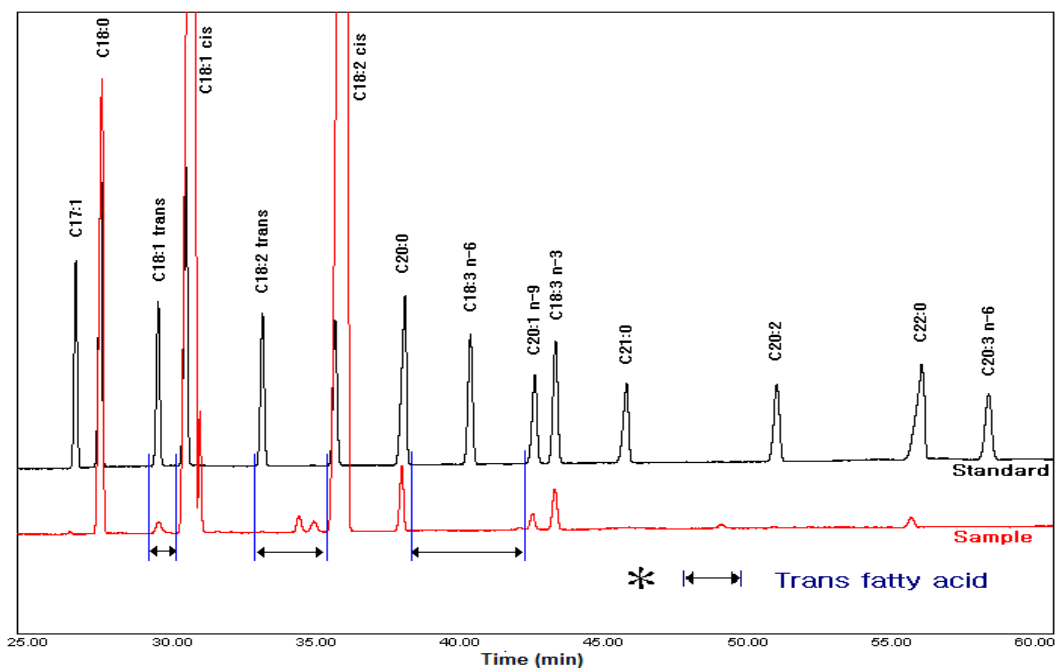
## 2. Chromatogram



# Trans Fatty Acid Content Analysis

## 3. Result Analysis

### <Trans Fatty Acid Distinction In Sample>



### <Trans Fatty Acid Content Calculation>

1. Input the values of RT and Area of Fatty acid standard sample to **Table 1**.

2. Input the value of Area of Fatty acid peaks to **Table 2**.

(Convert integral result of sample to Excel form, and then input the value of Area.)

Trans fatty acid peaks have to be distinguished clearly. )

3. The content of Trans fatty acid will be calculated automatically in **Table 3**.



# Trans Fatty Acid Content Analysis

<Example>

[Table 1.] Input the values of Retention Time and Area

The calculation of FID conversion factor in fatty acid determination

| Peak No. | FFA        | RT      | wt % | Area     | Area/wt | Me→FA  | R <sub>i</sub> |
|----------|------------|---------|------|----------|---------|--------|----------------|
| 15       | 17:1       | 26.6450 | 2    | 291.1480 | 145.57  | 0.9503 | 1.219          |
| 16       | 18:0       | 27.5183 | 4    | 456.8850 | 114.22  | 0.9530 | 0.956          |
| 17       | 18:1 trans | 29.5117 | 2    | 256.2285 | 128.11  | 0.9527 | 1.073          |
| 18       | 18:1 cis   | 30.4817 | 4    | 489.9968 | 122.50  | 0.9527 | 1.026          |
| 19       | 18:2 trans | 33.1325 | 2    | 265.0443 | 132.52  | 0.9524 | 1.110          |
| 20       | 18:2 cis   | 35.6567 | 2    | 263.4878 | 134.74  | 0.9524 | 1.128          |
| 21       | 20:0       | 38.0850 | 4    | 375.5219 | 93.88   | 0.9570 | 0.786          |
| 22       | 18:3 n-6   | 40.3542 | 2    | 266.8227 | 133.41  | 0.9520 | 1.117          |
| 23       | 20:1 n-9   | 42.5883 | 2    | 197.2178 | 98.61   | 0.9568 | 0.826          |
| 24       | 18:3 n-3   | 43.3192 | 2    | 268.6353 | 134.35  | 0.9520 | 1.125          |
| 25       | 21:0       | 45.7825 | 2    | 191.3588 | 97.63   | 0.9588 | 0.818          |
| 26       | 20:2       | 50.9967 | 2    | 203.5307 | 101.77  | 0.9565 | 0.852          |
| 27       | 22:0       | 56.0083 | 4    | 353.5496 | 88.39   | 0.9604 | 0.740          |
| 28       | 20:3, n-6  | 58.3558 | 2    | 198.6657 | 99.33   | 0.9562 | 0.832          |

[Table 3.] Contents of Trans Fatty Acid will be calculated automatically

| FFA                   | 1. Spl     |
|-----------------------|------------|
| 14:1                  | 0.0        |
| 15:0                  | 0.0        |
| 15:1                  | 10.8       |
| 16:0                  | 0.0        |
| 16:1                  | 0.2        |
| 17:0                  | 0.1        |
| 17:1                  | 0.0        |
| 18:0                  | 7.6        |
| 18:1 trans            | 0.2        |
| 18:1 cis              | 38.1       |
| 18:2 trans            | 0.5        |
| 18:2 cis              | 39.8       |
| 20:0                  | 1.3        |
| 18:3 trans            | 0.0        |
| 20:1 n-9              | 0.4        |
| 18:3 n-3              | 0.7        |
| 21:0                  | 0.0        |
| 20:2                  | 0.0        |
| 22:0                  | 0.3        |
| <b>Total trans FA</b> | <b>0.7</b> |

[Table 2.] Input the value of Area of sample

| Peak No. | FFA        | RT   | 1. Spl    |                     |          |
|----------|------------|------|-----------|---------------------|----------|
|          |            |      | Area      | R <sub>i</sub> peak | ratio. % |
| 7        | 13:0       | 16.3 |           | 0.0                 | 0.0      |
| 8        | 14:0       | 17.6 | 5.5697    | 8.9                 | 0.1      |
| 9        | 14:1       | 19.2 |           | 0.0                 | 0.0      |
| 10       | 15:0       |      |           | 0.0                 | 0.0      |
| 11       | 15:1       | 21.3 |           | 1198.1              | 10.8     |
| 12       | 16:0       |      | 1267.9562 | 0.0                 | 0.0      |
| 13       | 16:1       | 23.4 | 24.1758   | 20.5                | 0.2      |
| 14       | 17:0       | 24.0 | 10.1529   | 8.8                 | 0.1      |
| 15       | 17:1       | 26.6 |           | 0.0                 | 0.0      |
| 16       | 18:0       | 27.5 | 851.9145  | 848.9               | 7.6      |
| 17       | 18:1 trans | 29.5 | 29.1672   | 25.9                | 0.2      |
| 18       | 18:1 cis   | 30.5 | 4575.7647 | 4249.9              | 38.1     |
| 19       | 18:2 trans | 33.1 | 59.3938   | 55.2                | 0.5      |
| 20       | 18:2 cis   | 35.7 | 5254.2141 | 4435.2              | 39.8     |
| 21       | 20:0       | 38.1 | 115.7874  | 141.0               | 1.3      |
| 22       | 18:3 trans | 40.4 |           | 0.0                 | 0.0      |
| 23       | 20:1 n-9   | 42.6 | 35.9979   | 41.7                | 0.4      |
| 24       | 18:3 n-3   | 43.3 | 88.1929   | 74.6                | 0.7      |
| 25       | 21:0       | 45.8 |           | 0.0                 | 0.0      |
| 26       | 20:2       | 51.0 |           | 0.0                 | 0.0      |
| 27       | 22:0       | 56.0 | 25.2707   | 32.8                | 0.3      |
| 28       | 20:3, n-6  | 58.4 |           | 0.0                 | 0.0      |

