

|           |                          |
|-----------|--------------------------|
| SOP       | PHPL/QC/FE/021/02        |
| INITIATOR |                          |
| DCN       | Pharmanza Herbal Pvt.Ltd |

# ABC Testing, Inc

|                |           |
|----------------|-----------|
| EFFECTIVE DATE | 5/15/2015 |
| REVISION       | A         |
| SUPERSEDED     | N/A       |

## Chemical Info. and Calculation Sheet

Titration Analysis of Tannins  
 Performed by Theresa

Date : 5/15/2015  
 Ctrl #: ABCT-CICS / T - S - 7 / 5152015

|            |                      |      |           |         |          |       |       |      |                  |
|------------|----------------------|------|-----------|---------|----------|-------|-------|------|------------------|
| Chemical : | 0.103381297 KMNO4    | CAS# | 7722-64-7 | Lot No: | B0128065 | Src.: | ACROS | Ref: | RPB4pg24A        |
| Chemical : | Indigosulphonic acid | CAS# |           | Lot No: | 48H3679  | Src.: | Sigma | Ref: | Freshly prepared |
| Chemical : |                      | CAS# |           | Lot No: |          | Src.: |       | Ref: |                  |
| Chemical : |                      | CAS# |           | Lot No: |          | Src.: |       | Ref: |                  |
| Chemical : |                      | CAS# |           | Lot No: |          | Src.: |       | Ref: |                  |

| Sample Lab # | Mass (g) | T. Vol. (mL) |       | Blank (mL) | Corrected Volume (mL) | % Tannins | Average % | ATW (mg/tab) | LOD % | Result (mg/tab) |
|--------------|----------|--------------|-------|------------|-----------------------|-----------|-----------|--------------|-------|-----------------|
|              |          | I            | F     |            |                       |           |           |              |       |                 |
| L# 140954-1  | 0.1960   | 0.00         | 31.20 | 1.60       | 29.60                 | 64.90     | 63.73     |              |       |                 |
| L# 140954-2  | 0.2123   |              | 32.50 | 1.60       | 30.90                 | 62.55     |           |              |       |                 |
|              |          |              |       |            |                       |           |           |              |       |                 |
|              |          |              |       |            |                       |           |           |              |       |                 |
|              |          |              |       |            |                       |           |           |              |       |                 |
|              |          |              |       |            |                       |           |           |              |       |                 |
|              |          |              |       |            |                       |           |           |              |       |                 |
|              |          |              |       |            |                       |           |           |              |       |                 |

Review by \_\_\_\_\_

\*\*\*Note: "N/A" means not applicable, "0" means no value in this field, or leave blank for no value.

**Definition**

|  |                 |                          |                |                    |                      |                    |
|--|-----------------|--------------------------|----------------|--------------------|----------------------|--------------------|
| g = gram                                 | # = Number      | B4 = Before              | Spl = Sample   | w/ = with          | Ac = Actual          | ABCT = ABC Testing |
| L = liter                                | mg = milligram  | ATW = Average Tare Weigh | Std = Standard | Ctrl = Container   | ABS = Absorbance     |                    |
| I = Initial                              | mL = milliliter | LOD = Loss On Dry        | Src = Source   | Info = Information | Conc = Concentration |                    |
| F = Final                                | A4 = After      | Ref = Reference          | w/o = without  | Tgt = Target       | Ctrl = Control       |                    |
| CICS = Chemical Info & Calculation Sheet |                 |                          |                |                    |                      |                    |

|           |            |
|-----------|------------|
| SOP       | 3.7.8      |
| INITIATOR | Luyen Phan |
| DCN       | N/A        |

# ABC Testing, Inc

|                |          |
|----------------|----------|
| EFFECTIVE DATE | 04/04/07 |
| REVISION       | A        |
| SUPERSEDED     | N/A      |

## Chemical Info. and Calculation Sheet

UV/Vis Analysis of Polyphenols

Date : 5/14/2015

Performed by Robert Lee

Ctrl#: ABCT-CICS / P - S - 11 / SIS2015

|            |                  |      |               |         |           |       |       |      |            |
|------------|------------------|------|---------------|---------|-----------|-------|-------|------|------------|
| Chemical : | Folin-Ciocalteus | CAS# | 47641-500ml-F | Lot No: | BCBL7413V | Src.: | Sigma | Ref: | N/A        |
| Chemical : | 20% Na2CO3       | CAS# | N/A           | Lot No: | N/A       | Src.: | N/A   | Ref: | RPB3 P132A |
| Chemical : |                  | CAS# |               | Lot No: |           | Src.: |       | Ref: |            |
| Chemical : |                  | CAS# |               | Lot No: |           | Src.: |       | Ref: |            |
| Chemical : |                  | CAS# |               | Lot No: |           | Src.: |       | Ref: |            |

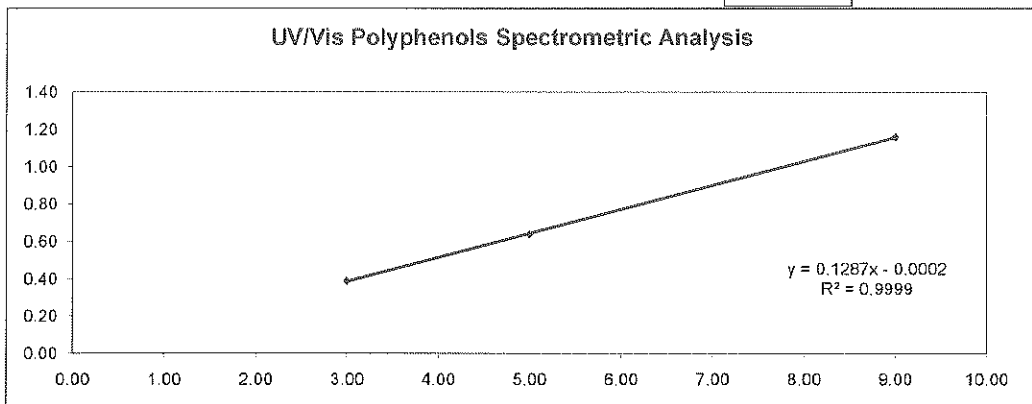
| Sample Lab # | Mass (g) | Volume (mL) | Dilution Factor | Final Conc. (mg/L) | ABS Value | Graph Parameter |        |
|--------------|----------|-------------|-----------------|--------------------|-----------|-----------------|--------|
|              |          |             |                 |                    |           | X               | Y      |
| Std 1        | 50.00    | 100.00      | 0.15            | 3.00               | 0.3888    | 3.00            | 0.3888 |
| Std 2        |          |             | 0.25            | 5.00               | 0.6388    | 5.00            | 0.6388 |
| Std 3        |          |             | 0.45            | 9.00               | 1.1594    | 9.00            | 1.1594 |

Slope = 0.1287

Intercept = -0.0002

% LOD Ac. Conc. % Conversion Factor = 1.11

| Lab #  | Mass (g) | Volume (mL) | Dilution Factor | Final Conc. (mg/L) | ABS Value | % LOD | Ac. Conc. | % Conversion Factor |
|--------|----------|-------------|-----------------|--------------------|-----------|-------|-----------|---------------------|
| 140968 | 47.12    | 100.00      | 0.250           | 4.16               | 0.5354    | 0.00  | 41.62     | 98.05               |
| 140954 | 109.38   | 100.00      | 0.250           | 5.06               | 0.6505    | 0.00  | 50.57     | 51.32               |
|        |          |             |                 |                    |           |       |           |                     |
|        |          |             |                 |                    |           |       |           |                     |
|        |          |             |                 |                    |           |       |           |                     |



\*\*\*Note: "N/A" means not applicable, "0" means no value in this field, or leave blank for no value. "omit" is zeroing field.

Review by \_\_\_\_\_

|                   |  |                 |                           |                |                    |                      |                    |
|-------------------|--|-----------------|---------------------------|----------------|--------------------|----------------------|--------------------|
| <b>Definition</b> | g = gram                                 | # = Number      | B4 = Before               | Spl = Sample   | w/ = with          | Ac = Actual          | ABCT = ABC Testing |
|                   | L = liter                                | mg = milligram  | ATW = Average Tare Weight | Std = Standard | Cntr = Container   | ABS = Absorbance     |                    |
|                   | I = Initial                              | mL = milliliter | LOD = Loss On Dry         | Src = Source   | Info = Information | Conc = Concentration |                    |
|                   | F = Final                                | A4 = After      | Ref = Reference           | w/o = without  | Tgt = Target       | Ctrl = Control       |                    |
|                   | CICS = Chemical Info & Calculation Sheet |                 |                           |                |                    |                      |                    |

\*A@A<B@<'PHDBA@B@H'
"B"

BECKMAN DU-600

Date: 05/14/15

\*A@A<B@<'PHDBA@B@H'
"B"

Time: 14:40

ReadSamples Tabulate +/-\*/Scans Scatter Meta Method SaveClear Print Quit

Scan directory: VIEW Autoprint: [No ] Method name: A:\DEFAULT
Start wl: 700 nm Autosave: [No ] Autosave name: [A:\]SCANS
End wl: 820 nm Scans per sample: 1 Sampling device: None
Overlay scans: [No ] Interval: 35.00 [sec] Scan speed: 600 nm/min

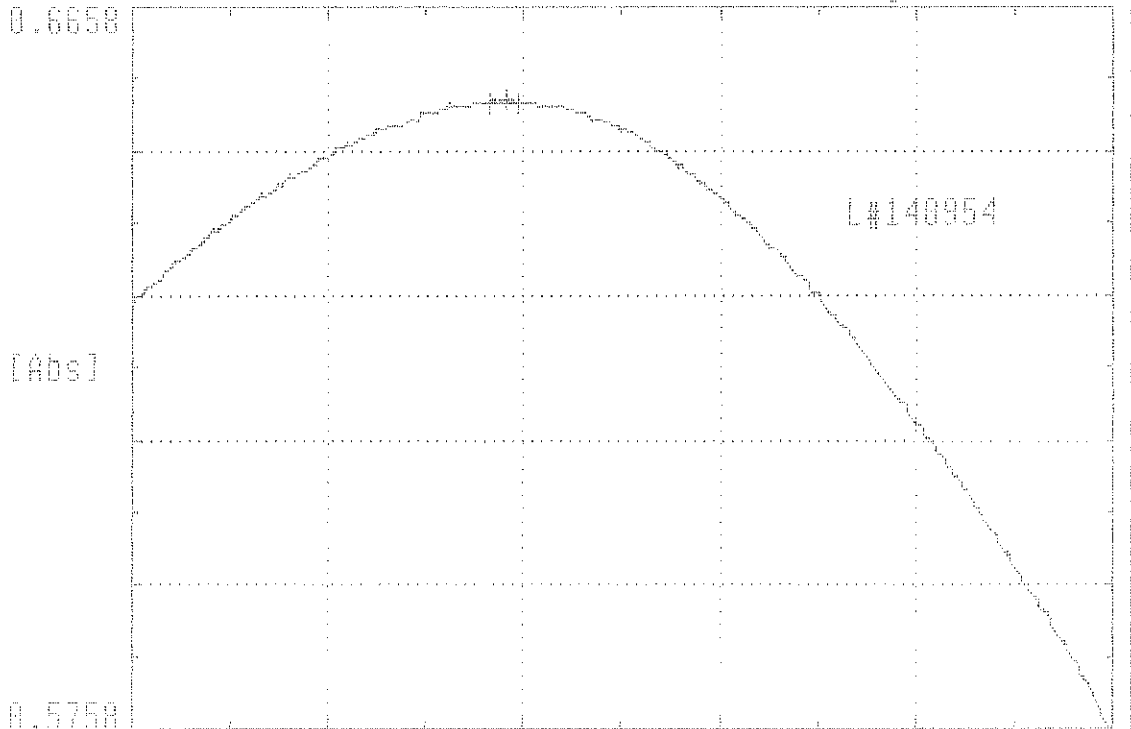
A:\WORK\_002 ( 000)

Print +/- + + Exit Zoom ZoomOut Trace Function Autoscale Annotate Print

A:\WORK\_002 Scan Functions: Scan

Smoothing: None

Table with 3 columns: wl, Abs, Pick. Contains peak data for wavelengths 744.0, 746.0, 747.5, and 760.0 nm.



5/13/2015

Analyzed by: Stephen Cheang

Column: 2Tu067 (Phenomenex Gemini 5u C18 110A, 4.5x250mm)

FR: 0.8ml/min

Method: Organic acid #13.mef

Citric Acid: Sigma, Lot: BO125481A; CAS: 305-72-6, Solvent: H2O, Wavelength: 215 nm, Purity: 99.5%

TimeRT: 5.508

FW: 192.14

MPA: 0.1% H3PO4 100%

| SMP Name    | SMP ID | STD-mg | STD-ml | SMP-mg | SMP-ml | STD-Sig | SMP-Sig | F-dit | ATW-mg | %    | per Ser |
|-------------|--------|--------|--------|--------|--------|---------|---------|-------|--------|------|---------|
| Citric Acid | STD    | 44.70  | 50.00  |        |        | 1488992 |         |       |        |      |         |
|             | 140954 | 44.70  | 50.00  | 301.40 | 50.00  | 1488992 | 525235  | 1.00  | 1.00   | 5.21 | 0.05    |

5/13/2015

Analyzed by: Stephen Cheung

Column: 2Fu067 (Phenomenex Gemini 5u C18 H10A, 4.6x250mm)

Method: Organic acid #13.mef

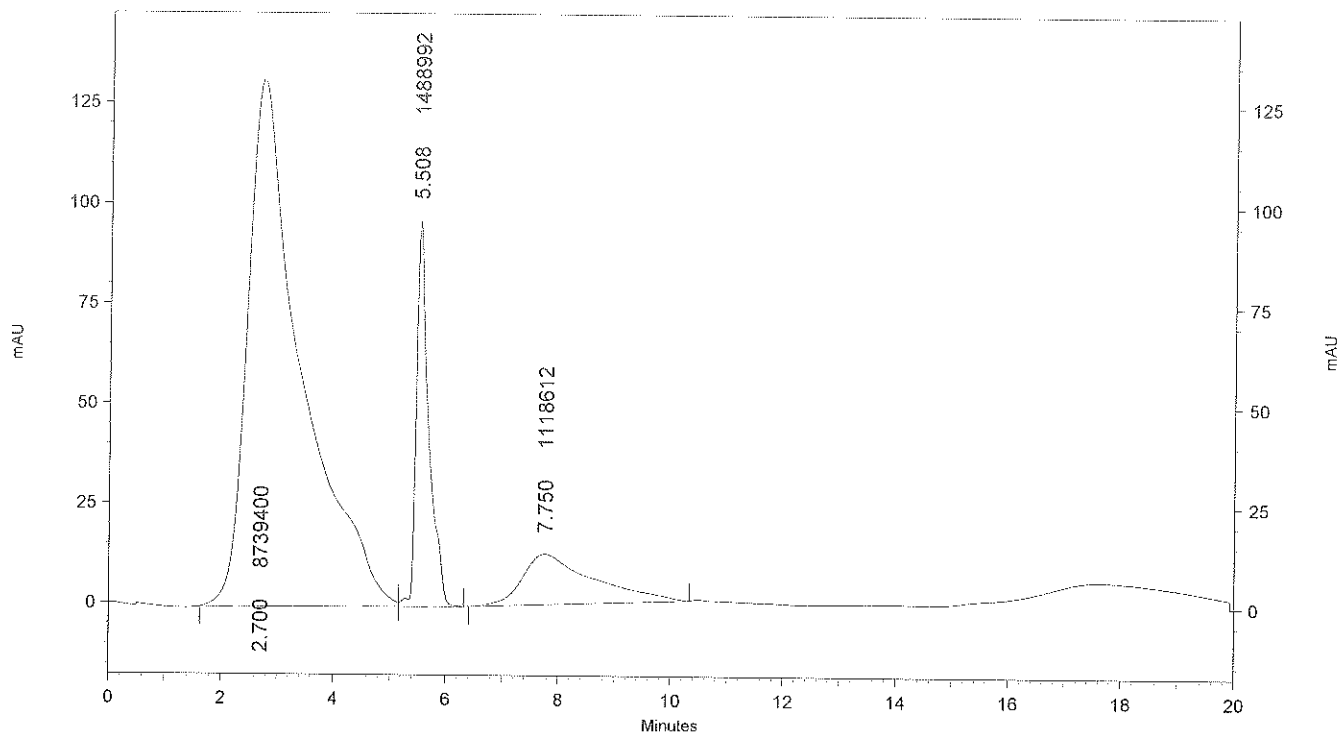
Maleic Acid: Sigma, Lot: 117H0059; CAS: 230-022-3, Solvent: H2O, Wavelength: 205 nm, Purity 98%

TimeRT: 4.392 min      FW=134.09      MPA: 0.1% H3PO4 (100%)

| SMP Name    | SMP ID | STD-mg | STD-ml | SMP-mg | SMP-ml | STD-Sig | SMP-Sig | F-dil | ATW-mg | %    | Per Ser |
|-------------|--------|--------|--------|--------|--------|---------|---------|-------|--------|------|---------|
| Maleic acid | STD    | 57.70  | 50.00  |        |        | 1338528 |         |       |        |      |         |
|             | 140954 | 57.70  | 50.00  | 301.40 | 50.00  | 1338528 | 127039  | 0.98  |        | 1.78 | 0.00    |

# Area % Report

Method Name: C:\32Karat\Projects\Default\Methods\Method 13\Organic Acid.met  
Data: c:\32Karat\Projects\Default\Data\1305131507.dat  
User: System  
Acquired: 5/13/2015 11:31:10 AM  
Printed: 5/13/2015 2:06:53 PM



Citric acid 20

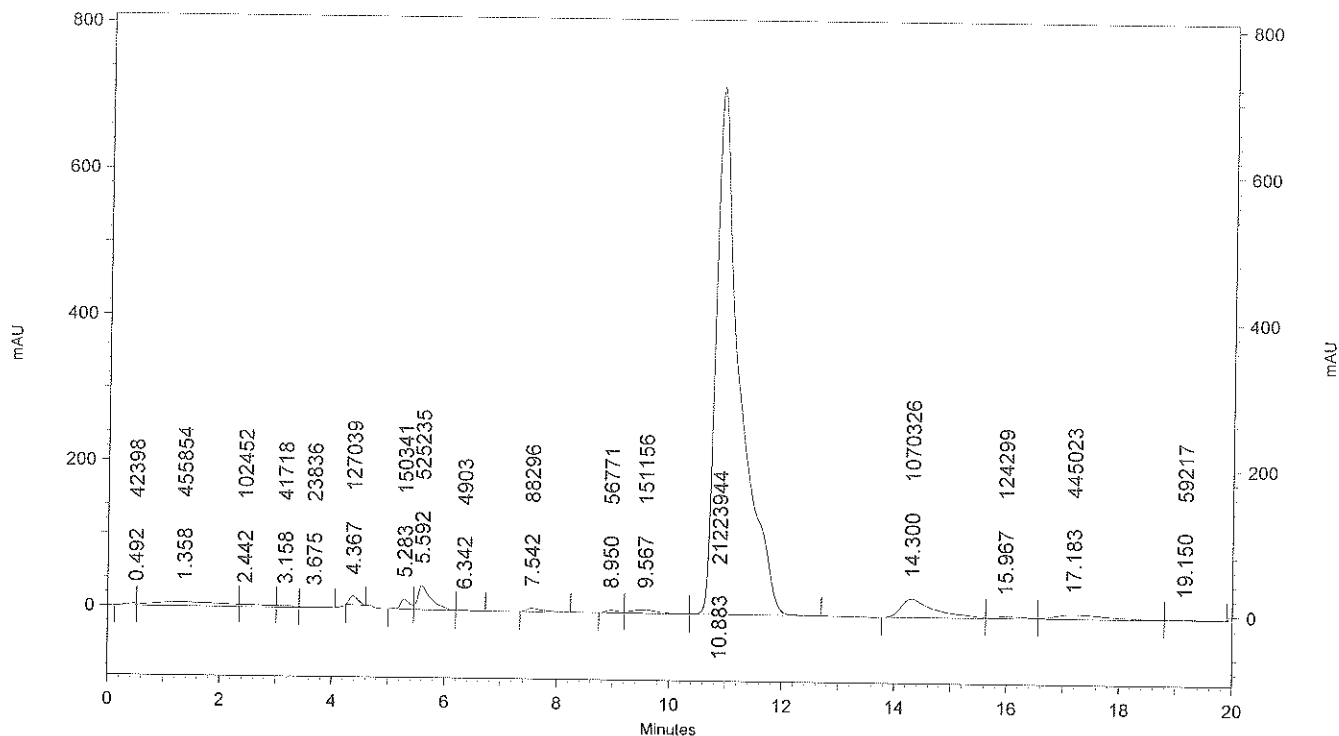
Det 168-215 nm

Results

| Name   | Retention Time | Area     | Area Percent |
|--------|----------------|----------|--------------|
|        | 2.700          | 8739400  | 77.019       |
|        | 5.508          | 1488992  | 13.122       |
|        | 7.750          | 1118612  | 9.858        |
| Totals |                | 11347004 | 100.000      |

# Area % Report

Method Name: C:\32Karat\Projects\Default\Methods\Method 13\Organic Acid.met  
Data: c:\32Karat\Projects\Default\Data\1305131506.dat  
User: System  
Acquired: 5/13/2015 11:08:57 AM  
Printed: 5/13/2015 2:06:46 PM



140954 20

Det 168-215 nm  
Results

| Name | Retention Time | Area     | Area Percent |
|------|----------------|----------|--------------|
|      | 0.492          | 42398    | 0.172        |
|      | 1.358          | 455854   | 1.846        |
|      | 2.442          | 102452   | 0.415        |
|      | 3.158          | 41718    | 0.169        |
|      | 3.675          | 23836    | 0.097        |
|      | 4.367          | 127039   | 0.514        |
|      | 5.283          | 150341   | 0.609        |
|      | 5.592          | 525235   | 2.127        |
|      | 6.342          | 4903     | 0.020        |
|      | 7.542          | 88296    | 0.358        |
|      | 8.950          | 56771    | 0.230        |
|      | 9.567          | 151156   | 0.612        |
|      | 10.883         | 21223944 | 85.952       |
|      | 14.300         | 1070326  | 4.335        |

# Area % Report

Method Name: C:\32Karat\Projects\Default\Methods\Method 13\Organic Acid.met  
Data: c:\32Karat\Projects\Default\Data\1305131506.dat  
User: System  
Acquired: 5/13/2015 11:08:57 AM  
Printed: 5/13/2015 2:06:46 PM

|        |        |       |
|--------|--------|-------|
| 15.967 | 124299 | 0.503 |
| 17.183 | 445023 | 1.802 |
| 19.150 | 59217  | 0.240 |

|        |  |          |         |
|--------|--|----------|---------|
| Totals |  | 24692808 | 100.000 |
|--------|--|----------|---------|



5/14/2015

Analyzed by: Sherry

Column: 2Tu098 (Phenomenex Luna 5u, PFP 100A, 250x4.60mm)  
 Method: Catechin13.mcf (HPLC#14)  
 Epicatechin: NP Biomedical, Lot: 2455J; CAS: 490-46-0, Solvent: H2O, Wavelength: 275 nm, Purity: 95.17%  
 EGCG: 2nd STD Pharmachem, Lot: 10K7714(L#53890) ; CAS:989-51-5, Solvent: H2O, Wavelength:275 nm  
 EGCG: Sigma, Lot: SLBG6681V, CAS: 989-51-5, Solvent: H2O, Wavelength: 280nm, Purity: 95%  
 Caffeine: Sigma, Lot: 71K1877; CAS: 58-08-2, Solvent: H2O, Wavelength: 278 nm, Purity: 100%  
 CGG: Sigma, Lot:SLBG9408V; CAS: 130405-40-2, Solvent: H2O, Wavelength: 275 nm, Purity: 98%  
 CG: Sigma, Lot:SLBJ2208V; CAS: 4233-96-9, Solvent: H2O, Wavelength: 275 nm, Purity: 98%

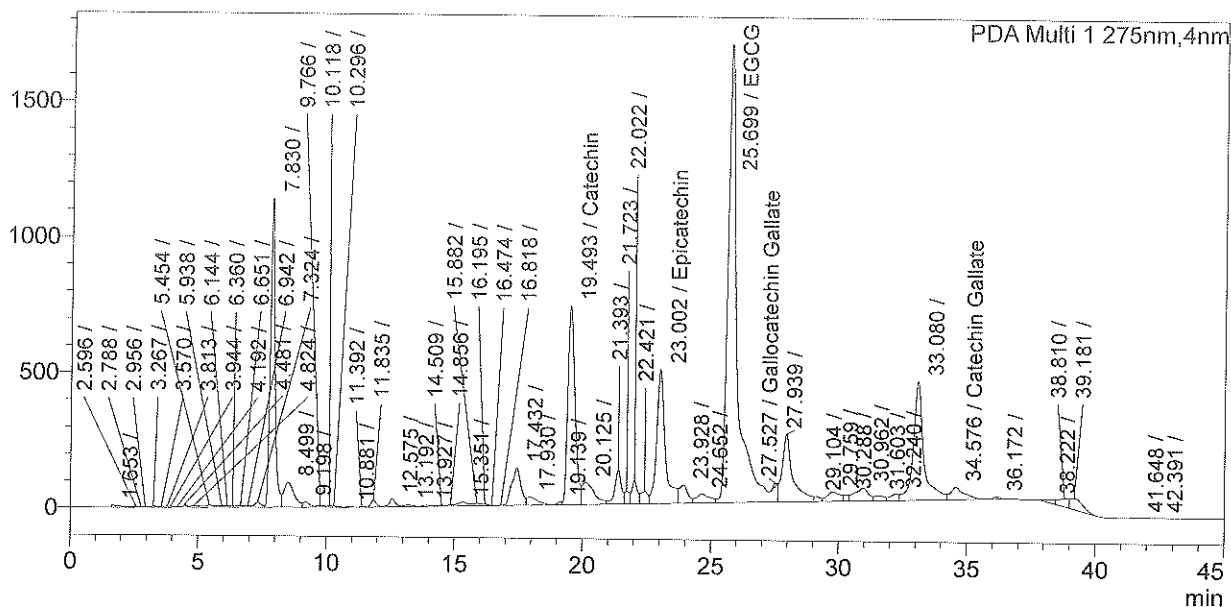
| SMP Name                 | SMP ID | STD-mg | STD-ml | SMP-mg | SMP-ml | STD-Sig | SMP-Sig  | F-dit | ATW-mg | %     | per Ser |
|--------------------------|--------|--------|--------|--------|--------|---------|----------|-------|--------|-------|---------|
| EGCG                     | STD    | 2.88   | 25.00  |        |        | 4443830 |          |       |        |       |         |
| Gallocatechin            | 140954 | 2.88   | 25.00  | 905.20 | 50.0   | 4443830 |          | 5.60  |        | 0.00  | 0.000   |
| Epigallocatechin         |        | 2.88   | 25.00  | 905.20 | 50.0   | 4443830 |          | 5.81  |        | 0.00  | 0.000   |
| Caffeine                 |        | 2.88   | 25.00  | 905.20 | 50.0   | 4443830 |          | 0.48  |        | 0.00  | 0.000   |
| Catechin                 |        | 2.88   | 25.00  | 905.20 | 50.0   | 4443830 | 14224740 | 2.04  |        | 4.15  | 0.000   |
| Epicatechin              |        | 2.88   | 25.00  | 905.20 | 50.0   | 4443830 | 11363244 | 1.68  |        | 2.73  | 0.000   |
| Epigallocatechin Gallate |        | 2.88   | 25.00  | 905.20 | 50.0   | 4443830 | 44562260 | 0.95  |        | 6.06  | 0.00    |
| Gallocatechin Gallate    |        | 2.88   | 25.00  | 905.20 | 50.0   | 4443830 | 130584   | 0.96  |        | 0.02  | 0.000   |
| Catechin Gallate         |        | 2.88   | 25.00  | 905.20 | 50.0   | 4443830 | 1762482  | 0.77  |        | 0.19  | 0.000   |
| Epicatechin Gallate      |        | 2.88   | 25.00  | 905.20 | 50.0   | 4443830 |          | 0.62  |        | 0.00  | 0.000   |
|                          |        |        |        |        |        |         |          |       | Total  | 13.15 | 0.00    |

# ==== Shimadzu LabSolutions Analysis Report =====

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| Sample Name : 140954 1:1            |                                     |
| Sample ID : UNK-0014                |                                     |
| Data Filename : 0514-14.lcd         |                                     |
| Method Filename : EGCG.lcm          |                                     |
| Batch Filename : 05142015.lcb       |                                     |
| Vial # : 1-27                       | Sample Type : Unknown               |
| Injection Volume : 20 uL            |                                     |
| Date Acquired : 2015/5/15 9:33:11   | Acquired by : System Administrator  |
| Date Processed : 2015/5/15 11:15:07 | Processed by : System Administrator |

## <Chromatogram>

mAU



## <Quantitative Results>

PDA

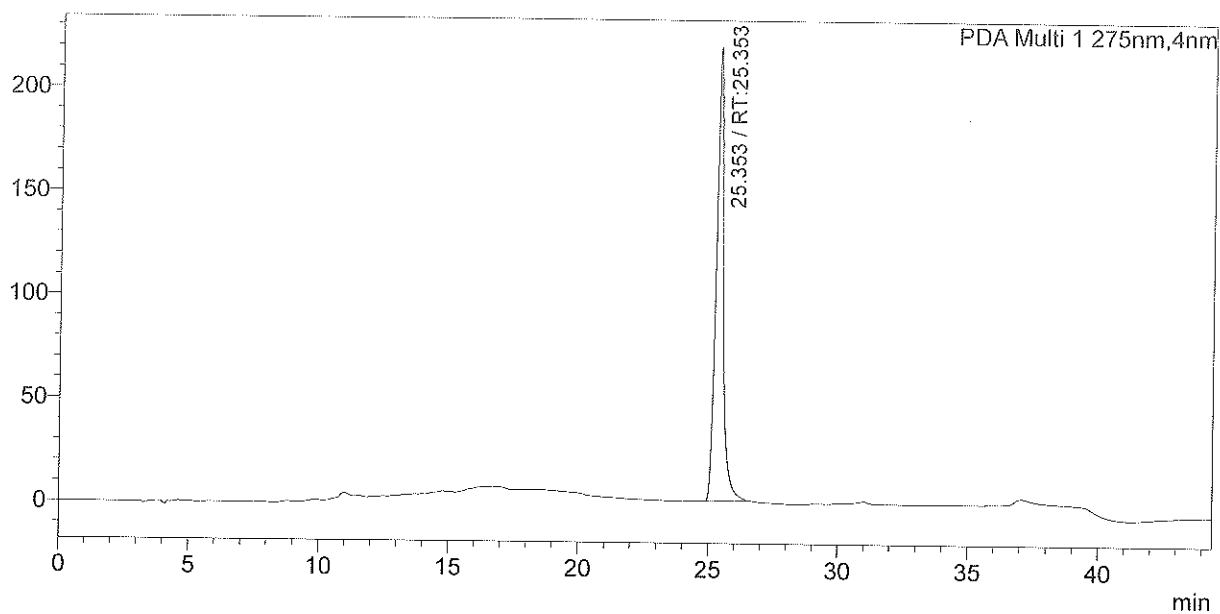
| ID#   | Name                  | Ret. Time | Area     | Height  | Conc. | Unit |
|-------|-----------------------|-----------|----------|---------|-------|------|
| 1     | EGCG                  | 25.699    | 44562260 | 1688019 | 0.000 | mg/L |
| 2     | Catechin              | 19.493    | 14224740 | 732428  | 0.000 | mg/L |
| 3     | Epicatechin           | 23.002    | 11363244 | 494026  | 0.000 | mg/L |
| 4     | Gallocatechin Gallate | 27.527    | 130584   | 12452   | 0.000 | mg/L |
| 5     | Catechin Gallate      | 34.576    | 1762482  | 46838   | 0.000 | mg/L |
| Total |                       |           | 72043311 | 2973764 |       |      |

# ==== Shimadzu LabSolutions Analysis Report =====

|                                    |                                     |
|------------------------------------|-------------------------------------|
| Sample Name : EGCG std             | Sample Type : Unknown               |
| Sample ID : UNK-0001               |                                     |
| Data Filename : 0514-01.lcd        |                                     |
| Method Filename : EGCG.lcm         |                                     |
| Batch Filename : 05142015.lcb      |                                     |
| Vial # : 1-23                      |                                     |
| Injection Volume : 20 uL           | Acquired by : System Administrator  |
| Date Acquired : 2015/5/14 14:26:52 | Processed by : System Administrator |
| Date Processed : 2015/5/15 8:41:48 |                                     |

## <Chromatogram>

mAU



## <Quantitative Results>

PDA

| ID#   | Name      | Ret. Time | Area    | Height | Conc. | Unit |
|-------|-----------|-----------|---------|--------|-------|------|
| 1     | RT:25.353 | 25.353    | 4443830 | 219065 | 0.000 | mg/L |
| Total |           |           | 4443830 | 219065 |       |      |