

LAMPIRAN 1

Certificate Of Analysis Aspartame

Certificate of Analysis

DESCRIPTION: Aspartame
SYNONYM: ASP-PHE METHYL ESTER
MFG. DATE: May 2014
CATALOG NO.: 47135 (1)
LOT NO.: LC07809V
EXP. DATE: May 2017
CAS NUMBER: 22839-47-0
MOLECULAR FORMULA: C₁₄H₁₆N₂O₅
MOLECULAR WEIGHT: 294

PHYSICAL PROPERTIES ASSAY

Appearance	WHITE POWDER
Purity (2)	99.0% (a)

Note: Supelco guarantees the purity of this chemical standard +/- 0.5% deviation prior to the expiration date shown on the label. This guarantee is exclusive of any contamination caused by the customer.

(1) This product is packaged from 8474775 Lot number LB64940.

(2) Determined by GC-FID unless otherwise noted.

(a) Thin Layer Chromatography

Duane Funk

Duane Funk
Quality Manager

Supelco warrants that its products conform to the information contained in this publication. Purchaser must determine the suitability of the product for its particular use. Please see the latest catalog or order invoice and packing slip for additional terms and conditions of sale. Supelco is a Sigma-Aldrich Company.

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595 North Harrison Road
Bellefonte, PA 16823-0048 US

LAMPIRAN 2

KUESIONER *FOOD FREQUENCY QUISTIONNAIRE/FFQ*

Kode: SMPH 1 DIMAUNG

KUISONER

FREKUENSI KONSUMSI PANGAN

(FFQ)

SURVEI ESTIMA ASUPAN ASPARTAM PADA KOMSUMSI PANGAN

Tanggal wawancara (tanggal-bulan-tahun) : 17 Maret 2019

IDENTITAS RESPONDEN

1. Nama lengkap : Risa Rosita
2. Kelas : VII B
3. Alamat : Kp. Cituntah
4. Nomor telepon : -
5. Tanggal lahir (tnggl-bulan-thn) : 03 Maret 2000
6. Tempat lahir : Bandung
7. Umur : 14 thn
8. Berat badan (*wajib diisi*) : 35 kg
9. Tinggi badan : 136 cm
10. Jenis kelamin : Perempuan

LAMPIRAN 3

PERHITUNGAN KOEFISIEN VARIANSI

Tabel. L.3.1. Perhitungan Koefisien Variasi Regresi Linier

C	Luas Area	\hat{y}	$y-\hat{y}$	$(y-\hat{y})^2$
1	862202	539383,7	322818,3	104211654814,89
2	1137984	1071298,7	66685,3	4446929236,09
4	1885667	2135128,7	-249461,7	62231139766,89
6	2910361	3198958,7	-288597,7	83288632445,29
8	4090361	4262788,7	-172427,7	29731311727,29
10	5426173	5326618,7	99554,3	9911058648,49
12	6611870	6390448,7	221421,3	49027392093,69
6,1428571			Jumlah	342848118732,63
			Rata-rata	48978302676,09
			Sy/x	261858,0221
			Sxo	0,49
			Vx0	8,01

Persamaan regresi : $y = bx + a$

$$y = 531915x + 7468,7$$

$$R^2 = 0,988$$

Contoh Perhitungan :

$$S_{y/x} = \sqrt{\frac{\sum (y-\hat{y})^2}{n-2}} = \sqrt{\frac{342848118732,63}{7-2}} = 261858,02$$

$$S_{x0} = \frac{S_{y/x}}{b} = \frac{261858,02}{531915} = 0,49$$

$$V_{x0} = \frac{S_{x0}}{\bar{x}} \times 100\% = 8,01 \%$$

$$LOD = \frac{3 \times S_{y/x}}{b} = \frac{3 \times 261858,02}{531915} = 1,47 \text{ ppm}$$

$$LOQ = \frac{10 \times S_{y/x}}{b} = \frac{10 \times 261858,02}{531915} = 4,92 \text{ ppm}$$

LAMPIRAN 4

PERHITUNGAN PRESISI DAN AKURASI

Contoh Perhitungan :

- a) (Luas Area sampel+baku) – (Luas Area sampel)

$$6236834 - 1496165 = 4740669$$

- b) Kadar X = $\frac{(\text{Luas Area sampel+baku}) - (\text{Luas Area sampel}) - a}{b}$

$$\text{Kadar X} = \frac{4740669 - 448048,17}{1327212,72} = 3,23 \text{ ppm}$$

- c) Perolehan kembali

$$\% \text{ Recovery} = \frac{\text{Ch} \times 100\%}{\text{Cs}}$$

Dimana :

Ch = kadar analit yang dihitung

Cs = kadar analit teoritis

$$\% \text{ Recovery} = \frac{3,23 \times 100\%}{4 \text{ ppm}} = 80,75 \%$$

Tabel. L.4.1. Metode Analisis

C (ppm)	Kadar X	(X - Rata-Rata)	(X-Rata-Rata) ²
4 ppm	3,23	-3,23	-0,0001
	3,3	-0,08	0,0064
	3,15	0,07	0,0049
Rata-rata	3,22	Jumlah	0,0112
		SD	0,074
		RSD %	2,29%
6 ppm	3,54	0,04	0,0016
	3,67	-0,09	-0,0081
	3,54	0,04	0,0016
Rata-rata	3,58	Jumlah	-0,0049
		SD	-0,00245
		RSD %	0,07%
8 ppm	4,76	-0,04	0,0016
	4,54	0,18	0,0324
	4,87	-0,15	0,0225
Rata-rata	4,72	Jumlah	0,0565
		SD	0,16
		RSD %	3,38%

Perhitungan

$$SD = \sqrt{\frac{\sum (xi-x)^2}{n-1}}$$

$$SD = \sqrt{\frac{0,0112}{3-1}} = 0,074$$

$$RSD \% = \frac{SD}{x \text{ rata-rata}} \times 100 \%$$

$$RSD \% = \frac{0,074}{3,22} \times 100 \% = 2,29 \%$$

LAMPIRAN 5

KURVA KALIBRASI DAN PERHITUNGAN KADAR ASPARTAM

Tabel L.5.1 Kurva Kalibrasi

C	Luas Area
1	862202
2	1137984
4	1885667
6	2910361
8	4090361
10	5426173
12	6611870

Contoh Perhitungan kadar Aspartam dan kadar dalam paparan:

$$Y = bx + a$$

$$1496165 = 531915x + 7468,7$$

$$1496165 - 7468,7 = 531915x$$

$$X = 2,798 \text{ ppm}$$

$$\text{Kadar dalam paparan} = \frac{2,798 \frac{\mu\text{g}}{\text{mL}} \times 50 \text{ mL}}{1 \text{ mL}} = 139,9 \mu\text{g/mL}$$

LAMPIRAN 6

PAPARAN SAMPEL

Tabel L.6.1 Paparan aspartam per responden dan persen paparan ADI sampel A

No responden	Paparan aspartam per responden (mg/kg BB/hari)	Persen Paparan Terhadap ADI %
1	0,94 mg/kg BB/hari	1,88%
2	0,94 mg/kg BB/hari	1,88%
4	0,85 mg/kg BB/hari	1,70%
6	0,71 mg/kg BB/hari	1,42%
7	4,54 mg/kg BB/hari	9,08%
9	8,08 mg/kg BB/hari	16,16%
10	0,52 mg/kg BB/hari	1,04%
11	0,77 mg/kg BB/hari	1,54%
13	1,01 mg/kg BB/hari	2,02%
16	0,77 mg/kg BB/hari	1,54%
18	2,15 mg/kg BB/hari	4,30%
19	8,76 mg/kg BB/hari	17,52%
21	13,27 mg/kg BB/hari	26,54%
22	7,27 mg/kg BB/hari	14,54%
23	6,06 mg/kg BB/hari	12,12%
24	1,76 mg/kg BB/hari	3,52%
25	1,24 mg/kg BB/hari	2,48%
26	2,79 mg/kg BB/hari	5,58%
27	2,04 mg/kg BB/hari	4,08%
28	0,85 mg/kg BB/hari	1,70%
29	2,15 mg/kg BB/hari	4,30%
30	2,55 mg/kg BB/hari	5,10%
34	2,04 mg/kg BB/hari	4,08%
36	15,34 mg/kg BB/hari	30,68%
38	1,43 mg/kg BB/hari	2,86%
39	1,13 mg/kg BB/hari	2,26%
41	9,09 mg/kg BB/hari	18,18%
47	6,46 mg/kg BB/hari	12,92%
49	2,94 mg/kg BB/hari	5,88%
50	5,11 mg/kg BB/hari	10,22%
52	2,72 mg/kg BB/hari	5,44%
53	2,05 mg/kg BB/hari	4,10%
54	4,91 mg/kg BB/hari	9,82%

Tabel L.6.2 Paparan aspartam per responden dan persen paparan ADI sampel A

No responden	Paparan aspartam per reponden (mg/kg BB/ hari)	Persen Paparan Terhadap ADI %
56	2,02 mg/kg BB/ hari	4,04%
58	0,60 mg/kg BB/ hari	1,20%
59	4,84 mg/kg BB/ hari	9,68%
60	12,59 mg/kg BB/ hari	25,18%
61	5,32 mg/kg BB/ hari	10,64%
63	2,79 mg/kg BB/ hari	5,58%
65	3,30 mg/kg BB/ hari	6,60%
66	5,45 mg/kg BB/ hari	10,90%
69	7,04 mg/kg BB/ hari	14,08%
74	1,29 mg/kg BB/ hari	2,58%
76	1,39 mg/kg BB/ hari	2,78%
78	1,88 mg/kg BB/ hari	3,76%
81	1,74 mg/kg BB/ hari	3,48%
84	1,04 mg/kg BB/ hari	2,08%
86	0,56 mg/kg BB/ hari	1,12%
88	0,71 mg/kg BB/ hari	1,42%
89	2,59 mg/kg BB/ hari	5,18%
90	10,39 mg/kg BB/ hari	20,78%
92	4,91 mg/kg BB/ hari	9,82%
93	0,47 mg/kg BB/ hari	0,94%

Tabel L.6.3 Paparan aspartam per responden dan persen paparan ADI Sampel B

No Responden	Paparan aspartam per responden (mg/kg BB/hari)	Persen Paparan Terhadap ADI %
6	0,18 mg/kg BB/hari	0,36%
8	0,49 mg/kg BB/hari	0,98%
12	0,716 mg/kg BB/hari	1,42%
13	5,51 mg/kg BB/hari	11,02 %
18	2,66 mg/kg BB/hari	5,32%
22	2,66 mg/kg BB/hari	5,32%
32	0,58 mg/kg BB/hari	1,16%
35	3,04 mg/kg BB/hari	6,08%
39	1,96 mg/kg BB/hari	3,92%
40	0,58 mg/kg BB/hari	1,16%
42	2,12 mg/kg BB/hari	4,24%
43	0,43 mg/kg BB/hari	0,86%
46	11,17 mg/kg BB/hari	22,34%
54	0,41 mg/kg BB/hari	0,82%
58	1,43 mg/kg BB/hari	2,86%
70	1,58 mg/kg BB/hari	3,16%
75	7,98 mg/kg BB/hari	15,96%
80	3,54 mg/kg BB/hari	7,08%
81	1,55 mg/kg BB/hari	3,10%
83	0,45 mg/kg BB/hari	0,90%
89	0,38 mg/kg BB/hari	0,76%

Tabel L. 7. 4 Paparan aspartam per responden dan persen paparan ADI Sampel C

No Responden	Paparan aspartam per responden (mg/kg BB/hari)	Persen Paparan Terhadap ADI %
1	2,10 mg/kg BB/hari	4,20%
3	1,60 mg/kg BB/hari	3,20%
4	3,81 mg/kg BB/hari	7,62%
5	0,92 mg/kg BB/hari	1,84%
6	0,72 mg/kg BB/hari	1,44%
7	1,85 mg/kg BB/hari	3,70%
10	0,28 mg/kg BB/hari	0,56%
11	0,56 mg/kg BB/hari	1,12%
13	0,29 mg/kg BB/hari	0,58%
15	0,46 mg/kg BB/hari	0,92%
16	0,43 mg/kg BB/hari	0,86%
17	0,95 mg/kg BB/hari	1,90%
19	3,92 mg/kg BB/hari	7,84%
20	1,85 mg/kg BB/hari	3,70%
21	8,14 mg/kg BB/hari	16,28%
22	4,90 mg/kg BB/hari	9,80%
23	0,82 mg/kg BB/hari	1,64%
24	0,50 mg/kg BB/hari	1%
25	1,69 mg/kg BB/hari	3,38%
26	0,98 mg/kg BB/hari	1,96%
29	3,05 mg/kg BB/hari	6,10%
30	7,63 mg/kg BB/hari	15,26%
33	0,38 mg/kg BB/hari	0,76%
34	1,60 mg/kg BB/hari	3,20%
35	5,50 mg/kg BB/hari	11%
35	0,31 mg/kg BB/hari	0,62%
36	1,56 mg/kg BB/hari	3,12%
41	0,42 mg/kg BB/hari	0,84%
45	2,90 mg/kg BB/hari	5,80%
49	0,76 mg/kg BB/hari	1,52%
53	0,28 mg/kg BB/hari	0,56%
54	1,35 mg/kg BB/hari	2,70%
61	0,46 mg/kg BB/hari	0,92%
71	0,34 mg/kg BB/hari	0,68%
76	0,32 mg/kg BB/hari	0,64%
84	0,80 mg/kg BB/hari	1,60%

Contoh perhitungan Tingkat Konsumsi Pangan Dan Paparan :

a) Tingkat Konsumsi Pangan (TKP)

$$\text{Tingkat Konsumsi Pangan (TKP)} = p \times U \times f$$

$$\text{Tingkat Konsumsi Pangan (TKP)} = 4 \times 200 \text{ mL} \times 2 = 1600 \text{ mL}$$

b) Paparan

$$\text{Paparan (mg/kg bb/ hari)} = \frac{\text{Kadar BTP dalam pangan} \times \text{TKP}}{\text{Berat badan}} =$$

$$\text{Paparan (mg/kg bb/ hari)} = \frac{139,9 \mu\text{g/mL} \times 1600 \text{ mL}}{38 \text{ kg}} = 5890,52 \mu\text{g/kg} \gg 5,89$$

mg/kg

c) % ADI

$$\% \text{ ADI} = \frac{\text{Paparan}}{\text{Nilai ADI}} \times 100\%$$

$$\% \text{ ADI} = \frac{5,89 \text{ mg/kg}}{50 \text{ mg/kg}} \times 100\% = 11,78 \%$$

d) Perhitungan SD dan RSD % Sampel A, B, dan C

$$SD = \sqrt{\frac{\sum (xi-x)^2}{n-1}}$$

$$SD = \sqrt{\frac{54795}{51-1}} = 32,77$$

$$RSD \% = \frac{SD}{\bar{x} \text{ rata-rata}} \times 100 \%$$

$$RSD \% = \frac{32,77}{1053,75} \times 100 \% = 3,10 \%$$

LAMPIRAN 7

PERHITUNGAN KOMPOSISI BERAT BADAN RESPONDEN

Contoh perhitungan :

- Rentang = Nilai Max-Nilai Min

$$\text{Rentang} = 58 - 27 = 31$$

- Banyak Kelas (K) = $1 + 3,3 \log n$

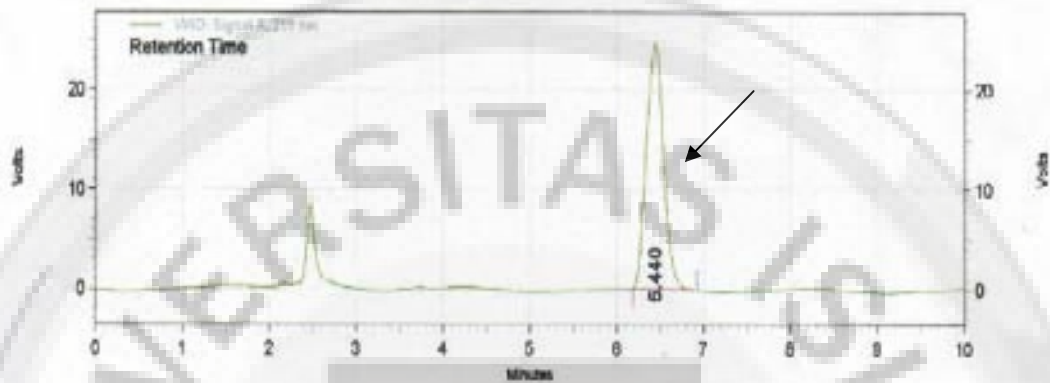
$$\text{Banyak Kelas (K)} = 1 + 3,3 \log 92 = 7,48 \longrightarrow 7$$

- Panjang Kelas = $\frac{\text{Rentang (R)}}{\text{Banyak Kelas (K)}}$

$$\text{Panjang Kelas} = \frac{31}{7,48} = 4$$

LAMPIRAN 8

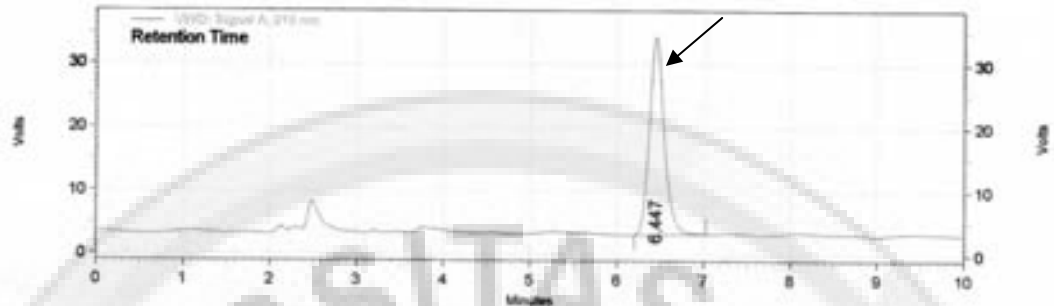
Gambar Kromatogram Standar Aspartam 20ppm



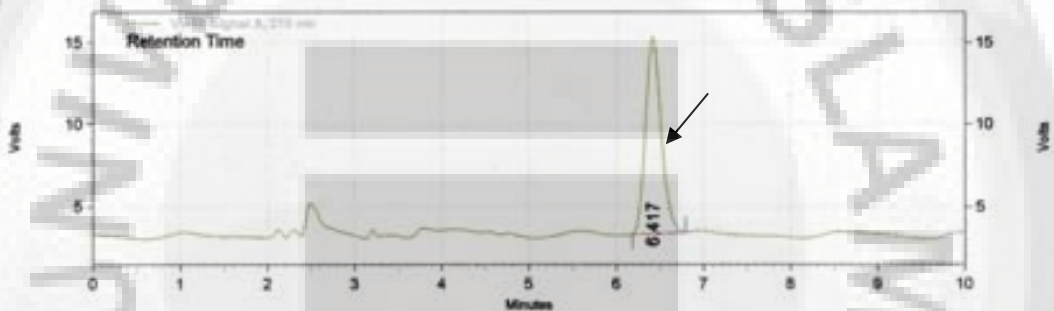
L.8.1. Kromatogram standar aspartam 20 ppm

LAMPIRAN 9

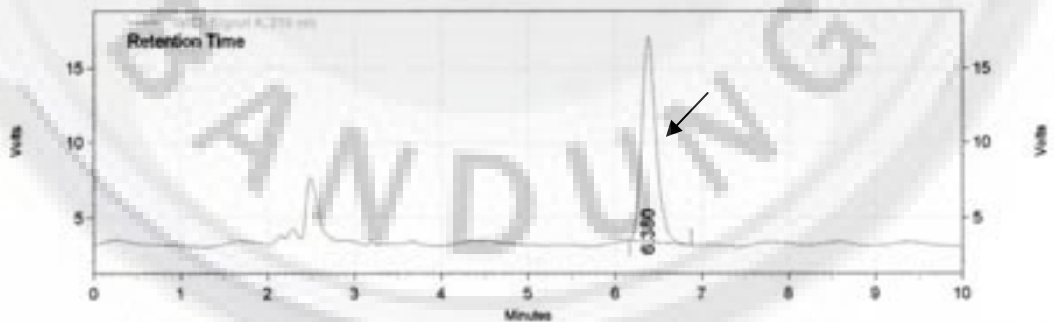
Gambar Kromatogram Standar Aspartam di tambah Sampel



Gambar L.9.1 Standar+Sampel A



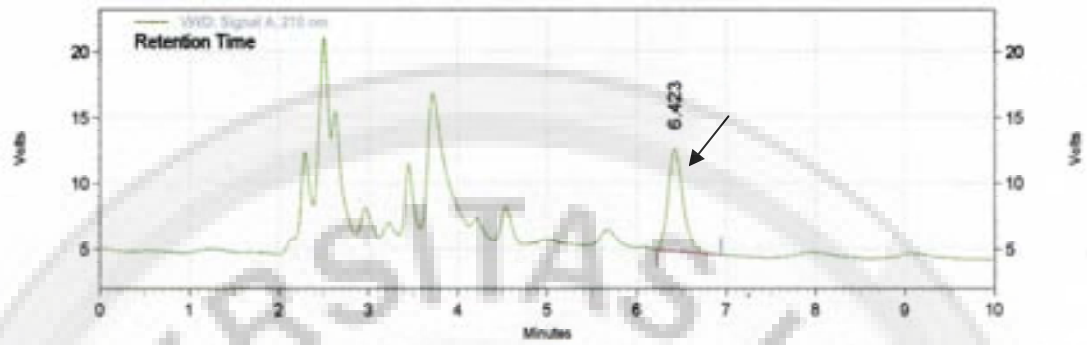
Gambar L.9.2 Standar+Sampel B



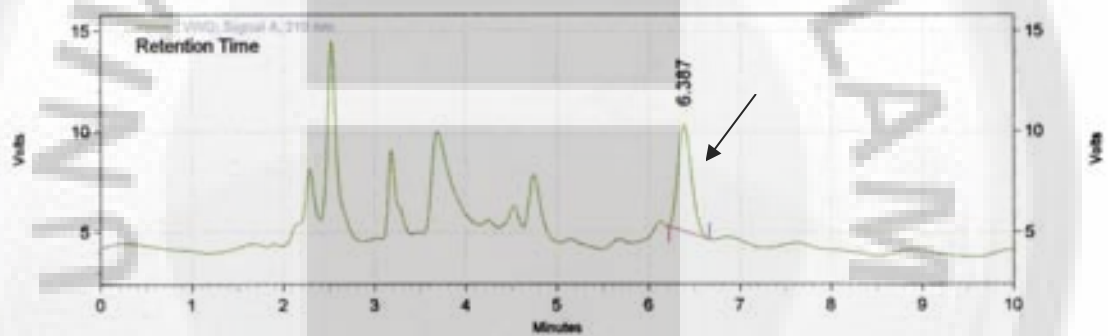
Gambar L.9.3 Standar+Sampel C

LAMPIRAN 10

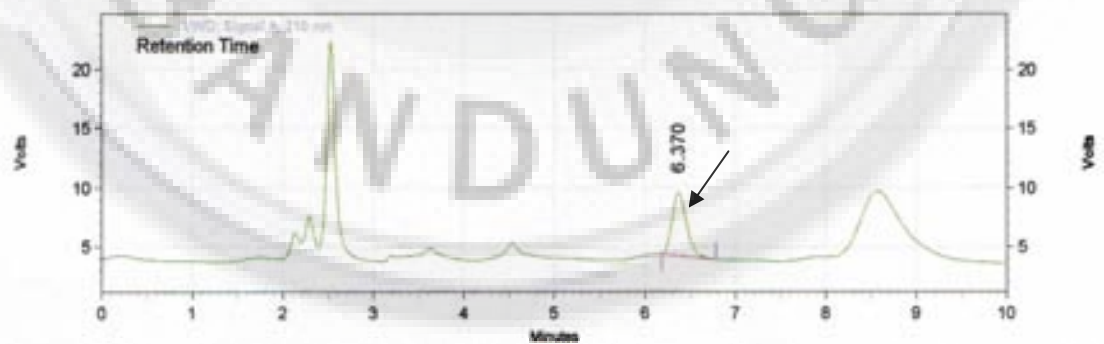
Gambar Kromatogram Sampel Aspartam



Gambar L.10.1 Kromatogram sampel A



Gambar L.10.2 Kromatogram sampel B



Gambar L.10.3 Kromatogram sampel C

