

ภาคผนวก

## ภาคผนวก ก

ค่าการดูดกลืนแสงของกรดแกลลิกและสารละลายบรอกโคโลสีเริ่มงอก

ทุกสายพันธุ์

โดยที่

YK1, YK2, YK3	คือ	สายพันธุ์หยกเขียว 2034
YK4, YK5, YK6	คือ	สายพันธุ์ท็อปกรีน
YK7, YK8, YK9	คือ	สายพันธุ์กรีนควีน ทีเอ 0222
YK10, YK11, YK12	คือ	สายพันธุ์มอนท็อป

Date : 3/22/2011 Time : 17:25:33

## CALIBRATION

Date: 3/22/2011 Time: 4:25:37 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08063015  
 Method: gallic-a  
 Ordinate mode: Single wavelength  
 Baseline: No correction ( 0.00 0.00 )  
 Analyst:

Wavelength(s)	Sample ID	Concentration	Ord. value	Comment
765.0	0.0 Gallic-a.A01	0.0000 mg/mL	0.0001	
765.0	0.0 Gallic-a.A01	0.0000 mg/mL	0.0001	Replicate 2
765.0	0.0 Gallic-a.A01	0.0000 mg/mL	-0.000	Replicate 3
	S.DEV: 0.0002		MEAN: -0.000	
765.0	0.0 Gallic-a.A02	0.0500 mg/mL	0.3760	
765.0	0.0 Gallic-a.A02	0.0500 mg/mL	0.3753	Replicate 2
765.0	0.0 Gallic-a.A02	0.0500 mg/mL	0.3759	Replicate 3
	S.DEV: 0.0004		MEAN: 0.3758	
765.0	0.0 Gallic-a.A03	0.1000 mg/mL	0.8519	
765.0	0.0 Gallic-a.A03	0.1000 mg/mL	0.8516	Replicate 2
765.0	0.0 Gallic-a.A03	0.1000 mg/mL	0.8518	Replicate 3
	S.DEV: 0.0001		MEAN: 0.8518	
765.0	0.0 Gallic-a.A04	0.1500 mg/mL	1.3044	
765.0	0.0 Gallic-a.A04	0.1500 mg/mL	1.3042	Replicate 2
765.0	0.0 Gallic-a.A04	0.1500 mg/mL	1.3037	Replicate 3
	S.DEV: 0.0003		MEAN: 1.3041	
765.0	0.0 Gallic-a.A05	0.2000 mg/mL	2.0749	
765.0	0.0 Gallic-a.A05	0.2000 mg/mL	2.0657	Replicate 2
765.0	0.0 Gallic-a.A05	0.2000 mg/mL	2.0877	Replicate 3
	S.DEV: 0.0111		MEAN: 2.0761	

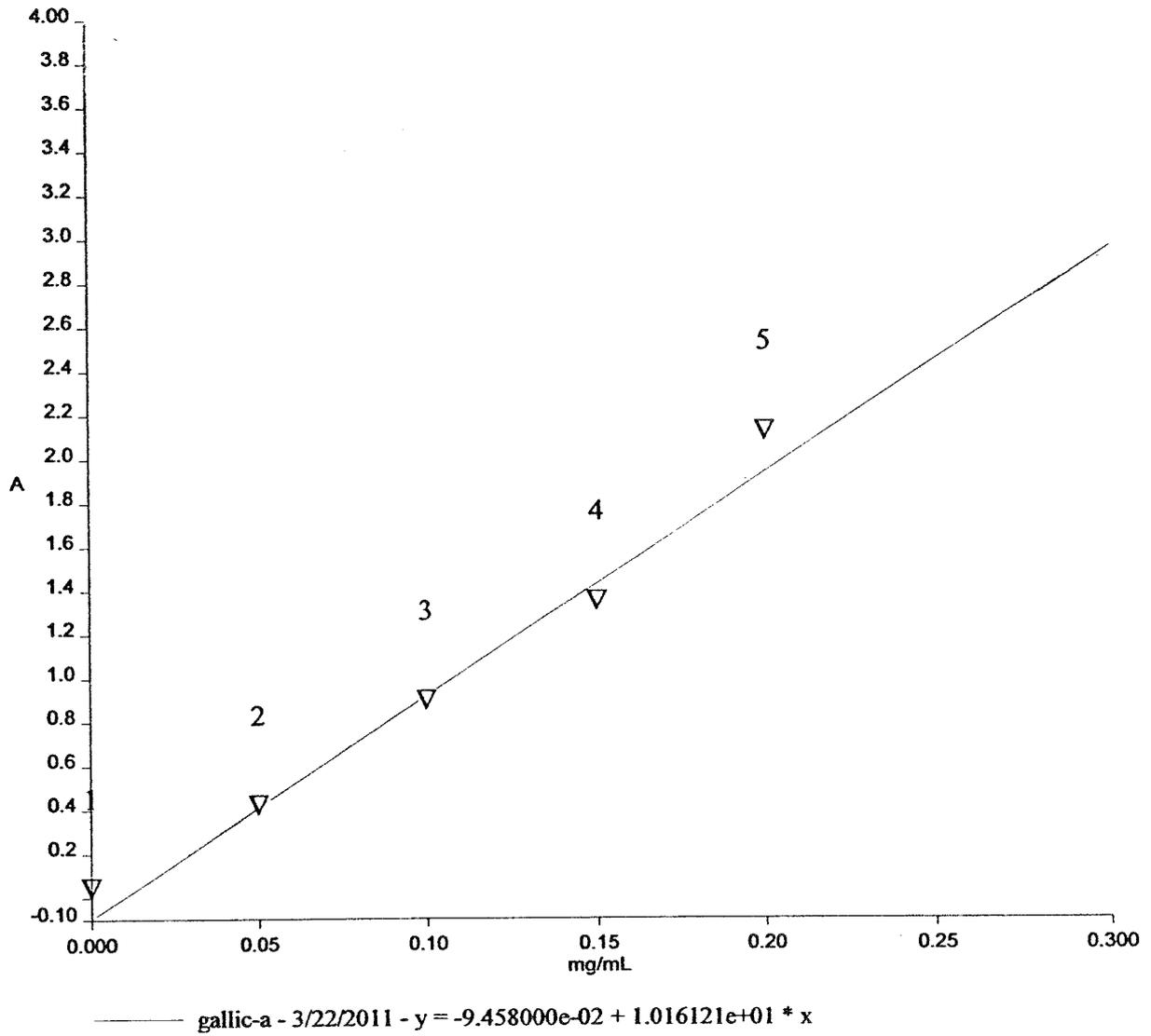
Equation:  $y = -9.458000e-02 + 1.016121e+01 * x$ 

Residual error: 0.129289

Correlation coefficient: 0.990426

Date: 3/22/2011

Time: 5:28:34 PM



Date : 3/22/2011 Time : 17:25:04

## Concentration Results

Date: 3/22/2011 Time: 5:12:33 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08063015  
 Method: gallic-a  
 Ordinate mode: Single wavelength  
 Slit: UV/VIS: 1.00 nm  
 Baseline: No correction ( 0.00 0.00 )  
 Result Filename: YK1.RCO  
 Autozero performed: 3/22/2011 4:24:59 PM  
 Analyst:

Wavelength(s)	Sample ID	Ordinate	Factor	Concentration	Sample Info
765.0	0.0	YK1	1.5313	1.0000 0.1600 mg/mL	
765.0	0.0	YK1	1.5347	1.0000 0.1603 mg/mL	Replicate 2
765.0	0.0	YK1	1.5312	1.0000 0.1600 mg/mL	Replicate 3
		S.DEV: 0.0002		MEAN 0.1601 mg/mL	
765.0	0.0	YK2	1.5365	1.0000 0.1605 mg/mL	
765.0	0.0	YK2	1.5322	1.0000 0.1601 mg/mL	Replicate 2
765.0	0.0	YK2	1.5384	1.0000 0.1607 mg/mL	Replicate 3
		S.DEV: 0.0003		MEAN 0.1604 mg/mL	
765.0	0.0	YK3	1.5319	1.0000 0.1601 mg/mL	
765.0	0.0	YK3	1.5312	1.0000 0.1600 mg/mL	Replicate 2
765.0	0.0	YK3	1.5364	1.0000 0.1605 mg/mL	Replicate 3
		S.DEV: 0.0003		MEAN 0.1602 mg/mL	
765.0	0.0	YK4	2.0218	1.0000 0.2083 mg/mL	
765.0	0.0	YK4	2.0126	1.0000 0.2074 mg/mL	Replicate 2
765.0	0.0	YK4	2.0293	1.0000 0.2090 mg/mL	Replicate 3
		S.DEV: 0.0008		MEAN 0.2082 mg/mL	
765.0	0.0	YK5	2.0128	1.0000 0.2074 mg/mL	
765.0	0.0	YK5	2.0365	1.0000 0.2097 mg/mL	Replicate 2
765.0	0.0	YK5	2.0459	1.0000 0.2106 mg/mL	Replicate 3
		S.DEV: 0.0017		MEAN 0.2093 mg/mL	
765.0	0.0	YK6	2.0411	1.0000 0.2102 mg/mL	
765.0	0.0	YK6	2.0602	1.0000 0.2121 mg/mL	Replicate 2
765.0	0.0	YK6	2.0223	1.0000 0.2083 mg/mL	Replicate 3
		S.DEV: 0.0019		MEAN 0.2102 mg/mL	
765.0	0.0	YK7	1.6582	1.0000 0.1725 mg/mL	
765.0	0.0	YK7	1.6484	1.0000 0.1715 mg/mL	Replicate 2
765.0	0.0	YK7	1.6626	1.0000 0.1729 mg/mL	Replicate 3
		S.DEV: 0.0007		MEAN 0.1723 mg/mL	
765.0	0.0	YK8	1.6407	1.0000 0.1708 mg/mL	
765.0	0.0	YK8	1.6596	1.0000 0.1726 mg/mL	Replicate 2
765.0	0.0	YK8	1.6540	1.0000 0.1721 mg/mL	Replicate 3
		S.DEV: 0.0010		MEAN 0.1718 mg/mL	
765.0	0.0	YK9	1.6560	1.0000 0.1723 mg/mL	
765.0	0.0	YK9	1.6497	1.0000 0.1717 mg/mL	Replicate 2
765.0	0.0	YK9	1.6540	1.0000 0.1721 mg/mL	Replicate 3
		S.DEV: 0.0003		MEAN 0.1720 mg/mL	
765.0	0.0	YK10	2.3057	1.0000 0.2362 mg/mL	
765.0	0.0	YK10	2.2769	1.0000 0.2334 mg/mL	Replicate 2
765.0	0.0	YK10	2.2643	1.0000 0.2321 mg/mL	Replicate 3
		S.DEV: 0.0021		MEAN 0.2339 mg/mL	
765.0	0.0	YK11	2.2829	1.0000 0.2340 mg/mL	
765.0	0.0	YK11	2.2626	1.0000 0.2320 mg/mL	Replicate 2
765.0	0.0	YK11	2.2865	1.0000 0.2343 mg/mL	Replicate 3
		S.DEV: 0.0013		MEAN 0.2334 mg/mL	
765.0	0.0	YK12	2.2647	1.0000 0.2322 mg/mL	
765.0	0.0	YK12	2.3026	1.0000 0.2359 mg/mL	Replicate 2
765.0	0.0	YK12	2.2868	1.0000 0.2344 mg/mL	Replicate 3
		S.DEV: 0.0019		MEAN 0.2342 mg/mL	

ภาคผนวก ข

ข้อมูลปริมาณสารฟีนอลิกในแต่ละสายพันธุ์ที่วิเคราะห์ด้วยโปรแกรม SPSS

## Oneway

## Descriptives

phenolics

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Green queen	9	.860278	.0032026	.0010675	.857816	.862740
Mon top	9	1.169167	.0078382	.0026127	1.163142	1.175192
Top green	9	1.046111	.0078572	.0026191	1.040072	1.052151
Yok kheo	9	.801222	.0013255	.0004418	.800203	.802241
Total	36	.969194	.1487975	.0247996	.918849	1.019540

## Descriptives

phenolics

	Minimum	Maximum
Green queen	.8540	.8645
Mon top	1.1600	1.1810
Top green	1.0370	1.0605
Yok kheo	.8000	.8035
Total	.8000	1.1810

## Test of Homogeneity of Variances

phenolics

Levene Statistic	df1	df2	Sig.
6.768	3	32	.001

79  
ANOVA

phenolics

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.774	3	.258	7632.295	.000
Within Groups	.001	32	.000		
Total	.775	35			

### Post Hoc Tests

#### Multiple Comparisons

Dependent Variable: phenolics

Tamhane

(I) cultivar	(J) cultivar	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Green queen	Mon top	-.308889*	.0028224	.000	-.317982	-.299796
	Top green	-.185833*	.0028283	.000	-.194947	-.176719
	Yok kheo	.059056*	.0011554	.000	.055338	.062773
Mon top	Green queen	.308889*	.0028224	.000	.299796	.317982
	Top green	.123056*	.0036995	.000	.111964	.134147
	Yok kheo	.367944*	.0026498	.000	.358913	.376976
Top green	Green queen	.185833*	.0028283	.000	.176719	.194947
	Mon top	-.123056*	.0036995	.000	-.134147	-.111964
	Yok kheo	.244889*	.0026561	.000	.235835	.253942
Yok kheo	Green queen	-.059056*	.0011554	.000	-.062773	-.055338
	Mon top	-.367944*	.0026498	.000	-.376976	-.358913
	Top green	-.244889*	.0026561	.000	-.253942	-.235835

\*. The mean difference is significant at the .05 level.

ภาคผนวก ก

ค่าการดูดกลืนแสงของสารมาตรฐาน Trolox ด้วยวิธี ABTS

โดยที่

ABSTro คือ สารมาตรฐาน Trolox ที่วัดด้วยวิธี ABTS

Date : 3/30/2011 Time : 16:12:31

## CALIBRATION

Date: 3/30/2011 Time: 3:30:00 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08063015  
 Method: abtstro  
 Ordinate mode: Single wavelength  
 Baseline: No correction ( 0.00 0.00 )  
 Analyst:

Wavelength(s)	Sample ID	Concentration	Ord. value	Comment
734.0	0.0	ABTSTro.A01	0.0000 mg/mL	1.1174
734.0	0.0	ABTSTro.A01	0.0000 mg/mL	1.1177 Replicate 2
734.0	0.0	ABTSTro.A01	0.0000 mg/mL	1.1175 Replicate 3
		S.DEV: 0.0001		MEAN: 1.1175
734.0	0.0	ABTSTro.A02	0.1000 mg/mL	0.9226
734.0	0.0	ABTSTro.A02	0.1000 mg/mL	0.9220 Replicate 2
734.0	0.0	ABTSTro.A02	0.1000 mg/mL	0.9219 Replicate 3
		S.DEV: 0.0003		MEAN: 0.9222
734.0	0.0	ABTSTro.A03	0.2000 mg/mL	0.6912
734.0	0.0	ABTSTro.A03	0.2000 mg/mL	0.6917 Replicate 2
734.0	0.0	ABTSTro.A03	0.2000 mg/mL	0.6919 Replicate 3
		S.DEV: 0.0003		MEAN: 0.6916
734.0	0.0	ABTSTro.A04	0.3000 mg/mL	0.4868
734.0	0.0	ABTSTro.A04	0.3000 mg/mL	0.4870 Replicate 2
734.0	0.0	ABTSTro.A04	0.3000 mg/mL	0.4870 Replicate 3
		S.DEV: 0.0001		MEAN: 0.4869
734.0	0.0	ABTSTro.A05	0.4000 mg/mL	0.1170
734.0	0.0	ABTSTro.A05	0.4000 mg/mL	0.1177 Replicate 2
734.0	0.0	ABTSTro.A05	0.4000 mg/mL	0.1171 Replicate 3
		S.DEV: 0.0004		MEAN: 0.1173

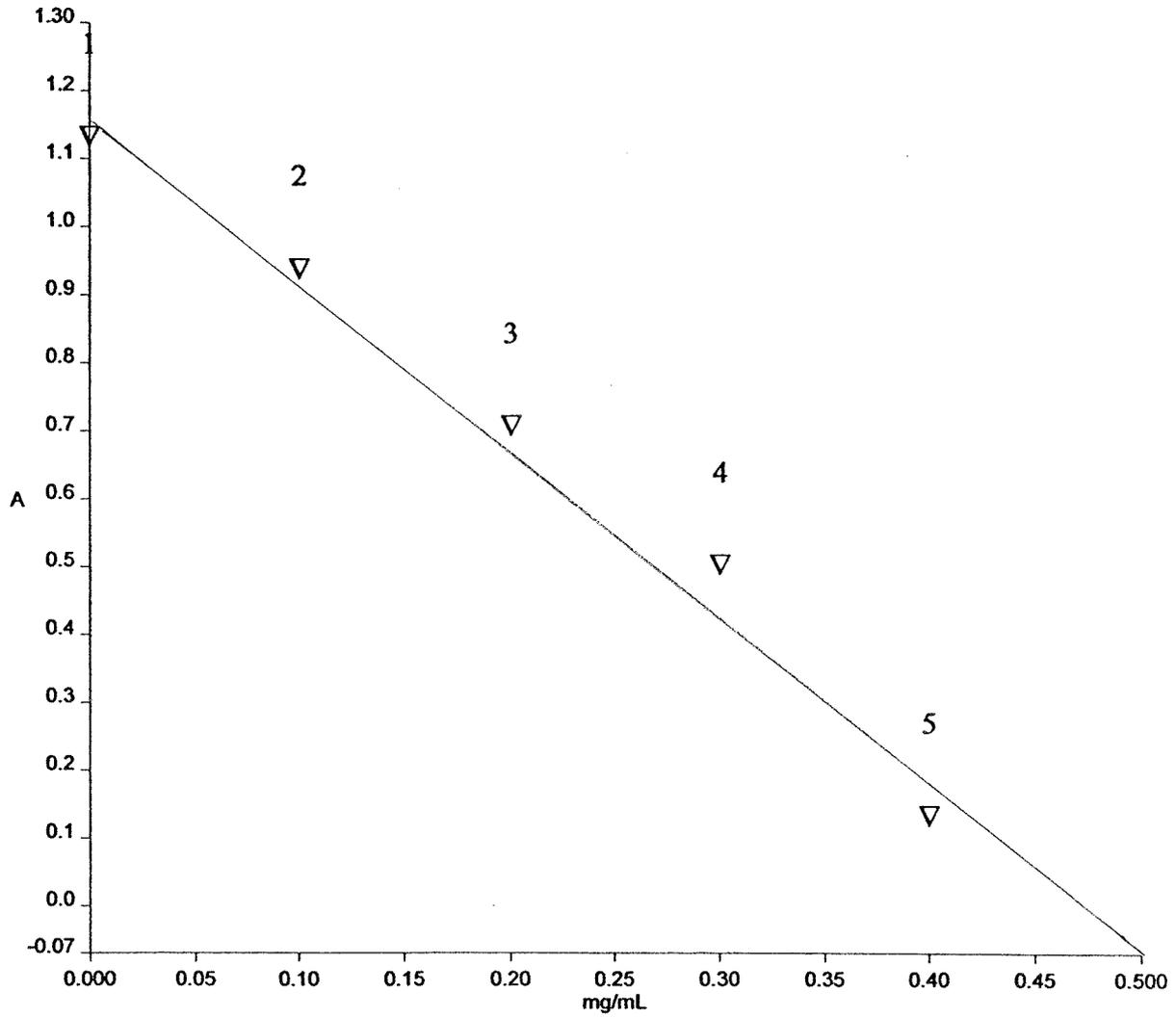
Equation:  $y = 1.154240e+00 + -2.435693e+00 * x$ 

Residual error: 0.057838

Correlation coefficient: 0.991648

Date: 3/30/2011

Time: 4:11:13 PM



abastro - 3/30/2011 -  $y = 1.154240e+00 + -2.435693e+00 * x$

## ภาคผนวก ง

ค่าการดูดกลืนแสงในแต่ละสายพันธุ์เทียบกับสารมาตรฐาน Trolox  
เมื่อสกัดด้วยตัวทำละลายเมทานอล, เอทานอล และ เอทิลอะซีเตต

โดยที่

GQ คือ สายพันธุ์กรีนควีน ทีเอ 0222

MT คือ สายพันธุ์มอนท็อบ

TG คือ สายพันธุ์ท็อบกรีน

YK คือ สายพันธุ์หยกเขียว 2034

EtOH คือ เอทานอล

MeOH คือ เมทานอล

Ethyl คือ เอทิลอะซีเตต

Date : 3/30/2011 Time : 16:13:21

## Concentration Results

Date: 3/30/2011 Time: 3:45:11 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08063015  
 Method: abtstro  
 Ordinate mode: Single wavelength  
 Slit: UV/VIS: 1.00 nm  
 Baseline: No correction ( 0.00 0.00 )  
 Result Filename: BS.RCO  
 Autozero performed: 3/30/2011 3:29:19 PM  
 Analyst:

Wavelength(s)	Sample ID	Ordinate	Factor	Concentration	Sample Info
734.0	0.0	GQ1EtOH	0.4115	1.0000 0.3049 mg/mL	
734.0	0.0	GQ1EtOH	0.4072	1.0000 0.3067 mg/mL	Replicate 2
734.0	0.0	GQ1EtOH	0.4048	1.0000 0.3077 mg/mL	Replicate 3
		S.DEV: 0.0014		MEAN 0.3064 mg/mL	
734.0	0.0	GQ2EtOH	0.4021	1.0000 0.3088 mg/mL	
734.0	0.0	GQ2EtOH	0.4000	1.0000 0.3097 mg/mL	Replicate 2
734.0	0.0	GQ2EtOH	0.3979	1.0000 0.3105 mg/mL	Replicate 3
		S.DEV: 0.0009		MEAN 0.3097 mg/mL	
734.0	0.0	MT1EtOH	0.2031	1.0000 0.3905 mg/mL	
734.0	0.0	MT1EtOH	0.1999	1.0000 0.3918 mg/mL	Replicate 2
734.0	0.0	MT1EtOH	0.1979	1.0000 0.3926 mg/mL	Replicate 3
		S.DEV: 0.0011		MEAN 0.3916 mg/mL	
734.0	0.0	MT2EtOH	0.1958	1.0000 0.3935 mg/mL	
734.0	0.0	MT2EtOH	0.1938	1.0000 0.3943 mg/mL	Replicate 2
734.0	0.0	MT2EtOH	0.1909	1.0000 0.3955 mg/mL	Replicate 3
		S.DEV: 0.0010		MEAN 0.3945 mg/mL	
734.0	0.0	TG1EtOH	0.0685	1.0000 0.4458 mg/mL	
734.0	0.0	TG1EtOH	0.0673	1.0000 0.4463 mg/mL	Replicate 2
734.0	0.0	TG1EtOH	0.0660	1.0000 0.4468 mg/mL	Replicate 3
		S.DEV: 0.0005		MEAN 0.4463 mg/mL	
734.0	0.0	TG2EtOH	0.0647	1.0000 0.4473 mg/mL	
734.0	0.0	TG2EtOH	0.0636	1.0000 0.4478 mg/mL	Replicate 2
734.0	0.0	TG2EtOH	0.0626	1.0000 0.4482 mg/mL	Replicate 3
		S.DEV: 0.0004		MEAN 0.4478 mg/mL	
734.0	0.0	YK1EtOH	0.2528	1.0000 0.3701 mg/mL	
734.0	0.0	YK1EtOH	0.2501	1.0000 0.3712 mg/mL	Replicate 2
734.0	0.0	YK1EtOH	0.2477	1.0000 0.3722 mg/mL	Replicate 3
		S.DEV: 0.0011		MEAN 0.3712 mg/mL	
734.0	0.0	YK2EtOH	0.2454	1.0000 0.3731 mg/mL	
734.0	0.0	YK2EtOH	0.2429	1.0000 0.3742 mg/mL	Replicate 2
734.0	0.0	YK2EtOH	0.2398	1.0000 0.3754 mg/mL	Replicate 3
		S.DEV: 0.0011		MEAN 0.3742 mg/mL	
734.0	0.0	GQ1MeOH	0.9194	1.0000 0.0964 mg/mL	
734.0	0.0	GQ1MeOH	0.9184	1.0000 0.0968 mg/mL	Replicate 2
734.0	0.0	GQ1MeOH	0.9171	1.0000 0.0974 mg/mL	Replicate 3
		S.DEV: 0.0005		MEAN 0.0969 mg/mL	
734.0	0.0	GQ2MeOH	0.9161	1.0000 0.0978 mg/mL	
734.0	0.0	GQ2MeOH	0.9149	1.0000 0.0983 mg/mL	Replicate 2
734.0	0.0	GQ2MeOH	0.9139	1.0000 0.0987 mg/mL	Replicate 3
		S.DEV: 0.0004		MEAN 0.0982 mg/mL	
734.0	0.0	MT1MeOH	0.9409	1.0000 0.0876 mg/mL	
734.0	0.0	MT1MeOH	0.9398	1.0000 0.0880 mg/mL	Replicate 2
734.0	0.0	MT1MeOH	0.9386	1.0000 0.0885 mg/mL	Replicate 3
		S.DEV: 0.0005		MEAN 0.0880 mg/mL	
734.0	0.0	MT2MeOH	0.9374	1.0000 0.0890 mg/mL	
734.0	0.0	MT2MeOH	0.9364	1.0000 0.0894 mg/mL	Replicate 2
734.0	0.0	MT2MeOH	0.9354	1.0000 0.0898 mg/mL	Replicate 3
		S.DEV: 0.0004		MEAN 0.0894 mg/mL	
734.0	0.0	TG1MeOH	0.6836	1.0000 0.1932 mg/mL	
734.0	0.0	TG1MeOH	0.6817	1.0000 0.1940 mg/mL	Replicate 2
734.0	0.0	TG1MeOH	0.6795	1.0000 0.1949 mg/mL	Replicate 3
		S.DEV: 0.0008		MEAN 0.1940 mg/mL	

Date : 3/30/2011 Time : 16:13:21

734.0	0.0	TG2MeOH	0.6777	1.0000	0.1957	mg/mL	
734.0	0.0	TG2MeOH	0.6758	1.0000	0.1964	mg/mL	Replicate 2
734.0	0.0	TG2MeOH	0.6739	1.0000	0.1972	mg/mL	Replicate 3
		S.DEV:	0.0008		MEAN 0.1964	mg/mL	
734.0	0.0	YK1MeOH	0.9162	1.0000	0.0977	mg/mL	
734.0	0.0	YK1MeOH	0.9149	1.0000	0.0983	mg/mL	Replicate 2
734.0	0.0	YK1MeOH	0.9140	1.0000	0.0986	mg/mL	Replicate 3
		S.DEV:	0.0005		MEAN 0.0982	mg/mL	
734.0	0.0	YK2MeOH	0.9130	1.0000	0.0990	mg/mL	
734.0	0.0	YK2MeOH	0.9120	1.0000	0.0995	mg/mL	Replicate 2
734.0	0.0	YK2MeOH	0.9108	1.0000	0.0999	mg/mL	Replicate 3
		S.DEV:	0.0005		MEAN 0.0995	mg/mL	
734.0	0.0	GQ1Ethyl	0.7821	1.0000	0.1528	mg/mL	
734.0	0.0	GQ1Ethyl	0.7810	1.0000	0.1532	mg/mL	Replicate 2
734.0	0.0	GQ1Ethyl	0.7809	1.0000	0.1533	mg/mL	Replicate 3
		S.DEV:	0.0003		MEAN 0.1531	mg/mL	
734.0	0.0	GQ2Ethyl	0.7739	1.0000	0.1561	mg/mL	
734.0	0.0	GQ2Ethyl	0.7722	1.0000	0.1568	mg/mL	Replicate 2
734.0	0.0	GQ2Ethyl	0.7705	1.0000	0.1575	mg/mL	Replicate 3
		S.DEV:	0.0007		MEAN 0.1568	mg/mL	
734.0	0.0	MT1Ethyl	0.5643	1.0000	0.2422	mg/mL	
734.0	0.0	MT1Ethyl	0.5626	1.0000	0.2429	mg/mL	Replicate 2
734.0	0.0	MT1Ethyl	0.5608	1.0000	0.2437	mg/mL	Replicate 3
		S.DEV:	0.0007		MEAN 0.2429	mg/mL	
734.0	0.0	MT2Ethyl	0.5592	1.0000	0.2443	mg/mL	
734.0	0.0	MT2Ethyl	0.5576	1.0000	0.2449	mg/mL	Replicate 2
734.0	0.0	MT2Ethyl	0.5561	1.0000	0.2456	mg/mL	Replicate 3
		S.DEV:	0.0006		MEAN 0.2449	mg/mL	
734.0	0.0	TG1Ethyl	0.6324	1.0000	0.2142	mg/mL	
734.0	0.0	TG1Ethyl	0.6298	1.0000	0.2153	mg/mL	Replicate 2
734.0	0.0	TG1Ethyl	0.6282	1.0000	0.2160	mg/mL	Replicate 3
		S.DEV:	0.0009		MEAN 0.2152	mg/mL	
734.0	0.0	TG2Ethyl	0.6262	1.0000	0.2168	mg/mL	
734.0	0.0	TG2Ethyl	0.6245	1.0000	0.2175	mg/mL	Replicate 2
734.0	0.0	TG2Ethyl	0.6228	1.0000	0.2182	mg/mL	Replicate 3
		S.DEV:	0.0007		MEAN 0.2175	mg/mL	
734.0	0.0	YK1Ethyl	0.4808	1.0000	0.2765	mg/mL	
734.0	0.0	YK1Ethyl	0.4788	1.0000	0.2773	mg/mL	Replicate 2
734.0	0.0	YK1Ethyl	0.4736	1.0000	0.2795	mg/mL	Replicate 3
		S.DEV:	0.0015		MEAN 0.2777	mg/mL	
734.0	0.0	YK2Ethyl	0.4700	1.0000	0.2809	mg/mL	
734.0	0.0	YK2Ethyl	0.4679	1.0000	0.2818	mg/mL	Replicate 2
734.0	0.0	YK2Ethyl	0.4658	1.0000	0.2827	mg/mL	Replicate 3
		S.DEV:	0.0009		MEAN 0.2818	mg/mL	

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ภาคผนวก จ

ข้อมูลฤทธิ์ต้านอนุมูล ABTS ในแต่ละสายพันธุ์ที่สกัดด้วยตัวทำละลาย  
เมทานอลที่วิเคราะห์ด้วยโปรแกรม SPSS

## Oneway

### Descriptives

teac\_methanol

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Green queen	6	.097567	.0008779	.0003584	.096645	.098488
Mon top	6	.088717	.0008400	.0003429	.087835	.089598
Top green	6	.195233	.0014976	.0006114	.193662	.196805
Yok kheo	6	.098833	.0008042	.0003283	.097989	.099677
Total	24	.120088	.0445077	.0090851	.101294	.138881

### Descriptives

teac\_methanol

	Minimum	Maximum
Green queen	.0964	.0987
Mon top	.0876	.0898
Top green	.1932	.1972
Yok kheo	.0977	.0999
Total	.0876	.1972

### Test of Homogeneity of Variances

teac\_methanol

Levene Statistic	df1	df2	Sig.
1.677	3	20	.204

## ANOVA

teac\_methanol

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.046	3	.015	13908.443	.000
Within Groups	.000	20	.000		
Total	.046	23			

## Post Hoc Tests

## Multiple Comparisons

Dependent Variable: teac\_methanol

LSD

(I) cultivar	(J) cultivar	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Green queen	Mon top	.008850*	.0006032	.000	.007592	.010108
	Top green	-.097667*	.0006032	.000	-.098925	-.096408
	Yok kheo	-.001267*	.0006032	.049	-.002525	-.000008
Mon top	Green queen	-.008850*	.0006032	.000	-.010108	-.007592
	Top green	-.106517*	.0006032	.000	-.107775	-.105258
	Yok kheo	-.010117*	.0006032	.000	-.011375	-.008858
Top green	Green queen	.097667*	.0006032	.000	.096408	.098925
	Mon top	.106517*	.0006032	.000	.105258	.107775
	Yok kheo	.096400*	.0006032	.000	.095142	.097658
Yok kheo	Green queen	.001267*	.0006032	.049	.000008	.002525
	Mon top	.010117*	.0006032	.000	.008858	.011375
	Top green	-.096400*	.0006032	.000	-.097658	-.095142

\*. The mean difference is significant at the .05 level.

ภาคผนวก ฉ

ข้อมูลฤทธิ์ต้านอนุมูล ABTS ในแต่ละสายพันธุ์ที่สกัดด้วยตัวทำละลาย

เอทานอลที่วิเคราะห์ด้วยโปรแกรม SPSS

## Oneway

### Descriptives

teac\_ethanol

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Green queen	6	.1540250	.0102847	.0041987	1.529457	1.551043
Mon top	6	1.965167	.0089536	.0036553	1.955770	1.974563
Top green	6	2.235167	.0045461	.0018559	2.230396	2.239937
Yok kheo	6	1.863500	.0097365	.0039749	1.853282	1.873718
Total	24	1.901021	.2541393	.0518760	1.793707	2.008334

### Descriptives

teac\_ethanol

	Minimum	Maximum
Green queen	1.5245	1.5525
Mon top	1.9525	1.9775
Top green	2.2290	2.2410
Yok kheo	1.8505	1.8770
Total	1.5245	2.2410

### Test of Homogeneity of Variances

teac\_ethanol

Levene Statistic	df1	df2	Sig.
1.249	3	20	.319

## ANOVA

teac\_ethanol

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.484	3	.495	6564.690	.000
Within Groups	.002	20	.000		
Total	1.485	23			

## Post Hoc Tests

## Multiple Comparisons

Dependent Variable: teac\_ethanol

LSD

(I) cultivar	(J) cultivar	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Green queen	Mon top	-.424917*	.0050117	.000	-.435371	-.414462
	Top green	-.694917*	.0050117	.000	-.705371	-.684462
	Yok kheo	-.323250*	.0050117	.000	-.333704	-.312796
Mon top	Green queen	.424917*	.0050117	.000	.414462	.435371
	Top green	-.270000*	.0050117	.000	-.280454	-.259546
	Yok kheo	.101667*	.0050117	.000	.091212	.112121
Top green	Green queen	.694917*	.0050117	.000	.684462	.705371
	Mon top	.270000*	.0050117	.000	.259546	.280454
	Yok kheo	.371667*	.0050117	.000	.361212	.382121
Yok kheo	Green queen	.323250*	.0050117	.000	.312796	.333704
	Mon top	-.101667*	.0050117	.000	-.112121	-.091212
	Top green	-.371667*	.0050117	.000	-.382121	-.361212

\*. The mean difference is significant at the .05 level.

ภาคผนวก ข

ข้อมูลฤทธิ์ต้านอนุมูล ABTS ในแต่ละสายพันธุ์ที่สกัดด้วยตัวทำละลาย  
เอทิลอะซิเตตที่วิเคราะห์ด้วยโปรแกรม SPSS

## Oneway

### Descriptives

teac\_eth

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Green queen	6	.774750	.0104055	.0042480	.763830	.785670
Mon top	6	1.219667	.0063140	.0025777	1.213041	1.226293
Top green	6	1.081667	.0073462	.0029991	1.073957	1.089376
Yok kheo	6	1.398917	.0124194	.0050702	1.385883	1.411950
Total	24	1.118750	.2333233	.0476269	1.020226	1.217274

### Descriptives

teac\_eth

	Minimum	Maximum
Green queen	.7640	.7875
Mon top	1.2110	1.2280
Top green	1.0710	1.0910
Yok kheo	1.3825	1.4135
Total	.7640	1.4135

### Test of Homogeneity of Variances

teac\_eth

Levene Statistic	df1	df2	Sig.
2.467	3	20	.092

## ANOVA

teac\_eth

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.250	3	.417	4678.293	.000
Within Groups	.002	20	.000		
Total	1.252	23			

## Post Hoc Tests

## Multiple Comparisons

Dependent Variable: teac\_eth

LSD

(I) cultivar	(J) cultivar	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Green queen	Mon top	-.444917*	.0054494	.000	-.456284	-.433549
	Top green	-.306917*	.0054494	.000	-.318284	-.295549
	Yok kheo	-.624167*	.0054494	.000	-.635534	-.612799
Mon top	Green queen	.444917*	.0054494	.000	.433549	.456284
	Top green	.138000*	.0054494	.000	.126633	.149367
	Yok kheo	-.179250*	.0054494	.000	-.190617	-.167883
Top green	Green queen	.306917*	.0054494	.000	.295549	.318284
	Mon top	-.138000*	.0054494	.000	-.149367	-.126633
	Yok kheo	-.317250*	.0054494	.000	-.328617	-.305883
Yok kheo	Green queen	.624167*	.0054494	.000	.612799	.635534
	Mon top	.179250*	.0054494	.000	.167883	.190617
	Top green	.317250*	.0054494	.000	.305883	.328617

\*. The mean difference is significant at the .05 level.

ภาคผนวก ซ

ค่าการดูดกลืนแสงของสารมาตรฐานวิตามินซีด้วยวิธี ABTS

Date : 3/30/2011 Time : 12:32:09

## CALIBRATION

Date: 3/30/2011 Time: 12:08:10 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08063015  
 Method: ABTSvitC  
 Ordinate mode: Single wavelength  
 Baseline: No correction ( 0.00 0.00 )  
 Analyst:

Wavelength(s)	Sample ID	Concentration	Ord. value	Comment
734.0	0.0	ABTSvitC.A01 0.0000 mg/mL	0.8893	
734.0	0.0	ABTSvitC.A01 0.0000 mg/mL	0.8891	Replicate 2
734.0	0.0	ABTSvitC.A01 0.0000 mg/mL	0.8881	Replicate 3
		S.DEV: 0.0007	MEAN: 0.8888	
734.0	0.0	ABTSvitC.A02 0.0500 mg/mL	0.7299	
734.0	0.0	ABTSvitC.A02 0.0500 mg/mL	0.7299	Replicate 2
734.0	0.0	ABTSvitC.A02 0.0500 mg/mL	0.7299	Replicate 3
		S.DEV: 0.0000	MEAN: 0.7299	
734.0	0.0	ABTSvitC.A03 0.1000 mg/mL	0.4935	
734.0	0.0	ABTSvitC.A03 0.1000 mg/mL	0.4934	Replicate 2
734.0	0.0	ABTSvitC.A03 0.1000 mg/mL	0.4934	Replicate 3
		S.DEV: 0.0001	MEAN: 0.4934	
734.0	0.0	ABTSvitC.A04 0.1500 mg/mL	0.2970	
734.0	0.0	ABTSvitC.A04 0.1500 mg/mL	0.2971	Replicate 2
734.0	0.0	ABTSvitC.A04 0.1500 mg/mL	0.2968	Replicate 3
		S.DEV: 0.0002	MEAN: 0.2970	
734.0	0.0	ABTSvitC.A05 0.2000 mg/mL	0.1151	
734.0	0.0	ABTSvitC.A05 0.2000 mg/mL	0.1151	Replicate 2
734.0	0.0	ABTSvitC.A05 0.2000 mg/mL	0.1150	Replicate 3
		S.DEV: 0.0001	MEAN: 0.1151	

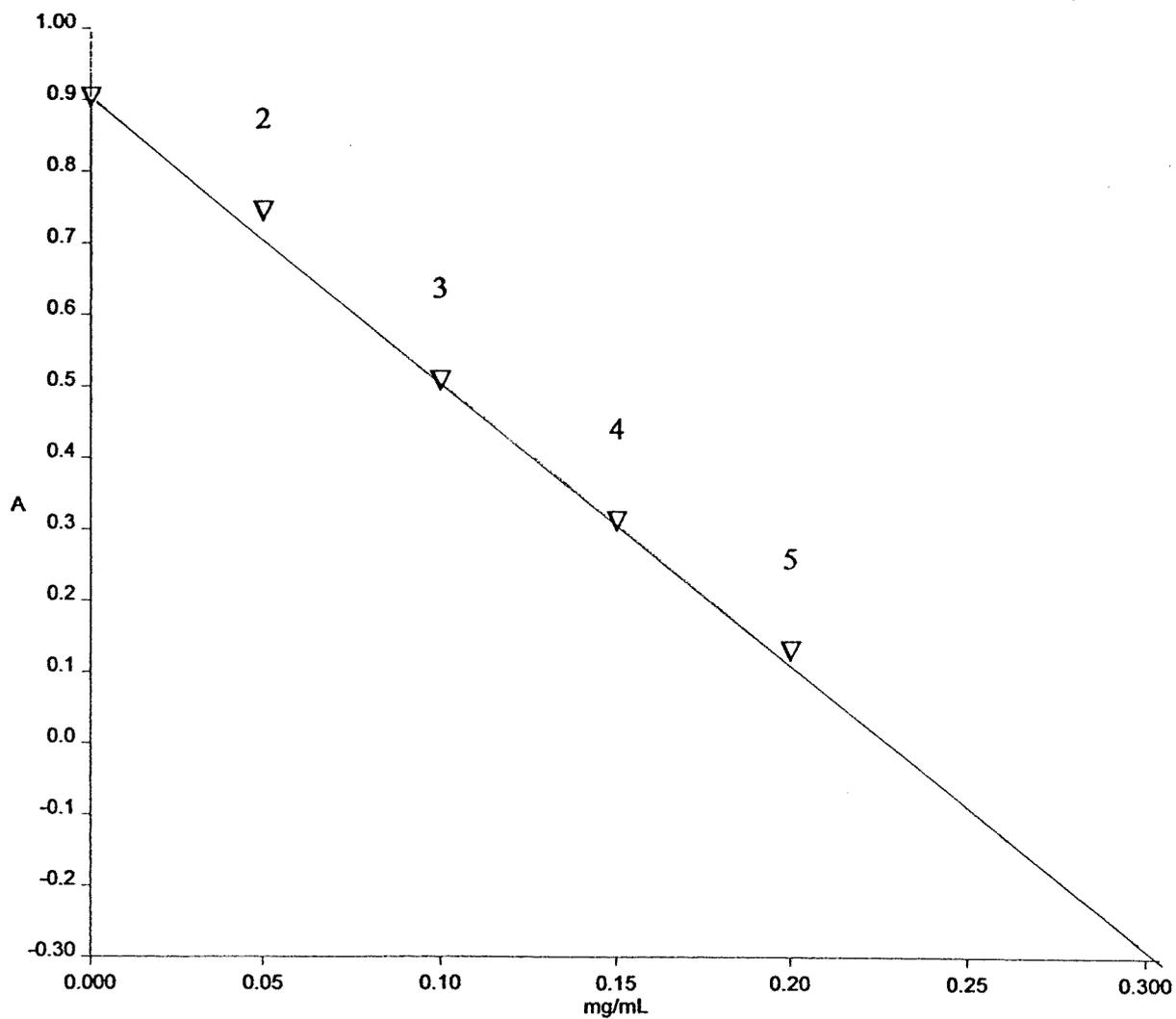
Equation:  $y = 9.009393e-01 + -3.961007e+00 * x$ 

Residual error: 0.019531

Correlation coefficient: 0.998544

Date: 3/30/2011

Time: 12:32:32 PM



ABTSvitC - 3/30/2011 -  $y = 9.009393e-01 + -3.961007e+00 * x$

## ภาคผนวก ฉ

ค่าการดูดกลืนแสงในแต่ละสายพันธุ์เทียบกับสารมาตรฐานวิตามินซี  
เมื่อสกัดด้วยตัวทำละลายเมทานอล, เอทานอล และ เอทิลอะซีเตต

โดยที่

GQ คือ สายพันธุ์กรีนควีน ทีเอ 022

MT คือ สายพันธุ์มอนท้อป

TG คือ สายพันธุ์ท้อปกรีน

YK คือ สายพันธุ์หยกเขียว 2034

EtOH คือ เอทานอล

MeOH คือ เมทานอล

Ethyl คือ เอทิลอะซีเตต

Date : 3/30/2011 Time : 12:31:22

## Concentration Results

Date: 3/30/2011 Time: 12:15:04 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08063015  
 Method: ABTSvitC  
 Ordinate mode: Single wavelength  
 Slit: UV/VIS: 1.00 nm  
 Baseline: No correction ( 0.00 0.00 )  
 Result Filename: BS.RCO  
 Autozero performed: 3/30/2011 11:52:41 AM  
 Analyst:

Wavelength(s)	Sample ID	Ordinate	Factor	Concentration	Sample Info	
734.0	0.0	GQ1EtOH	0.2016	1.0000	0.1766 mg/mL	
734.0	0.0	GQ1EtOH	0.2001	1.0000	0.1769 mg/mL	Replicate 2
734.0	0.0	GQ1EtOH	0.1983	1.0000	0.1774 mg/mL	Replicate 3
		S.DEV: 0.0004		MEAN 0.1770	mg/mL	
734.0	0.0	GQ2EtOH	0.1950	1.0000	0.1782 mg/mL	
734.0	0.0	GQ2EtOH	0.1936	1.0000	0.1786 mg/mL	Replicate 2
734.0	0.0	GQ2EtOH	0.1917	1.0000	0.1791 mg/mL	Replicate 3
		S.DEV: 0.0004		MEAN 0.1786	mg/mL	
734.0	0.0	MT1EtOH	0.0600	1.0000	0.2123 mg/mL	
734.0	0.0	MT1EtOH	0.0594	1.0000	0.2125 mg/mL	Replicate 2
734.0	0.0	MT1EtOH	0.0587	1.0000	0.2126 mg/mL	Replicate 3
		S.DEV: 0.0002		MEAN 0.2125	mg/mL	
734.0	0.0	MT2EtOH	0.0573	1.0000	0.2130 mg/mL	
734.0	0.0	MT2EtOH	0.0566	1.0000	0.2132 mg/mL	Replicate 2
734.0	0.0	MT2EtOH	0.0556	1.0000	0.2134 mg/mL	Replicate 3
		S.DEV: 0.0002		MEAN 0.2132	mg/mL	
734.0	0.0	TG1EtOH	0.0165	1.0000	0.2233 mg/mL	
734.0	0.0	TG1EtOH	0.0156	1.0000	0.2235 mg/mL	Replicate 2
734.0	0.0	TG1EtOH	0.0155	1.0000	0.2235 mg/mL	Replicate 3
		S.DEV: 0.0001		MEAN 0.2234	mg/mL	
734.0	0.0	TG2EtOH	0.0149	1.0000	0.2237 mg/mL	
734.0	0.0	TG2EtOH	0.0147	1.0000	0.2238 mg/mL	Replicate 2
734.0	0.0	TG2EtOH	0.0145	1.0000	0.2238 mg/mL	Replicate 3
		S.DEV: 0.0001		MEAN 0.2237	mg/mL	
734.0	0.0	YK1EtOH	0.0811	1.0000	0.2070 mg/mL	
734.0	0.0	YK1EtOH	0.0801	1.0000	0.2072 mg/mL	Replicate 2
734.0	0.0	YK1EtOH	0.0792	1.0000	0.2075 mg/mL	Replicate 3
		S.DEV: 0.0002		MEAN 0.2072	mg/mL	
734.0	0.0	YK2EtOH	0.0769	1.0000	0.2080 mg/mL	
734.0	0.0	YK2EtOH	0.0760	1.0000	0.2083 mg/mL	Replicate 2
734.0	0.0	YK2EtOH	0.0745	1.0000	0.2086 mg/mL	Replicate 3
		S.DEV: 0.0003		MEAN 0.2083	mg/mL	
734.0	0.0	GQ1MeOH	0.6046	1.0000	0.0748 mg/mL	
734.0	0.0	GQ1MeOH	0.6029	1.0000	0.0752 mg/mL	Replicate 2
734.0	0.0	GQ1MeOH	0.6020	1.0000	0.0755 mg/mL	Replicate 3
		S.DEV: 0.0003		MEAN 0.0752	mg/mL	
734.0	0.0	GQ2MeOH	0.6011	1.0000	0.0757 mg/mL	
734.0	0.0	GQ2MeOH	0.6000	1.0000	0.0760 mg/mL	Replicate 2
734.0	0.0	GQ2MeOH	0.5965	1.0000	0.0769 mg/mL	Replicate 3
		S.DEV: 0.0006		MEAN 0.0762	mg/mL	
734.0	0.0	MT1MeOH	0.5813	1.0000	0.0807 mg/mL	
734.0	0.0	MT1MeOH	0.5794	1.0000	0.0812 mg/mL	Replicate 2
734.0	0.0	MT1MeOH	0.5782	1.0000	0.0815 mg/mL	Replicate 3
		S.DEV: 0.0004		MEAN 0.0811	mg/mL	
734.0	0.0	MT2MeOH	0.5771	1.0000	0.0818 mg/mL	
734.0	0.0	MT2MeOH	0.5758	1.0000	0.0821 mg/mL	Replicate 2
734.0	0.0	MT2MeOH	0.5746	1.0000	0.0824 mg/mL	Replicate 3
		S.DEV: 0.0003		MEAN 0.0821	mg/mL	
734.0	0.0	TG1MeOH	0.4152	1.0000	0.1226 mg/mL	
734.0	0.0	TG1MeOH	0.4135	1.0000	0.1231 mg/mL	Replicate 2
734.0	0.0	TG1MeOH	0.4121	1.0000	0.1234 mg/mL	Replicate 3
		S.DEV: 0.0004		MEAN 0.1230	mg/mL	

Date : 3/30/2011 Time : 12:31:22

734.0	0.0	TG2MeOH	0.4109	1.0000	0.1237	mg/mL	
734.0	0.0	TG2MeOH	0.4092	1.0000	0.1242	mg/mL	Replicate 2
734.0	0.0	TG2MeOH	0.4059	1.0000	0.1250	mg/mL	Replicate 3
		S.DEV:	0.0006		MEAN 0.1243	mg/mL	
734.0	0.0	YK1MeOH	0.6242	1.0000	0.0699	mg/mL	
734.0	0.0	YK1MeOH	0.6233	1.0000	0.0701	mg/mL	Replicate 2
734.0	0.0	YK1MeOH	0.6223	1.0000	0.0704	mg/mL	Replicate 3
		S.DEV:	0.0002		MEAN 0.0701	mg/mL	
734.0	0.0	YK2MeOH	0.6203	1.0000	0.0709	mg/mL	
734.0	0.0	YK2MeOH	0.6191	1.0000	0.0712	mg/mL	Replicate 2
734.0	0.0	YK2MeOH	0.6182	1.0000	0.0714	mg/mL	Replicate 3
		S.DEV:	0.0003		MEAN 0.0711	mg/mL	
734.0	0.0	GQ1Ethyl	0.3640	1.0000	0.1356	mg/mL	
734.0	0.0	GQ1Ethyl	0.3631	1.0000	0.1358	mg/mL	Replicate 2
734.0	0.0	GQ1Ethyl	0.3617	1.0000	0.1361	mg/mL	Replicate 3
		S.DEV:	0.0003		MEAN 0.1358	mg/mL	
734.0	0.0	GQ2Ethyl	0.3609	1.0000	0.1363	mg/mL	
734.0	0.0	GQ2Ethyl	0.3602	1.0000	0.1365	mg/mL	Replicate 2
734.0	0.0	GQ2Ethyl	0.3594	1.0000	0.1367	mg/mL	Replicate 3
		S.DEV:	0.0002		MEAN 0.1365	mg/mL	
734.0	0.0	MT1Ethyl	0.2587	1.0000	0.1621	mg/mL	
734.0	0.0	MT1Ethyl	0.2573	1.0000	0.1625	mg/mL	Replicate 2
734.0	0.0	MT1Ethyl	0.2561	1.0000	0.1628	mg/mL	Replicate 3
		S.DEV:	0.0003		MEAN 0.1625	mg/mL	
734.0	0.0	MT2Ethyl	0.2551	1.0000	0.1630	mg/mL	
734.0	0.0	MT2Ethyl	0.2543	1.0000	0.1633	mg/mL	Replicate 2
734.0	0.0	MT2Ethyl	0.2532	1.0000	0.1635	mg/mL	Replicate 3
		S.DEV:	0.0002		MEAN 0.1633	mg/mL	
734.0	0.0	TG1Ethyl	0.5421	1.0000	0.0906	mg/mL	
734.0	0.0	TG1Ethyl	0.5407	1.0000	0.0910	mg/mL	Replicate 2
734.0	0.0	TG1Ethyl	0.5398	1.0000	0.0912	mg/mL	Replicate 3
		S.DEV:	0.0003		MEAN 0.0909	mg/mL	
734.0	0.0	TG2Ethyl	0.5392	1.0000	0.0913	mg/mL	
734.0	0.0	TG2Ethyl	0.5384	1.0000	0.0915	mg/mL	Replicate 2
734.0	0.0	TG2Ethyl	0.5376	1.0000	0.0917	mg/mL	Replicate 3
		S.DEV:	0.0002		MEAN 0.0915	mg/mL	
734.0	0.0	YK1Ethyl	0.3617	1.0000	0.1361	mg/mL	
734.0	0.0	YK1Ethyl	0.3605	1.0000	0.1364	mg/mL	Replicate 2
734.0	0.0	YK1Ethyl	0.3595	1.0000	0.1367	mg/mL	Replicate 3
		S.DEV:	0.0003		MEAN 0.1364	mg/mL	
734.0	0.0	YK2Ethyl	0.3584	1.0000	0.1370	mg/mL	
734.0	0.0	YK2Ethyl	0.3572	1.0000	0.1373	mg/mL	Replicate 2
734.0	0.0	YK2Ethyl	0.3561	1.0000	0.1376	mg/mL	Replicate 3
		S.DEV:	0.0003		MEAN 0.1373	mg/mL	

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ภาคผนวก ฉ

ข้อมูลฤทธิ์ต้านอนุมูล ABTS ในแต่ละสายพันธุ์ที่สกัดด้วยตัวทำละลาย  
เมทานอลที่วิเคราะห์ด้วยโปรแกรม SPSS

## Oneway

### Descriptives

aeac\_methanol extract

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
					Green queen	6
Mon top	6	.408083	.0030890	.0012611	.404842	.411325
Top green	6	.618333	.0042387	.0017304	.613885	.622782
Yok kheo	6	.353250	.0030455	.0012433	.350054	.356446
Total	24	.439521	.1073558	.0219139	.394188	.484853

### Descriptives

aeac\_methanol extract

	Minimum	Maximum
Green queen	.3740	.3845
Mon top	.4035	.4120
Top green	.6130	.6250
Yok kheo	.3495	.3570
Total	.3495	.6250

### Test of Homogeneity of Variances

aeac\_methanol extract

Levene Statistic	df1	df2	Sig.
.175	3	20	.912

## ANOVA

aeac\_methanol extract

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.265	3	.088	7072.786	.000
Within Groups	.000	20	.000		
Total	.265	23			

## Post Hoc Tests

## Multiple Comparisons

Dependent Variable: aeac\_methanol extract

LSD

(I) cultivar	(J) cultivar	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Green queen	Mon top	-.029667*	.0020397	.000	-.033921	-.025412
	Top green	-.239917*	.0020397	.000	-.244171	-.235662
	Yok kheo	.025167*	.0020397	.000	.020912	.029421
Mon top	Green queen	.029667*	.0020397	.000	.025412	.033921
	Top green	-.210250*	.0020397	.000	-.214505	-.205995
	Yok kheo	.054833*	.0020397	.000	.050579	.059088
Top green	Green queen	.239917*	.0020397	.000	.235662	.244171
	Mon top	.210250*	.0020397	.000	.205995	.214505
	Yok kheo	.265083*	.0020397	.000	.260829	.269338
Yok kheo	Green queen	-.025167*	.0020397	.000	-.029421	-.020912
	Mon top	-.054833*	.0020397	.000	-.059088	-.050579
	Top green	-.265083*	.0020397	.000	-.269338	-.260829

\*. The mean difference is significant at the .05 level.

ภาคผนวก ก

ข้อมูลฤทธิ์ต้านอนุมูล ABTS ในแต่ละสายพันธุ์ที่สกัดด้วยตัวทำละลาย

เอทานอลที่วิเคราะห์ด้วยโปรแกรม SPSS

## Oneway

### Descriptives

aeac\_ethanol extract

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
					Green queen	6
Mon top	6	1.064167	.0021602	.0008819	1.061900	1.066434
Top green	6	1.118000	.0010000	.0004082	1.116951	1.119049
Yok kheo	6	1.038833	.0031728	.0012953	1.035504	1.042163
Total	24	1.027500	.0867965	.0177173	.990849	1.064151

### Descriptives

aeac\_ethanol extract

	Minimum	Maximum
Green queen	.8830	.8955
Mon top	1.0615	1.0670
Top green	1.1165	1.1190
Yok kheo	1.0350	1.0430
Total	.8830	1.1190

### Test of Homogeneity of Variances

aeac\_ethanol extract

Levene Statistic	df1	df2	Sig.
7.954	3	20	.001

## ANOVA

aeac\_ethanol extract

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.173	3	.058	5735.620	.000
Within Groups	.000	20	.000		
Total	.173	23			

## Post Hoc Tests

## Multiple Comparisons

Dependent Variable: aeac\_ethanol extract

LSD

(I) cultivar	(J) cultivar	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Green queen	Mon top	-.175167*	.0018311	.000	-.178986	-.171347
	Top green	-.229000*	.0018311	.000	-.232820	-.225180
	Yok kheo	-.149833*	.0018311	.000	-.153653	-.146014
Mon top	Green queen	.175167*	.0018311	.000	.171347	.178986
	Top green	-.053833*	.0018311	.000	-.057653	-.050014
	Yok kheo	.025333*	.0018311	.000	.021514	.029153
Top green	Green queen	.229000*	.0018311	.000	.225180	.232820
	Mon top	.053833*	.0018311	.000	.050014	.057653
	Yok kheo	.079167*	.0018311	.000	.075347	.082986
Yok kheo	Green queen	.149833*	.0018311	.000	.146014	.153653
	Mon top	-.025333*	.0018311	.000	-.029153	-.021514
	Top green	-.079167*	.0018311	.000	-.082986	-.075347

\*. The mean difference is significant at the .05 level.

ภาคผนวก จ

ข้อมูลฤทธิ์ต้านอนุมูล ABTS ในแต่ละสายพันธุ์ที่สกัดด้วยตัวทำละลาย  
เอทิลอะซิเตตที่วิเคราะห์ด้วยโปรแกรม SPSS

## Oneway

### Descriptives

aeac\_ethyl acetate extract

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
					Green queen	6
Mon top	6	.814333	.0025820	.0010541	.811624	.817043
Top green	6	.456083	.0019343	.0007897	.454053	.458113
Yok kheo	6	.684250	.0028062	.0011456	.681305	.687195
Total	24	.658875	.1316484	.0268726	.603285	.714465

### Descriptives

aeac\_ethyl acetate extract

	Minimum	Maximum
Green queen	.6780	.6835
Mon top	.8105	.8175
Top green	.4530	.4585
Yok kheo	.6805	.6880
Total	.4530	.8175

### Test of Homogeneity of Variances

aeac\_ethyl acetate extract

Levene Statistic	df1	df2	Sig.
.534	3	20	.664

## ANOVA

aeac\_ethyl acetate extract

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.399	3	.133	23458.830	.000
Within Groups	.000	20	.000		
Total	.399	23			

## Post Hoc Tests

## Multiple Comparisons

Dependent Variable: aeac\_ethyl acetate extract

LSD

(I) cultivar	(J) cultivar	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Green queen	Mon top	-.133500*	.0013739	.000	-.136366	-.130634
	Top green	.224750*	.0013739	.000	.221884	.227616
	Yok kheo	-.003417*	.0013739	.022	-.006282	-.000551
Mon top	Green queen	.133500*	.0013739	.000	.130634	.136366
	Top green	.358250*	.0013739	.000	.355384	.361116
	Yok kheo	.130083*	.0013739	.000	.127218	.132949
Top green	Green queen	-.224750*	.0013739	.000	-.227616	-.221884
	Mon top	-.358250*	.0013739	.000	-.361116	-.355384
	Yok kheo	-.228167*	.0013739	.000	-.231032	-.225301
Yok kheo	Green queen	.003417*	.0013739	.022	.000551	.006282
	Mon top	-.130083*	.0013739	.000	-.132949	-.127218
	Top green	.228167*	.0013739	.000	.225301	.231032

\*. The mean difference is significant at the .05 level.

ภาคผนวก ฉ

ค่าการดูดกลืนแสงของสารมาตรฐานวิตามินซี  
และสารละลายบรอกโคลีเริ่มงอกทุกสายพันธุ์ด้วยวิธีรีดิวซ์

Date : 3/23/2011 Time : 17:18:22

## CALIBRATION

Date: 3/23/2011 Time: 5:00:10 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08063015  
 Method: ascorbic  
 Ordinate mode: Single wavelength  
 Baseline: No correction ( 0.00 0.00 )  
 Analyst:

Wavelength(s)	Sample ID	Concentration	Ord. value	Comment
700.0	0.0	ascorbic.A01 0.0000 mg/mL	0.0001	
700.0	0.0	ascorbic.A01 0.0000 mg/mL	0.0002	Replicate 2
700.0	0.0	ascorbic.A01 0.0000 mg/mL	0.0003	Replicate 3
		S.DEV: 0.0001	MEAN: 0.0002	
700.0	0.0	ascorbic.A02 0.1000 mg/mL	0.9627	
700.0	0.0	ascorbic.A02 0.1000 mg/mL	0.9595	Replicate 2
700.0	0.0	ascorbic.A02 0.1000 mg/mL	0.9592	Replicate 3
		S.DEV: 0.0019	MEAN: 0.9605	
700.0	0.0	ascorbic.A03 0.2000 mg/mL	1.6811	
700.0	0.0	ascorbic.A03 0.2000 mg/mL	1.6751	Replicate 2
700.0	0.0	ascorbic.A03 0.2000 mg/mL	1.6739	Replicate 3
		S.DEV: 0.0038	MEAN: 1.6767	
700.0	0.0	ascorbic.A04 0.3000 mg/mL	2.4360	
700.0	0.0	ascorbic.A04 0.3000 mg/mL	2.4363	Replicate 2
700.0	0.0	ascorbic.A04 0.3000 mg/mL	2.4360	Replicate 3
		S.DEV: 0.0002	MEAN: 2.4361	

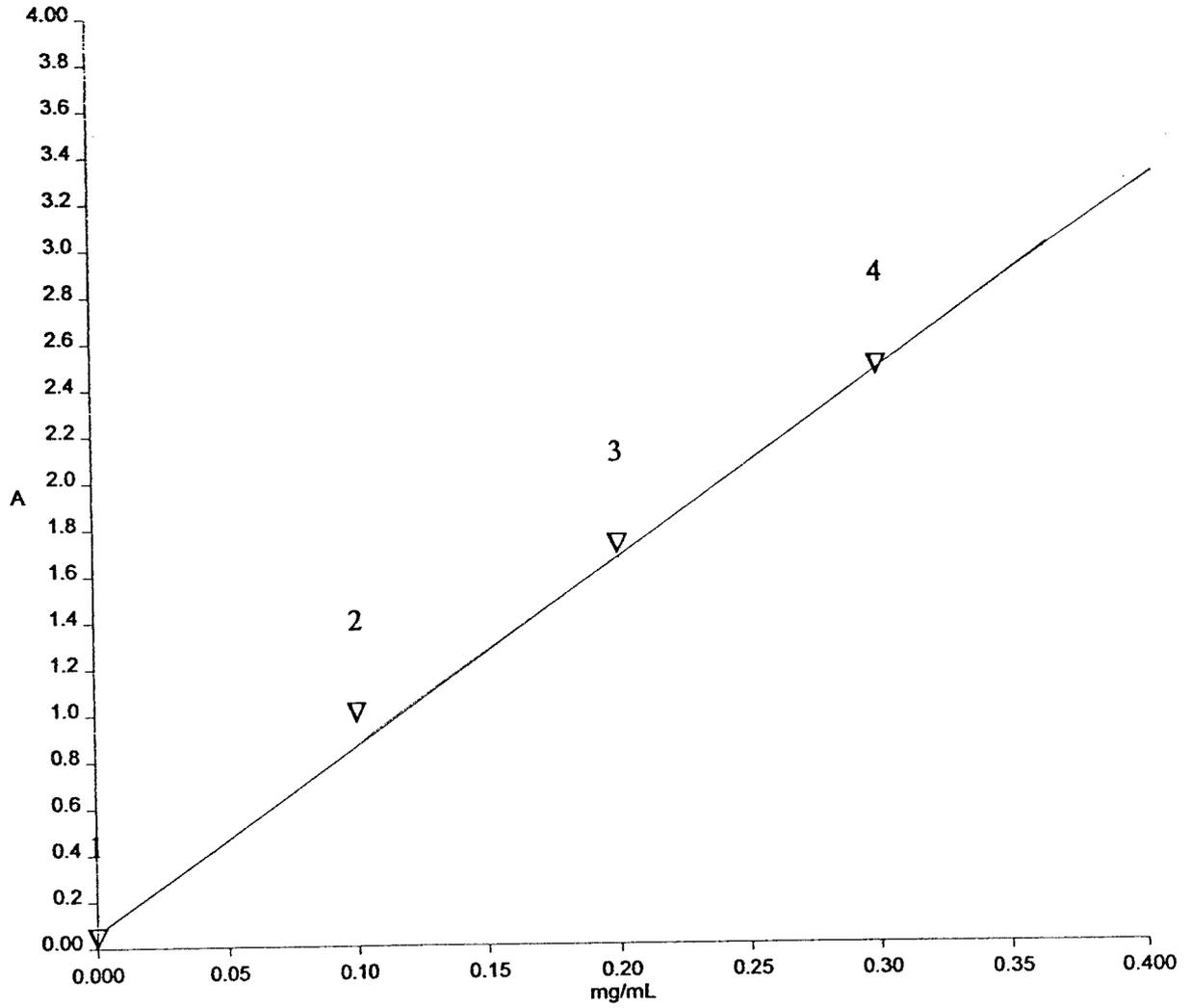
Equation:  $y = 6.479900e-02 + 8.023823e+00 * x$ 

Residual error: 0.084280

Correlation coefficient: 0.997801

Date: 3/23/2011

Time: 5:18:35 PM



ascorbic - 3/23/2011 -  $y = 6.479900e-02 + 8.023823e+00 * x$

Date : 3/23/2011 Time : 17:18:09

## Concentration Results

Date: 3/23/2011 Time: 5:05:17 PM  
 Instrument: PerkinElmer Lambda 25 Serial No: 501S08063015  
 Method: ascorbic  
 Ordinate mode: Single wavelength  
 Slit: UV/VIS: 1.00 nm  
 Baseline: No correction ( 0.00 0.00 )  
 Result Filename: reduce.RCO  
 Autozero performed: 3/23/2011 5:00:07 PM  
 Analyst:

Wavelength(s)	Sample ID	Ordinate	Factor	Concentration	Sample Info	
700.0	0.0	YK1	0.2654	1.0000	0.0250 mg/mL	
700.0	0.0	YK1	0.2654	1.0000	0.0250 mg/mL	Replicate 2
700.0	0.0	YK1	0.2650	1.0000	0.0250 mg/mL	Replicate 3
		S.DEV:	0.0000		MEAN 0.0250 mg/mL	
700.0	0.0	YK2	0.2649	1.0000	0.0249 mg/mL	
700.0	0.0	YK2	0.2647	1.0000	0.0249 mg/mL	Replicate 2
700.0	0.0	YK2	0.2645	1.0000	0.0249 mg/mL	Replicate 3
		S.DEV:	0.0000		MEAN 0.0249 mg/mL	
700.0	0.0	YK3	0.2640	1.0000	0.0248 mg/mL	
700.0	0.0	YK3	0.2652	1.0000	0.0250 mg/mL	Replicate 2
700.0	0.0	YK3	0.2654	1.0000	0.0250 mg/mL	Replicate 3
		S.DEV:	0.0001		MEAN 0.0249 mg/mL	
700.0	0.0	MT1	1.2359	1.0000	0.1460 mg/mL	
700.0	0.0	MT1	1.2352	1.0000	0.1459 mg/mL	Replicate 2
700.0	0.0	MT1	1.2349	1.0000	0.1458 mg/mL	Replicate 3
		S.DEV:	0.0001		MEAN 0.1459 mg/mL	
700.0	0.0	MT2	1.2438	1.0000	0.1469 mg/mL	
700.0	0.0	MT2	1.2423	1.0000	0.1468 mg/mL	Replicate 2
700.0	0.0	MT2	1.2416	1.0000	0.1467 mg/mL	Replicate 3
		S.DEV:	0.0001		MEAN 0.1468 mg/mL	
700.0	0.0	MT3	1.2432	1.0000	0.1469 mg/mL	
700.0	0.0	MT3	1.2420	1.0000	0.1467 mg/mL	Replicate 2
700.0	0.0	MT3	1.2419	1.0000	0.1467 mg/mL	Replicate 3
		S.DEV:	0.0001		MEAN 0.1468 mg/mL	
700.0	0.0	GQ1	2.3822	1.0000	0.2888 mg/mL	
700.0	0.0	GQ1	2.3812	1.0000	0.2887 mg/mL	Replicate 2
700.0	0.0	GQ1	2.3808	1.0000	0.2886 mg/mL	Replicate 3
		S.DEV:	0.0001		MEAN 0.2887 mg/mL	
700.0	0.0	GQ2	2.3807	1.0000	0.2886 mg/mL	
700.0	0.0	GQ2	2.3810	1.0000	0.2887 mg/mL	Replicate 2
700.0	0.0	GQ2	2.3813	1.0000	0.2887 mg/mL	Replicate 3
		S.DEV:	0.0000		MEAN 0.2887 mg/mL	
700.0	0.0	GQ3	2.3790	1.0000	0.2884 mg/mL	
700.0	0.0	GQ3	2.3792	1.0000	0.2884 mg/mL	Replicate 2
700.0	0.0	GQ3	2.3800	1.0000	0.2885 mg/mL	Replicate 3
		S.DEV:	0.0001		MEAN 0.2885 mg/mL	
700.0	0.0	TG1	2.1770	1.0000	0.2632 mg/mL	
700.0	0.0	TG1	2.1767	1.0000	0.2632 mg/mL	Replicate 2
700.0	0.0	TG1	2.1762	1.0000	0.2631 mg/mL	Replicate 3
		S.DEV:	0.0001		MEAN 0.2632 mg/mL	
700.0	0.0	TG2	2.1594	1.0000	0.2610 mg/mL	
700.0	0.0	TG2	2.1590	1.0000	0.2610 mg/mL	Replicate 2
700.0	0.0	TG2	2.1592	1.0000	0.2610 mg/mL	Replicate 3
		S.DEV:	0.0000		MEAN 0.2610 mg/mL	
700.0	0.0	TG3	2.1579	1.0000	0.2609 mg/mL	
700.0	0.0	TG3	2.1578	1.0000	0.2609 mg/mL	Replicate 2
700.0	0.0	TG3	2.1578	1.0000	0.2609 mg/mL	Replicate 3
		S.DEV:	0.0000		MEAN 0.2609 mg/mL	

ภาคผนวก ข

ข้อมูลฤทธิ์ต้านอนุมูลด้วยวิธีรีดิวซ์ในแต่ละสายพันธุ์  
ที่วิเคราะห์ด้วยโปรแกรม SPSS

# Oneway

## Descriptives

aeac\_reduce method

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Green queen	9	.288600	.0001414	.0000471	.288491	.288709
Mon top	9	.149822	.0100890	.0033630	.142067	.157577
Top green	9	.261689	.0011096	.0003699	.260836	.262542
Yok kheo	9	.024944	.0000726	.0000242	.024889	.025000
Total	36	.181264	.1057688	.0176281	.145477	.217051

## Descriptives

aeac\_reduce method

	Minimum	Maximum
Green queen	.2884	.2888
Mon top	.1458	.1767
Top green	.2609	.2632
Yok kheo	.0248	.0250
Total	.0248	.2888

## Test of Homogeneity of Variances

aeac\_reduce method

Levene	df1	df2	Sig.
Statistic			
4.650	3	32	.008

## ANOVA

aeac\_reduce method

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.391	3	.130	5055.764	.000
Within Groups	.001	32	.000		
Total	.392	35			

## Post Hoc Tests

## Multiple Comparisons

Dependent Variable: aeac\_reduce method

LSD

(I) cultivar	(J) cultivar	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Green queen	Mon top	.138778*	.0023926	.000	.133904	.143651
	Top green	.026911*	.0023926	.000	.022038	.031785
	Yok kheo	.263656*	.0023926	.000	.258782	.268529
Mon top	Green queen	-.138778*	.0023926	.000	-.143651	-.133904
	Top green	-.111867*	.0023926	.000	-.116740	-.106993
	Yok kheo	.124878*	.0023926	.000	.120004	.129751
Top green	Green queen	-.026911*	.0023926	.000	-.031785	-.022038
	Mon top	.111867*	.0023926	.000	.106993	.116740
	Yok kheo	.236744*	.0023926	.000	.231871	.241618
Yok kheo	Green queen	-.263656*	.0023926	.000	-.268529	-.258782
	Mon top	-.124878*	.0023926	.000	-.129751	-.120004
	Top green	-.236744*	.0023926	.000	-.241618	-.231871

\*. The mean difference is significant at the .05 level.