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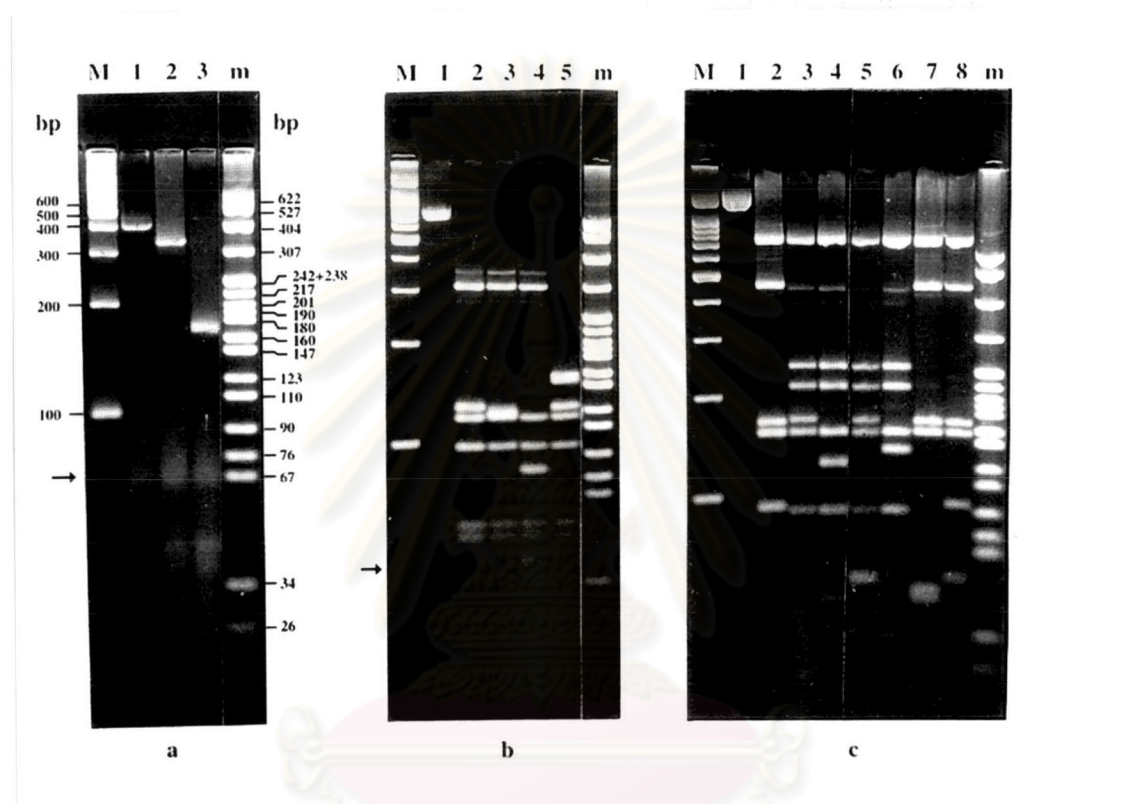
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ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

APPENDIX A

Restriction profiles of three mtDNA segments of *Apis cerana* digested with *Dra*I. Arrows indicate primer dimer. (Data from Sihanuntavong, 1999)



Lane M and m 100 bp and pBR322-*Msp* I markers

Lane 1 Undigested amplified DNA

(a) Two restriction profiles observed from srRNA gene

Lane 2-3 Restriction patterns A and B, respectively

(b) Four restriction profiles observed from lrRNA gene

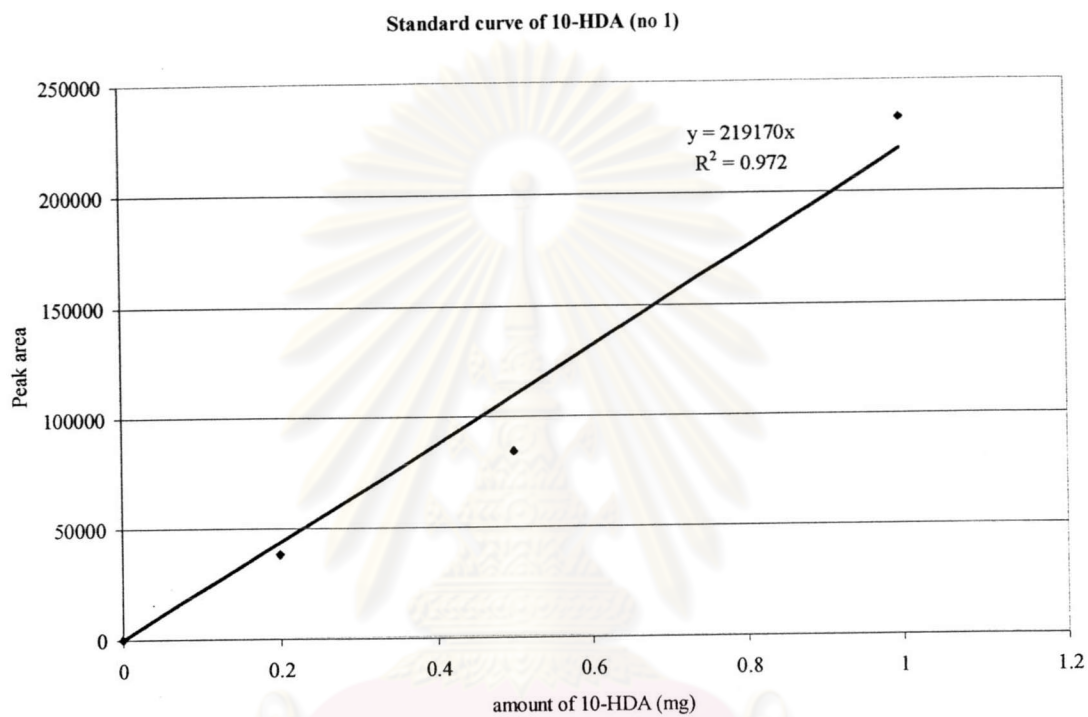
Lane 2-5 Restriction patterns A, B, C and D, respectively

(c) Seven restriction profiles observed from intergenic COI-COII region.

Lane 2-8 Restriction patterns A, B, C, D, E, F and G, respectively

APPENDIX B

Standard curve and Chromatogram of Gas Chromatography



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Gas chromatography chromatogram of royal jelly

Southern Honeybee royal jelly

1.435 1.896 2.171
2.869 3.623 4.244

** CALCULATION REPORT **

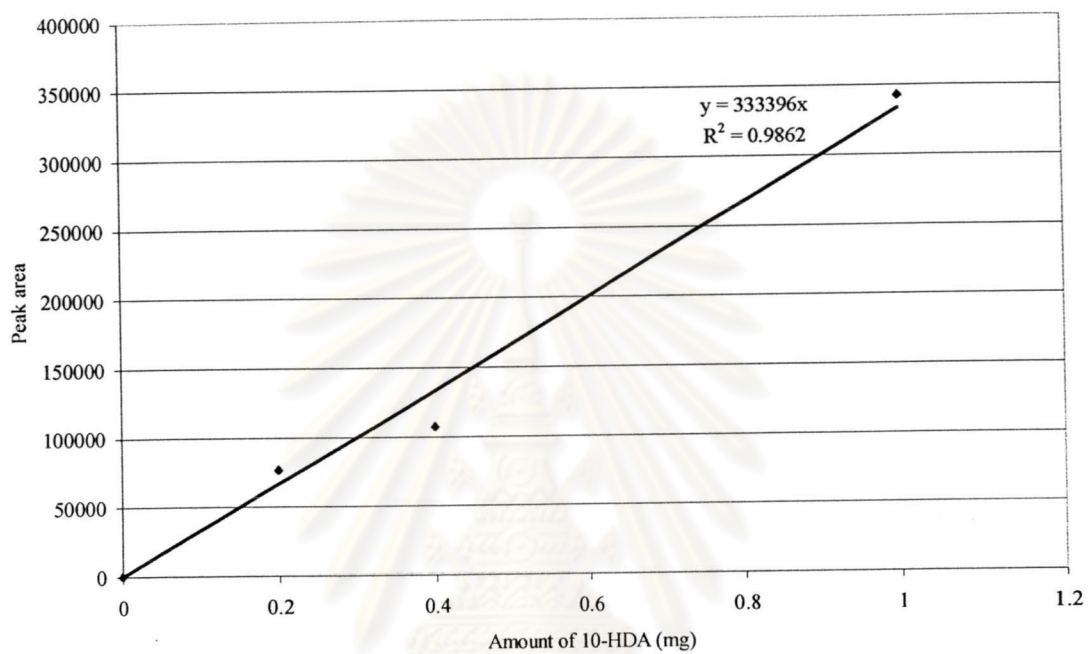
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1	2	1.435	5706	1278	T		0.8924	
	3	1.896	35473	4642	T		5.5485	
	4	2.171	23119	2749	TV		3.6631	
	5	2.869	7240	711	T		1.1325	
	6	3.623	203367	11694	T		31.8099	
	7	4.244	364116	14435	TV		56.9535	
		TOTAL	639321	35508			100	

1.436 1.893 2.167
2.850 3.603 4.224
4.725

** CALCULATION REPORT **

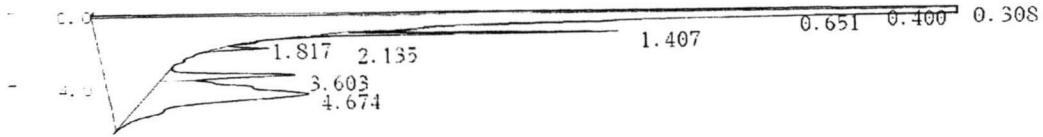
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1	2	1.436	28396	5550	T		4.3977	
	3	1.893	41558	5337	T		6.4362	
	4	2.167	26267	3043	TV		4.0681	
	5	2.85	8177	752	T		1.2664	
	6	3.603	227647	13279	T		35.2564	
	7	4.224	219066	11825	TV		33.9275	
	8	4.725	94578	3614	TV		14.6477	
		TOTAL	645689	43399			100	

Standard curve of 10-HDA



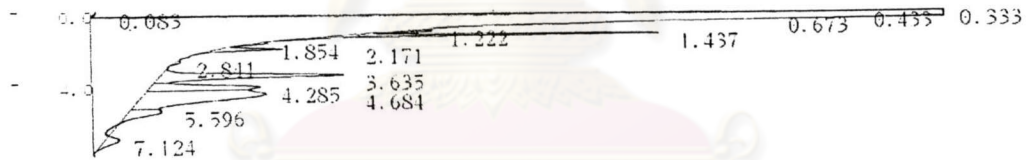
ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Northern Honeybee royal jelly



** CALCULATION REPORT **

CH	PKNO	TIME	AREA	HEIGHT	MK	IDNO	CONC	NAME
1	1	0.308	4340965	1391708	E		33.8601	
	2	0.4	7953306	1391727	SVE		62.0368	
	3	0.651	18223	7969	T		0.1421	
	4	1.407	65422	10836	T		0.5103	
	5	1.817	2145	270	T		0.0167	
	6	2.135	15775	1794	T		0.123	
	7	3.603	76937	4660	T		0.6001	
	8	4.674	347537	5818	TV		2.7108	
TOTAL			12820308	2814781			100	

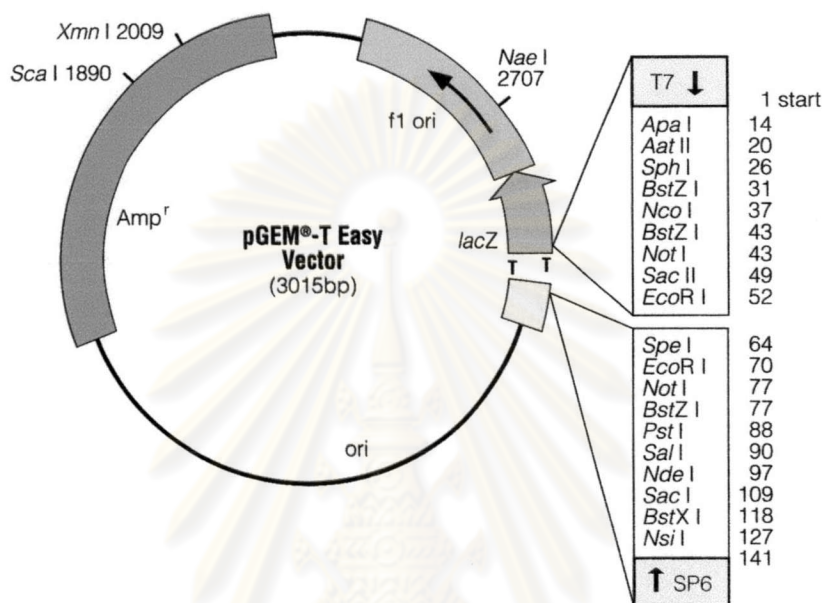


** CALCULATION REPORT **

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	2	0.333	4151776	1392311	E		31.8465	
	3	0.433	8360409	1392349	SVE		64.129	
	4	0.673	11802	5133	T		0.0905	
	5	1.222	3409	752	T		0.0261	
	6	1.437	73057	11683	T		0.5604	
	7	1.854	3136	422	T		0.0241	
	8	2.171	21783	2404	T		0.1671	
	9	2.811	1660	146	T		0.0127	
	10	3.635	113631	6875	T		0.8716	
	11	4.285	74925	4087	TV		0.5747	
	12	4.684	180017	4524	TV		1.3811	
	13	5.596	30607	1194	TV		0.2348	
	14	7.124	9926	539	TV		0.0761	
TOTAL			13036856	2822493			100	

APPENDIX C

pGEM[®]-T Easy Vector circle map



pGEM[®]-T Easy Vector Sequence reference points:

T7 RNA Polymerase transcription initiation site	1
SP6 RNA Polymerase transcription initiation site	141
T7 RNA Polymerase promoter (-17 to +3)	2999-3
SP6 RNA Polymerase promoter (-17 to +3)	139-158
Multiple cloning region	10-128
<i>lacZ</i> start codon	180
<i>lac</i> operon sequences	2836-2996, 166-395
<i>lac</i> operator	200-216
β -lactamase coding region	1337-2197
phage <i>f1</i> region	2380-2835
binding site of pUC/M13 Forward Sequencing Primer	2956-2972
binding site of pUC/M13 Reverse Sequencing Primer	176-192

pGEM[®]-T Easy Vector Sequence

```

1  GGGCGAATTG  GGCCCGACGT  CGCATGCTCC  CGGCCGCCAT  GCGGCCCGCG
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 3001 ATACGACTCA CTATA

APPENDIX D

cDNA clone Sequences

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 ATTGCCCAAAAA



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Base codes and ambiguity codes

CAPITAL LETTER: the algorithm estimates that is likely that the sequence
has an uncertainty less than one percent

Italic letter: the algorithm estimates that the sequence has an
uncertainty greater than one percent

Small letter: the algorithm is uncertain whether or not there is a base at
that position

Ambiguity codes

Code:	Base
M	A or C
R	A or G
W	A or T
S	C or G
Y	C or T
K	G or T
V	A, C or G
H	A, C or T
D	A, G or T
B	C, G or T
N	A, C, G or T

BIOGRAPHY

Miss Namtip Trongnipatt was born on March 22nd, 1977, Bangkok, Thailand. She got the Bachelor's degree of Science, Major Biochemistry from Chulalongkorn University in 1999. She has studied her Master's degree at the department of Biochemistry, Faculty of Science, Chulalongkorn University.



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