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## **APPENDICES**

## **APPENDIX A**

## Culture media

All media were dispensed and sterilized in autoclave for 15 minutes at 15 pound pressure (121 °C) except for the carbon utilization test medium which was sterilized at 10 pound for 10 minutes

### 1. Boullion Gelatin broth

Peptone	1.0 g
Meat extract	0.5 g
NaCl	0.5 g
Gelatin	15.0 g
Distilled water	100 ml
pH 7.0-7.2	

### 2. Basal Inorganic Nitrogen medium

(NH <sub>4</sub> ) <sub>2</sub> HPO <sub>4</sub>	0.1 g
KCl	0.02 g
MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.02 g
Agar	7.5 g
pH 7.0	

### 3. Carbon utilization medium (ISP-9)

#### Basal mineral salt agar

Carbohydrate	1.0 g
(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	0.264 g
K <sub>2</sub> HPO <sub>4</sub> (anhydrous)	0.238 g
K <sub>2</sub> HPO <sub>4</sub> ·3H <sub>2</sub> O	0.565 g
MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.1 g
<u>Pridham and Gottlieb trace salt (B)</u>	0.1 ml
Agar	1.5 g
Distilled water	100 ml
pH 6.8-7.0	

Pridham and Gottlieb trace salt (B)

CuSO <sub>4</sub> .5H <sub>2</sub> O	0.64 g
FeSO <sub>4</sub> .7H <sub>2</sub> O	0.11 g
MnCl <sub>2</sub> .4H <sub>2</sub> O	0.79 g
ZnSO <sub>4</sub> .7H <sub>2</sub> O	0.15 g
Distilled water	100 ml

**4. Esculin broth**

Esculin	0.1 g
Ferric citrate	0.05 g
Peptone	1.5 g
NaCl	0.5 g
Distilled water	100 ml

**5. Glycerol-Asparagine agar**

L-asparagine (anhydrous basis)	0.1 g
Glycerol	1.0 g
K <sub>2</sub> HPO <sub>4</sub> (anhydrous basis)	0.1 g
Pridham and Gottlieb trace salt (A)	0.1 ml
Agar	1.5 g
Distilled water	100 ml
pH 7.0-7.4	

Pridham and Gottlieb trace salt (A)

FeSO <sub>4</sub> .7H <sub>2</sub> O	0.1 g
MnCl <sub>2</sub> .4H <sub>2</sub> O	0.1 g
ZnSO <sub>4</sub> .7H <sub>2</sub> O	0.1 g
Distilled water	100 ml

**6. Inorganic salt- starch agar (ISP-4)**

Soluble starch (Difco)	1 g
K <sub>2</sub> HPO <sub>4</sub> (anhydrous)	0.1 g

MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.1 g
NaCl	0.1 g
(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	0.2 g
CaCO <sub>3</sub>	0.2 g
Pridham and Gottlieb trace salt (A)	0.1 ml
Agar	1.5 g
Distilled water	100 ml
pH 7.0-7.4	

#### 7. Muller-Hinton medium (MHM)

Muller-Hinton (Difco)	3.4 g
Distilled water	100 ml
pH 7.3	

#### 8. Nutrient agar

Nutrient agar (Difco)	2.3 g
Distilled water	100 ml

#### 9. Nitrate broth

Peptone	1.0 g
KNO <sub>3</sub>	0.1 g
NaCl	0.5 g
Distilled water	100 ml
pH 7.0	

#### 10. Oatmeal agar (ISP-3)

Oatmeal	20 g
Agar	18 g
Distilled water	100 ml
pH 7.0-7.4	



**11. Potato starch agar**

Potato Starch	1.0 g
Glycerol	1.0 g
K <sub>2</sub> HPO <sub>4</sub>	0.2 g
(NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub>	0.2 g
MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.1 g
NaCl	0.1 g
CaCO <sub>3</sub>	0.2 g
Agar	1.2 g
Distilled water	100 ml
pH 7.0-7.3	

**12. Production medium**

Yeast extract	0.4 g
Glucose	0.4 g
Malt extract	1.0 g
CaCO <sub>3</sub>	0.1 g
pH 7.3	

**13. Sabouraud dextrose agar (SDA)**

Sabouraud dextrose agar	3.0 g
Distilled water	100 ml

**14. Skim milk**

Skim milk (Difco)	10.0 g
Distilled water	100 ml

**15. Starch-casein nitrate agar**

Starch	1.0 g
Sodium caseinate	0.03 g
KNO <sub>3</sub>	0.2 g
Agar	1.5 g

Distilled water	100 ml
pH 7.0-7.4	

**16. Seed medium**

Yeast extract	0.4 g
Glucose	0.4 g
Malt extract	1.0 g
Distilled water	100 ml
pH 7.3	

**17. Tyrosine agar**

Glycerol	1.5 g
L-Tyrosine	0.05 g
L-Asparagine	0.1 g
K <sub>2</sub> HPO <sub>4</sub> (anhydrous)	0.05 g
MgSO <sub>4</sub> ·7H <sub>2</sub> O	0.05 g
NaCl	0.05 g
FeSO <sub>4</sub> ·7H <sub>2</sub> O	0.01 g
Pridham and Gottlieb trace salt (A)	0.1 ml
Agar	1.5 g
Distilled water	100 ml
pH 7.2-7.4	

**18. Yeast Extract- Malt Extract agar (ISP-2)**

Yeast extract	0.4 g
Malt extract	1.0 g
Glucose	0.4 g
Agar	1.5 g
Distilled water	100 ml
pH 7.3	

## **APPENDIX B**

## Reagent and Buffers

### 1. 6N HCl

Conc. HCl	60 ml
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Distilled water	60 ml
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Add. Conc. HCl into the distilled water.

### 2. Ninhydrin solution

Ninhydrin	0.3 g
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l-Butanol	100 ml
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Glacial acetic acid	3 ml
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### 3. Nitrate reduction test reagent

#### Sulphanilic acid solution

Sulphanilic acid	0.8 g
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5 N Acetic acid	100 ml
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Dissolve by gentle heating in a fume hood.

#### *N,N*- dimethyl-1-naphthylamine solution

N,N- dimethyl-1-naphthylamine solution	0.5 g
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5 N Acetic acid	100 ml
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Dissolve by gentle heating in a fume hood.

Two drops of sulphanilic acid solution and three drops of *N,N*- dimethyl-1-naphthylamine into peptone nitrate broth inoculating with the test microorganisms.

### 4. Phenol : Chloroform (1:1 v/v)

Crystalline phenol was liquidified in water bath at 65 °C and mixed with chloroform in the ratio of 1:1 (v/v). The solution was stored in a light tight bottle.

### 5. 10% Sodium dodecyl sulphate (SDS)

The stock solution of 10% SDS was prepared by dissolved 10 g of sodium dodecyl sulphate in 100 ml steried distilled water. Sterilization is not required for the preparation of this stock solution.

**6. 20XSSC**

3M NaCl

0.1 M Tri-sodiumcitrate

The 20XSSC was adjusted the pH to 7.0 with 1 N NaOH. The solution was sterilized by autoclaving for 15 minutes at 15 lb/in<sup>2</sup>.

**7. RNase A solution**

Rnase A 20 mg

0.15 M NaCl 10 ml

Dissolved 20 mg Rnase A in 10 ml 0.15 m NaCl and heat at 95 °C for 5-10 minutes.

Keep Rnase A solution in -20 °C.

**8. RNase T<sub>1</sub> solution**Rnase T<sub>1</sub> 80 µl

0.1 M Tris-HCl (pH7.5) 10 ml

**9. Nuclease P<sub>1</sub> solution**Nuclease P<sub>1</sub> 0.1 mg40 mM CH<sub>3</sub>COONa+12 mM ZnSO<sub>4</sub> (pH 5.3)**10. Alkaline phosphatase solution**

Alkaline phosphatase 2.4 units

0.1 M Tris-HCl (pH8.1) 1 ml

**11. 0.1 M Tris-HCl buffer, pH 9**

Tris 1.21 mg

Distilled water 100 ml

Adjust the pH to 9 with HCl

**12. Saline-EDTA**

0.1 M NaCl

50 mM EDTA (pH 8)

**13. Ethidium bromide solution (10 mg/ml)**

The ethidium bromide solution was prepared by dissolved 1 g of ethidium bromide in 100 ml of distilled water. The solution was stored in light-tight container at room temperature.

**14. Agarose gel**

Agarose	1.6 g
1XTBE buffer	200 ml

**15. Reagent and buffer for DNA-DNA hybridization****15.1 Prehybridization solution**

100x Denhardt solution	5 ml
10 mg/ml Salmon sperm DNA	1 ml
20x SSC	10 ml
Formamide	50 ml
Distilled water	34 ml

**15.2 Hybridization solution**

Prehybridization solution	100 ml
Dextran-sulfate	5 g

**15.3 Solution I**

Bovine serum albumin	0.25 g
Titron X-100	50 $\mu$ l
PBS	50 ml

**15.4 Solution II**

Streptavidin-POD	1 $\mu$ l
Solution I	4 ml

**15.5 Solution III**

3,3',5,5'-Tetramethylbenzidine (TMB) (10 mg/ml in DMSO)	100 $\mu$ l
0.3% H <sub>2</sub> O <sub>2</sub>	100 $\mu$ l
0.4 M Citric acid-0.2 M Na <sub>2</sub> HPO <sub>4</sub> buffer pH 6.2 in 10% DMSO	100 $\mu$ l

**15.6 2M H<sub>2</sub>SO<sub>4</sub>**

H <sub>2</sub> SO <sub>4</sub>	22 ml
Distilled water	178 ml

The solution was sterilized by autoclaving

## **APPENDIX C**



## Primers and Nucleotide sequences of the PCR amplified 16S rDNA

### 1. List of primer for 16S rDNA PCR amplification and Sequencing

8-27f 5'-AGAGTTTGATC(A/C)TGGCTCAG-3'

530f 5'-GTGCCAGC(A/C)GCCGCGG-3'

1114f 5'-GCAACGAGCGCAACCC-3'

1392r 5'-ACGGGCGGTGTGT(A/G)C-3'

### 2. Nucleotide sequences of the PCR amplified 16S rDNA

GGCGTGCTTACACATGCAAGTCGAACGATGAACCGGTTTCGGCCGGGGATTAGTGGCGAACGGGTGAGTAACA  
CGTGGGCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGACTGCCGACCG  
CATGGTCTGGTGGTGAAAGCTCCGGCGGTGCAGGATGAGCCCGCGCCTATCAGCTTGTGGTGGGGTATG  
GCCTACCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCAG  
CTCTACGGGAGGACGAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCCGCTGAGGGA  
TGACGGCCTTCGGGTTGTAACCTCTTTCAGCAGGGAAGAAGCGCAAGTGACGGTACCTGCAGAAGAAGCGCC  
GGCTAACTACGTGCCAGCAGCCGCGTAATACGTAGGGCGCAAGCCTGTCCGGAATTATTGGGCGTAAAGAG  
CTCGTAGGCGGCTTGTCCGCTCGGATGTGAAAGCCCGGGGCTTAACTCCGGGTCTGCATTTCGATACGGG  
CTAGAGTTCGGTAGGGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGT  
GGCGAAGGCGGATCTCTGGGCCGATACTGACGCTGAGGAGCGAAAGCCTGGGGAGCGAACAGGATTAGATACC  
CTGGTAGTCCACGCCGTAACGTTGGGAACTAGGTGTGGGCGACATTCACGTTGTCCGTGCCGACGTAACG  
CATTAAAGTTCCTCCGCTGGGGAGTACGGCCGCAAGGCTAAAACCTCAAAGGAATTGACGGGGGCCCGCACAAAG  
GGCGGAGCATGTGGCTTAATTCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACATCGGAAACCTCTG  
GAGACAGGGCCCCCTTGTGGTCCGTTACAGGTGGTGCATGGCTGTCCGTGAGTCTGAGATGTTGGG  
TTAAGTCCCGCAACGAGCGCAACCTTGTCTGTGTGCCAGCATGCCCTTTGGGGTATGGGGAACCTCACAG  
GAGCACTGCCGGGATCAACTCGGAGGAAGGTGGGGCAGCAGCTCAAGTCATCATGCCCTTATGTCTGGGC  
TGACACGCTGCTACAATGGCCGGTACAATGAGCTGCGAAGCCGTGAGGTGGAGCGAATCTCAAAAAGCCGGTC  
TCAGTTCGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCATTGCTG  
CGGTGAATACGTTCCCGGGCCTTGTACACACCGCCGTCACGTACGAAAGTCGGTAACACCCGAAGCCGGTG  
GCCAACCCCTTGTGGGGGAGCCGTCAGGTGGGACTGGCGATTGGGACAAGTCTAACAAAGGTACCGTAACT

### The PCR amplified 16S rDNA nucleotide sequences of S1-2

CGTGCTTACCATGCAAGTCGAACGATGAAGCCCTTCGGGGTGGATTAGTGGCGAACGGGTGAGTAACACGTGG  
GCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGACACGGGATCGCATGA  
TCTTGTGTGGAAAGCTCCGGCGGTGCAGGATGAGCCCGCGCCTATCAGCTAGTTGGTGGGTAATGGCTCAC  
CAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTA  
CGGGAGGACGAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCCGCTGAGGGATGACGG  
CCTTCGGGTTGTAACCTCTTTCAGCAGGGAAGAAGCGAAAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAA  
CTACGTGCCAGCAGCCGCGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTA  
GGCGGCTTGTACGTCGGTTGTGAAAGCCCGGGCTTAAACCCGGGTCTGCAGTCGATACGGGCGAGGCTAGAG  
TTCGGTAGGGGAGATCGGAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAA  
GGCGGATCTCTGGGCCGATACTGACGCTGAGGAGCGAAAGCCTGGGGAGCGAACAGGATTAGATACCCGGTA  
GTCCACGCCGTAACGGTGGGCACTAGGTGTGGGCGACATTCACGTCGTCCGTGCCGACGTAACGCATTAA  
GTGCCCCGCTGGGAGTACGGCCGCAAGGCTAAAACCTCAAAGGAATTGACGGGGGCCCGCACAAAGCGGCGGA  
GCATGTGGCTTAATTCGACGCAACGCGAAGAACCTTACCAAGGCTTGACATACACCGGAACCGCCAGAGATG  
GTCGCCCCCTTGTGGTCCGTTGTACAGGTGGTGCATGGCTGTCCGTGAGTCTGCTGAGATGTTGGGTTAAG  
TCCGCGAACAGGCAACCCCTTGTCCGTTGTGCCAGCAGGCCCTTGTGGTCTGGGACTCACGGGCGAGACC  
GCCGGGTTCAACTCGGAGGAAGGTGGGCGACGACGTCAAAGTCATCATGCCCTTATGTCTTGGGCTGCACAC  
GTGCTACAATGGCCGGTACAATGAGCTGCGATACCGCGAGGTGGAGCGAATCTCAAAAAGCCGGTCTCAGTTC  
GGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTCGCTAGTAATCGCAGATCAGCATTGCTGCGGTGAA  
TACGTTCCCGGGCCTTGTACACACCGCCGTCACGTACGAAAGTCGGTAACACCCGAAGCCGGTGGCCAAC  
CCCTTGTGGGAGGAGCTGTGCAAGGTGGGACTGGCGATTGGGACAAGTCTAACAAAGGTACCGTAACT

### The PCR amplified 16S rDNA nucleotide sequences of S3-1

GCGTGCTTACACATGCAAGTCGAACGATGAAGCCCTTCGGGGTGGATTAGTGGCGAACGGGTGAGTAACACGTGGG  
 CAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGACACGGGATCGCATGATCTT  
 CGTGTGGAAAGCTCCGGCGGTGCAGGATGAGCCCGGGCTATCAGCTAGTTGGTGAGGTAACGGCTACCAAGGC  
 GACGACGGGTAGCCGGCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGAGGCA  
 GCAGTGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACGGCCTTCGGGTTGT  
 AAACCTCTTTCAGCAGGAAGAAGCGAAAGTGACGGTACCTGCAGAAGAAGCGCCGGTAACTACGTGCCAGCAGC  
 CGCGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGCGGCTTGTACGTCGG  
 TTGTGAAAGCCCGGGGCTTAACCCCGGGTCTGCAGTCCATACGGGCAGGCTAGAGTTCGGTAGGGGAGATCGGAA  
 TTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTG  
 ACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGAACCCTGGTAGTCCACGCGTAAACGGTGGGCACTAG  
 GTGTGGGCGACATTCCACGTCGTCCGTGCCGAGCTAACGCATTAAGTGCCCGCCTGGGAGTACGGCCGAAGGC  
 TAAACTCAAAGGAATTGACGGGGGCCGCAAGCGGCGGAGCATGTGGCTTAATTTCGACGCAACGCGAAGAACC  
 TTACCAAGGCTTGACATACACCGGAAACGGCCAGAGATGGTGCSCCCTTGGTCGGTGTACAGGTGGTGCATGGCT  
 GTCATCAGCTCGTCTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTGTCCCTGTTGCCACAAGGCCCC  
 TTGTTGGTGCTGGGGACTCACGGGAGACCGCCGGGTCCAACCTCGGAAGGAAGGTGGGACGACGTCAAGTCATCA  
 TGCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAATGAGCTGCGATACCGCGAGGTGGAGCGAA  
 TCTCAAAAAGCCGCTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCATGAAGTCGGAGTTCGCTAGTAATCGCAG  
 ATCAGCATTGCTGCGGTGAATACGTTCGCGGGCCTGTACACACCGCCCGTACGTCACGAAAGTCGGTAAACCC  
 GAAGCCGGTGGCCCAACCCTTGTGGGAGGGAGCTGTCGAAGGTGGGACTGGCGATTGGGACGAAGTCGTAACAGG  
 GTAACCGTA

### The PCR amplified 16S rDNA nucleotide sequences of SB12-1

TGGCGCGTGCTTACACATGCAAGTCGAACGGTGAAGCCCTTCGGGGTGGATCAGTGGCGAACGGGTGAGTAACAC  
 GTGGGCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGACCTTCTCCGCATG  
 GGGGTTGGTGTAAAGCTCCGGCGGTGCAGGATGAGCCCGGGCTATCAGCTTGTGGTGGGGTAATGGCTACCA  
 AGCGACGACGGGTAGCCGGCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGA  
 GGCAGCAGTGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCCGCGTGAGGGATGACGGCCTTCGGG  
 TTGTAAACCTCTTTCAGCAGGAAGAAGCGCAAGTGACGGTACCTGCAGAAGAAGCACCGGCTAACTACGTGCCAG  
 CAGCCGCGTAATACGTAGGGTGCAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGCGGCTTGTACG  
 TCGGATGTGAAAGCCCGGGGCTTAACCCCGGGTCTGCATTGATACGGGCAGGCTAGAGTGTGGTAGGGGAGATCG  
 GAATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGGCCATTA  
 CTGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGAATTAGATACCCTGGTAGTCCACGCGTAAACGTTGGGAA  
 CTAGGTGTTGGCGACATTCCACGTCGTCCGTGCCGAGCTAACGCATTAAGTTCGCCCTGGGGAGTACGGCCGC  
 AAGGCTAAAACCTCAAAGGAATTGACGGGGGCCGCAAGCAGCGGAGCATGTGGCTTAATTTCGACGCAACGCGAA  
 GAACCTTACCAAGGCTTGACATATGCCGAAACATCCAGAGATGGGTGCCCCCTTGTGGTTCGGTATACAGGTGGTG  
 CATGGTTGTCGTCAGCTCGTGTCTGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTGTTCGTGTTGCC  
 AGCATGCCTTTCGGGGTGTGGGGACTCACAGGAGACTGCCGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAA  
 ATCATCATGCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGTCCGTACAAAGGGCTGCGATGCCGCGAGGCG  
 GACGAATCCCAAAAAGCCGGCCTCAGTTCGGATTGGGGTCTGCAACTCGACCCATGAAGTTGGAGTTGCTAGTA  
 ATCGCAATCACATGCTGCGGTGAATACGTTCCCGGGCTTGTACACACCGCCCGTACGTC

### The PCR amplified 16S rDNA nucleotide sequences of S33-3

GCGGCGTGCTTAACACATGCAAGTCGAACGGTGAAGCCCTTCGGGGTGGATCAGTGGCGAACGGGTGAGTAACACG  
 ATGGGCAATCTGCCCTGCACTCTGGGACAAGCCCTGAAAACGGGGTCTAATACCGGATATGACCTTCCTCCGCATG  
 GGGTTGGTGGAAAGCTCCGGCGGTGCAGGATGAGCCCGCGGCTATCAGCTTGTGGTGGGGTAATGGCTACCA  
 AGGCGACACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGAGG  
 CAGAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCACGACGCCGCTGAGGGATGACGCCTTCGGTTGTAA  
 ACCTCTTTCAGCAGGGAAGAAGCGCAAGTGACGGTACCTGCAAAGAACACCGGCTAACTACGTGCCATCAGCCGCG  
 TAATACTAGGGTGCAGCGTTGTCCGGAATTATTGGACGTAAAGAGCTCGTAGGCGGCTGTGCGGTGCGATGTGAA  
 AGCCCCGGGGCTTAACCAAGGGTCTGCATTGATACGGGCAGGCTAGAGTGTGGTAGGGGAGATCGGAATTCCTGG  
 TGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGGCCATTACTGACGCTGA  
 GGAGCGAAAGCGTAGGGAGCGAACAGGATTAGATACCTGGTAGTCCACGCCGTAAACGTTGGGAAC TAGTGTTG  
 GCGACATTCCACGTCGTGGTGCCGACGTAACGCATTAAGTTCGCCGCTGGGGAGTACGGCCGCAAGGCTAAAA  
 CTCAAAGGAATTGACGGGGGCCCCGACAAGCAGCGGAGCATGTGGCTTAATTGACGCAACGCGAAGAACCTTACC  
 AAGGCTTGACATATGCCGGAACACCTGGAGACAGGTGCCCTTGTGGTGTATACAGTGGTGTGTTGTCTC  
 AGCTCGTGTCTGAATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTGTTCTGTGTTGACAGCAGAGTAATGTCTG  
 GGGACTCACAGGAGACTGCCGGGGTCAACTCGGAGGAAGGTGGGGACAACGTCAAATCATCAAGCCCCCTATGTA  
 CTGGGCTGCACACGTGCTACAATGGTGGTACAAAGGCTGCGATGCCGTGAGGCGGAGCGAATCCAAAAAGCC  
 GGCCTCAGTTCCGATGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTAGTAATCGCAGATCAGCATGCTG  
 CGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTACGAAAAGTCGGTAACACCCGAAGCCGTGGCC  
 TAACCCTCTGGGATGGAGCCGTCGAAGGTGGGACCAGCGATTGGGACGAAGTCGTAACAAGGTAAC

### The PCR amplified 16S rDNA nucleotide sequences of S38-2

GCTTACACATGCAAGTCGAACGATGAACCGGCTTCGGCCGGGATTAGTGGCGAACGGGTGAGTAACACGTTGGGCA  
 ATCTGCCCTTCACTCTGGGACAAGCCCTGAAAACGGGGTCTAATACCGGATACGACGCGCGACCGCATGGTCTGTG  
 CGTGGAAAGCTCCGGCGGTGAAGGATGAGCCCGCGGCTATCAGCTTGTGGTGGGGTAATGGCCTACCAAGGCGA  
 CGACGGGTAGCCGGCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGAGGCAGC  
 AGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCACGACGCCGCTGAGGGATGACGGCCTTCGGTTGTAA  
 ACCTCTTTCAGCAGGGAAGAAGCGAGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCCAGCAGCCG  
 CGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGCGGCTTGTACGTCGGAT  
 GTGAAAGCCCGGGCTTAACCCCGGGTCTGCATTGATACGGGCAGGCTAGAGTTCGGTAGGGGAGATCGGAATTC  
 CTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGGCCGATACTGACG  
 CTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCTGGTAGTCCACGCCGTAAACGTTGGGAAC TAGGT  
 GTGGGCGACATTCCACGTCGTCCGTGCCGACGTAACGCATTAAGTTCGCCGCTGGGGAGTACGGCCGCAAGGCT  
 AAAACTCAAAGGAATTGACGGGGGCCCCGACAAGCAGCGGAGCATGTGGCTTAATTGACGCAACGCGAAGAACCT  
 TACCAAGGCTTGACATACACCGGAAAACCTGGAGACAGGTCCCCCTTGTGGTTCGGTGTACAGGTGGTGCATGGCT  
 GTCGTGAGCTCGTGTGATGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTGTCTGTGTTGCCAGCATGC  
 CCTTCGGGGTATGGGGACTCACAGGAGACTGCCGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAAGTCATCA  
 TGCCCTTATGCTTGGGCTGCACACGTGCTACAATGCCCGGTACAATGAGCTGCGATACCGCGAGGTGGAGCGAA  
 TCTCAAAAAGCCGGTCTCAGTTCCGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTTGCTAGTAATCGCAG  
 ATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTACGAAAAGTCGGTAACACCC  
 GAAGCCGGTGGCCCAACCCCTTGTGGGAGGAATCGTGAAGGTGGGACTGGCGATTGGGACGAAGTCGTAACAAG  
 GTAACCGT

### The PCR amplified 16S rDNA nucleotide sequences of S55-4

TGGCGGCGTGCTTAACACATGCAAGTCGAACGGATGAAGCCCTTCGGGGTGGATTAGTGGCGAACGGGTGAGTAAC  
 ACGTGGGTCAATCTGCCCTGCACTCTGGGACAAGCCCTGGCAAACGGGGTCTAATACCGGATACGACCTGCCGAGG  
 CATCTCGGCGGGTGGAAAGCTCCGGCGGTGCAGATGAGCCCGCGCCTATCAGCTTGTTGGTGGGGTAATGGCCTA  
 CCAAGGCGACGACGGGTAGCCGGCCTGAGAGGGCGACCGCCACACTGGGACTGAGACACGGCCAGACTCCTACG  
 GGAGGACAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCACGACGCCGCTGAGGGATGACGGCCTTCG  
 GGTGTAAACCTCTTTCAGCAGGGAAGAAGCGAAAGTGACGGTACCTGCAAAGAAGCGCCGGCTAACTACGTGCAG  
 CAGCCCGGTAATACGTAGGGCGCAAGCGTTGTCCAGGAATATTGGGCGTAAAGAGCTCGTAGGCGGCTTGTCTCG  
 CGTCAGATGTGAAAGCCCGGGGCTTAACCCCGGGATCTGCATTTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGA  
 TCGGAATTCCTGGGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGGCGGA  
 TACTGACGCTGAGGAGCGAAAGCGTGGGAGCGAACAGGATAAGATACCTGTAGTCCACGCGTAAAGTTGGAAC  
 AGGTGTGGGCGACATTCCACGTCGTCCGTGCCGACGCTAACGCATTAAGTTCGCCGCTGGGGAGTACGGCCGCAA  
 GGCTAAAACCAAAGGAATTGACGGGGGCCCGCACAGCAGCGGAGCATGTGGCTTAATTCGACGCAACCGCAAAA  
 CCTTACCAAGGCTTGACATACACCGGAAACACCTAGAGATAGGTGCCCCCTTGTGGTTCGGTGTACAGGTGGTGCAT  
 GGCTGTTCGTGAGCTCGTGTTCGTGAGATGTTGGGTAAAGTCCCAACGAGCGCAACCCTTGTCTGTGTTGCCACAT  
 GCCCTTCGGGGTGTGGGGACTCACAGGAGACTGCCGGGTCAACTCGGAGGAAGGTGGGACGACGTCAGTCATC  
 ATGCCCTTATGTCTGGGCTGCACACGTGCTACAATGGCCGGTACAATGAGCTGCCATACCGCAAGGTTGGAGCG  
 AATCTCAAAAAGCCGGTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCATGAAGTTGGAGTTGCTAGTAATCGC  
 AGATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCGGTAACAC  
 CCGAAGCCGGTGGCCCAACCCTTGTGGAGGGAGCCGTCGAAGGTGGGACTGGCGATTGGGACAAGTCGTAACAAG  
 TAACCGTAA

### The PCR amplified 16S rDNA nucleotide sequences of S49-1

CGTGCTTACACATGCAAGTCGAACGATGAACCGGCTTCGGTTCGGGGATTAGTGGCGAACGGGTGAGTAACACGTTGG  
 GCAATCTGCCCTTCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGACACGGGGTCGCATGATCT  
 CCGTGTGGAAAGCTCCGGCGGTGAAGGATGAGCCCGCGCCTATCAGCTTGTTGGTGGGATAGGCTCACCAAGGC  
 GACGACGGGTAGCCGGCCTGAGAGGGCGACCGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGAGGCA  
 GCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCACGACGCCGCTGAGGGATGACGGCCTTCGGGTGT  
 AAACCTCTTTCAGCAGGGGAAGAAGCGAGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCCAGCAGC  
 CGCGGTAATACGTAGGGCGCGAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGCGGCTTGTTCGCGTCGG  
 ATGTGAAAGCCCGGGGCTTAACCCCGGGTCTGCATTTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGATCGGAAT  
 TCCTGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGCCGATACTGA  
 CGCTGAGGAGCGAAAGCGTGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCGTAAACGTTGGGAACTAG  
 GTGTGGGCGACATTCCACGTCGTCCGTGCCGACGCTAACGCATTAAGTTCGCCGCTGGGGAGTACGGCCGCAAGG  
 CTAAAACCAAAGGAATTGACGGGGGCCCGCACAGCAGCGGAGCATGTGGCTTAATTCGACGCAACCGCAAGAAC  
 CTTACCAAGGCTTGACATACACCGGAAACCGTGGAGACACGGTCCCCCTTGTGGTTCGGTGTACAGGTGGTGCATG  
 GCTGTTCGTGAGCTCGTGTTCGTGAGATGTTGGGTAAAGTCCCGCAACGAGCGCAACCCTTGTCTGTGTTGCCAGCA  
 TGCCTTTCGGGGTGTGGGGGACTCACAGGAGACTGTCCGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAGT  
 CATCATGCCCTTATGCTCTGGGCTGCACACGTGCTACAATGGCCGGTACAATGAGCTCGGATACCGCGAGGTGGA  
 GCGAATCTCAAAAAGCCGGTCTCAGTTCGGATTAGGGTCTGCAACTCGACCCATGAAGTCGGAGTTGCTAGTAAT  
 CGCAGATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTCACGAAAGTCGGTAA  
 CACCCGAAGCCGGTGGCCCAACCCTTGTGGAAGGGAATCGTCAAGGTGGGACTGGCGATTGGGACAAGTCATAACA  
 AGGAACCGTAATAACCAA

### The PCR amplified 16S rDNA nucleotide sequences of S71-1

GCGTGCTTACCATGCAAGTCGAACGATGAAGCCCTTCGGGGTGGATTAGTGGCGAACGGGTGAGTAACACGTGGGC  
 AATCTGCCCTTCACTCTGGGACAAGCCCTGGAACGGGGTCTAATACCGGATACGACCCGCCGAGGCATCTCGGTG  
 GGTGAAAGCTCCGGCGGTGAAGGATGAGCCCGCGCCTATCAGCTTGTGGTGGGGTAACGGCCACCAAGGCGA  
 CGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGAGGCAGC  
 AGTGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCCCGGTGAGGGATGACGGCCTTCGGGTGTAA  
 ACCTCTTTCAGCAGGGAAGAAGCGCAAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCCAGCAGCCG  
 CGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGCGGCTTGTACAGTTCGGG  
 TGTGAAAGCCCGGGGCTTAACCCCGGTCTGCATCCGATACGGGCAGGCTAGAGTGTGGTAGGGGAGATCGGAATT  
 CCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGGCCATTACTGAC  
 GCTGAGGAAAGCGAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGTAACGTTGGGAAC TAGG  
 TGTGGCGACATTCACGTCGTTCGGTTCGCGCAGCTAACGCATTAAGTTCGCCGCTGGGGAGTACGGCCGCAAGGC  
 TAAACTCAAAGGAATTGACGGGGGCCGCAAGCAGCGGAGCATGTGGCTTAATTCGACGCAACGCGAAGAACC  
 TTACCAAGGCTTGACATATACCGGAAACATCCAGAGATGGGTGCCCCCTTGTGGTTCGGTATACAGGTGGTGCATGG  
 CTGTTCGTAGCTCGTGTTCGTGAGATGTTGGGTAAAGTCCCGCAACGAGCGCAACCCTTGTCTGTGTTGCCAGCAT  
 GCCCTTCGGGGTGTAGGGGACTCACAGGAGACCGCCGGGTCAACTGGAGGAAGGTGGGGACGACGTCAAGTCATC  
 ATGCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAAGAGCTGCGATGCCGTGAGGCGGAGCGA  
 ATCTCAAAAAGCCGGTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTTGCTAGTAATCGCA  
 GATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTACGAAAAGTCGGTAACACC  
 CGAAGCCGGTGGCCCAACCCCTTGTGGGAGGGAGCTGTGAAGGTGGGACCAGCGATTGGGACGAAGTCGTAACAA  
 GGTAACCGTAA

### The PCR amplified 16S rDNA nucleotide sequences of S72-10

CGTGCTTACACATGCAAGTCGAACGATGAAACTTCCTTCGGGAGGGGTATTAGTGGCGAACGGGTGAGTAACACGT  
 GGGCAATCTGCCCTTCACTCTGGGACAAGCCCTGGAACGGGGTCTAATACCGGATATGACACGGGGTTCGCATGAT  
 TTTCGTGTGAAAGCTCCGGCGGTGAAGGATGAGCCCGCGCCTATCAGCTTGTGGTGGGGTATGGCCCTACCA  
 GCGAGTACGGGTAGCCCGCCTGAGAGGGCGACCGGCCACTGGGACTGAGACACGGCCAGACTCCTACGGGAG  
 GCAGCAGTGGGGAATATTGCACAATGGGCGAAAGCCTGATGCAGCGACGCCCGGTGAGGGATGACGGCCTTCGGGT  
 TGTAACCTCTTTCAGCAGGGAAGAAGCGAGAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCCAGC  
 AGCCCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGCGGCTTGTCCGCT  
 CGGATGTGAAAGCCCGGGCTTAACCCCGGTCTGCATTTCGATACGGGCAGGCTAGAGTTCGGTAGGGGAGATCGG  
 AATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGGCCGATAC  
 TGACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGTAACGTTGGGAAC  
 TAGGTGTGGGCGACATTCACGTCGTCCGTGCCGAGCTAACGCATTAAGTTCGCCGCTGGGGAGTACGGCCGCA  
 AGGCTAAAACCAAAGGAATTGACGGGGGCCGCAAGCAGCGGAGCATGTGGCTTAATTCGACGCAACGCGAAG  
 AACCTTACCAAGGCTTGACATACACCGGAAAACCGTGGAGACTCCCCCTTGTGGTTCGGTGTACAGGTGGTGCAT  
 GGCTGTTCGTAGCTCGTGTTCGTGAGATGTTGGGTAAAGTCCCGCAACGAGCGCAACCCTTGTCTGTGTTGCCAGC  
 ACGTCTTTCGGGGATGGTGGGGACTCACAGGAGACTGCCGGGTCAACTCGGAGGAAGGTGGGGACGACGTCAAG  
 TCATCATGCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGGTACAATGAGCTGCGATACCGTGAGGTGG  
 AGCGAATCTCAAAAAGCCGGTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCCATGAAGTCGGAGTTGCTAGTAA  
 TCGCAGATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTACGAAAAGTCGGTA  
 ACACCCGAAGCCGGTGGCCCAACCCCTTGTGGGAGGGAATCGTGAAGGTGGGACTGGCGATTGGGACGAAGTCGT  
 AACAAGGTAACCGTA

### The PCR amplified 16S rDNA nucleotide sequences of S75-3

GGCGTGCTTACACATGCAAGTCGAACGATGAACCGGTTTCGGCCGGGGATTAGTGGCGAACGGGTGAGTAACACGT  
 GGGCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGACTGCCGACCGCATGGT  
 CTGGTGGTGGAAAGCTCCGGCGGTGCAGGATGAGCCCGCGCCTATCAGCTTGTGGTGGGGTGATGGCCTACCAA  
 GGGCAGCAGCGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGAG  
 GCAGCAGTGGGGAATATGCACAATGGGCGCAAGCCTGATGCAGCGACGCCGCTGAGGGATGACGGCCTTCGGGT  
 TGTAAACCTCTTTCAGCAGGGAAGAAGCGCAAGTGACGGTACCTGCAGAGAAGCGCCGGTAACCTACGTGCCAGC  
 AGCCCGGTAATACGTAGGGCGCAAGCGTTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGCGGCTTGTCCGCT  
 CGGATGTGAAAGCCCGGGCTTAACTCCGGGTCTGCATTGCATACGGGCAGGCTAGAGTTCGGTAGGGGAGATCGG  
 AATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGGCCGATAC  
 TGACCGTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCGTAAACGTTGGGAAC  
 TAGGTGTGGGCGACATTCACGTTGTCCGTGCCGACGTAACGCATTAAGTTCGCCGCTGGGGAGTACGGCCGCA  
 AGGCTAAAACCTCAAAGGAATTGACGGGGGCCGCAAGCGGGGAGCATGTGGCTTAATTCGACGCAACGCGAAG  
 AACCTTACCAAGGCTTACATACATCGGAAACCTCTGGAGACAGGGCCCTTGTGGTGGTGTACAGGTGGTGCA  
 TGGCTGTCTGAGCTCGTGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTGTCTGTGTTGCCAG  
 CATGCCCTTGGGGTGATGGGGAACACAGGAGCACTGCCGGGGATCAACTCGGAGGAAGGTGGGGCAGCAGCTC  
 AAGTCATATGCCCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGTTACAATGAGCTGCGAAGCCGTGAGG  
 TGGAGCGAATCTCAAAAAGCCGGTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCATGAAGTCGGAGTCGCTAG  
 TAATCGCAGATCAGCATTGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTACGAAAGTCG  
 GTAACACCCGAAGCCGGTGGCCCAACCCTTGTGGGGGAGCCGTCAAGGTGGGACTGGCGATTGGGACAAGTCTAA  
 CAAGGTACCGTAAACT

### The PCR amplified 16S rDNA nucleotide sequences of S75-5

CGGCGTGCTTACCATGCAAGTCGAACGATGAAGCCCTTCGGGGTGGATTAGTGGCGAACGGGTGAGTAACACGTGG  
 CCAATCTGCCCTTCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATACGACCCCGGAGGCATCTCGG  
 TGGGTGGAAAGCTCCGGCGGTGAAGGATGAGCCCGCGCCTATCAGCTTGTGGTGGGGTAAAGCCACCAAGGC  
 GACGACGGGTAGCCGGCCTGAGAGGGCGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGAGGCA  
 GCAGTGGGGAATATGCACAATGGGCGAAAGCCTGATGCAGCGACGCCGCTGAGGGATGACGGCCTTCGGGTTGT  
 AAACCTCTTTCAGCAGGGAAGAAGCGCAAGTGACGGTACCTGCAGAAGAAGCGCCGGCTAACTACGTGCCAGCAGC  
 CGCGGTAATACGTAGGGCGCAAGCGTTGTCCGGACATTATTGGGCGTAAAGAGCTCGCTAGGCGGCTTGTACGTC  
 GGGTGTGAAAGCCCGGGCTTAAACCCCGGTCTGCATCCGATACGGGCAGGCTAGAGTGTGGTAGGGGAGATCGGA  
 ATTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGATCTCTGGGCCATTACT  
 GACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGTAACGTTGGGAAC  
 AGGTGTGGCGACATTCCACGTCGTCGGTGCCGACGTAACGCATTAAGTTCGCCGCTGGGGAGTACGGCCGCAA  
 GGCTAAAACCTCAAAGGAATTGACGGGGGCCGCAAGCAGCGGAGCATGTGGCTTAATTCGACGCAACGCGAAGA  
 ACCTTACCAAGGCTTACATATAACCGGAAACATCCAGAGATGGGTGCCCCCTTGTGGTGGTATACAGGTGGTGCA  
 TGGCTGTCTGAGCTCGTGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTGTCTGTGTTGCCAG  
 CATGCCCTTCCGGGTGATGGGGACTCACAGGAGACCGCCGGGTCAACTCGTGAGGAAGGTGGGGAACGCACGTCA  
 AGTCATCATGCCCTTATGTCTTGGGCTGCACACGTGCTACAATGGCCGTTACAAGAGCTGCGATGCCGTGAGGC  
 GGAGCGAATCTCAAAAAGCCGGTCTCAGTTCGGATTGGGGTCTGCAACTCGACCCATGAAGTCGGAGTTGCTAGC  
 AATCCGAGATCAGCATGCTGCGGTGAATACGTTCCCGGGCCTTGTACACACCGCCCGTCACGTACGAAAGCGG  
 TAACACCCGAAGCCGGTGGCCCAACCCTTGTGGGAGGGAGTGTCAAGGTGGACCAGCGATTGGGACAAA

### The PCR amplified 16S rDNA nucleotide sequences of S76-1

CGGCGGGCTTACACATGCAAGTCGAACGGTGAAGCCCTTCGGGTGGTATCATGGCGAACGGGTGAGTAACACGTGG  
 GCAATCTGCCCTGCACTCTGGGACAAGCCCTGGAAACGGGGTCTAATACCGGATATGACCTGGGACCGCATGGTCT  
 GGGTGTAAAGCTCCGGCGGTGCAGGATGAGCCCCGGCCTATCAGCTTGTGGTGGGGTAATGGCCTACCAAGGCG  
 ACGACGGGTAGCCGGCCTGAGAGGGCGACCGCCACACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAG  
 CAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACCCGCTGAGGGATGACGGCCTTCGGGTGTA  
 AACCTCTTTCAGCAGGGAAGAAGCGCAAGTGACGGTACCTGCAGAAGAAGCACC GGCTAACTACGTGCCAGCAGCC  
 GCGTAATACATAGGGTGCAGCGTTATCCGGAATTATTGGGCGTAAAGAGCTCGCTAGGCGGCCTGTCCGCTCGG  
 ATGTGAAAGCCCCGGGCTTAACCCCGGTCTGCATTGATACGGGCAGGCTAGAGTGTGGTAGGGGAGATCGGAAT  
 TCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGCGGATCTCTGGGCCATTACTGA  
 CGCTGAGGAGCGAAAGCGTGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCCGTAACGTTGGGAAC TAG  
 GTGTTGGTACATTCACGTGATCGGTGCCGAGCTAACGCATTAAGTCCCGCCTGGGAGTACGGCCGCAAGG  
 CTAAACTCAAAGGAATTGACGGGGCCCGCACAAAGCAGCGGAGCATGTGGCTTAATTGACGCAACCGGAAGAAC  
 CTTACCAAGGCTTGACATATGCCGGAACACCTGGAGACAGGTGCCCCCTTGTGGTGGTATACAGGTGGTGCATG  
 GTTGTGCTGAGCTCGTGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTGTCTGTGTTGCCAGCA  
 TGCCTTTCGGGGTGTGGGATCTCACAGGCACACTGAAGGGATCAACACGAGAGGAAGGTGGGGCAGCAGCTC  
 AAATCATGCCCCCTTATGTCTTGGCTGCACACGTCTACAATGGTGGTACAAAGGCTGCGATGCCGTGAGG  
 CGGAGCGAATCCCAAAAAGCCGGCCTACAGTTCCGATTGGGGTCTGCAACTCGACCCCATGAAGTTGGAGTTGCTA  
 GTAATCGCAGATCAGCATGCTGCGGTGAATACGTTCCCGGCCTTGTACACACCGCCCGTACGTCACGAAAGTCCG  
 GTAACACCCGAAGCCGTTGCCCTAACCTCTGGGATGGAGCCGTCAAGTTGGGACCAGCGATTGGGACGAAGTCTG  
 AACAGGTAACCGTA

### The PCR amplified 16S rDNA nucleotide sequences of SB3-2

GCGTCTTACACATGCAAGTCGAACGATGATCCCGCTTCGGTGGGGTATTAGTGGCGAACGGGTGAGTAACACG  
 TGGGCAATCTGCCCTGTACTTTGGGATAACCTGGGAAACTGGGTCTAATACCGGATATGACCTTCTCGCATGGGT  
 TTGGTGAAGCTCCGGCGGTACGGATGACCCGCGGCCTATCACTTGTGGTGGGGTAATGGCCTACCAAGGCACACG  
 GGTAGCCGGCTGAGAGGGTGACCGCCACCTGGGACTGAACACGGCCCAACTCCTACGGGAGGCAGCAGTGGGGAA  
 TATTGCACAATGGGCGCAAGCCTGATGCAGCGACCCGCTGAGGGATGACGGCCTTCGGTGTAAACCTCTTCCC  
 AGGGACAAGCGCAAGTGACGGTACCTGGATAAAAGCACC GGCTAACTACGTGCCAGCACCGCGGTAATACTAGGGT  
 GCGAGCGTTGTCCGAATTATTGGGGGGCGGTAAAGAGCTCGTAAGGCGGTTTGTCCGCTTCGTTCGTGAAACTCC  
 ACGCTAACGTGGAGCGTGGGGTTCGTATACGGGCAGACTTGAGTTCGGTAGGGGAGACTGGAATTCCTGGTGTAG  
 CGGTGAAATGCGCAGATATCAAGAGGAACACCGGTGGCAAAGGCGGCTCTCTGGGCCGATACTGACGCTGAGGAGC  
 GAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAACGTTGGGGCCTAGGTGTGGGCGAC  
 ATCCACGTTGTCCGTGCCGTAGCTAACGCATTAAGCGCCCCGCTGGGGAGTACGGCCGCAAGGCTAAACTCAAA  
 GGAATTGACGGGGCCCGCACAAAGCGGCGGAGCATGTGGATTAATTCGATGCAACGCGAAGAACCTTACCTGGGCT  
 TGACATGCGCCAGACATCCCTAGAGATAGGGCTTCCCTTGTGGTTGGTGTACAGGTGGTGCATGGCTGTCTCAGC  
 TCGTGTGCTGAGATGTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATCTACGTTGCCAGCGGTTATGGCGGG  
 GACTCGTGGGAGACTGCCGGGTCAACTCGGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCTTATGTCCAG  
 GGCTTACACATGCTACAATGGCTGGTACAGAGGGCTGCGATACCGCGAGGGTGGAGCGAATCCCTAAAGCCGGT  
 CTCAGTTCGGATCGCAGTCTGCAACTCGACTGCGTGAAGTCGGAGTTCGCTAGTAATCGCAGATCAGCAACGCTGCG  
 GTGAATACGTTCCCGGCCTTGTACACACCGCCCGTACGTCATGAAAGTCGGTAACACCCGAAGCCCATGGCCCA  
 ACCCGCAAGGGGGGAGTGGTGAAGGTGGGACTGGCGATTGGGACGAAGTCGTAACAAGGTAACCG

### The PCR amplified 16S rDNA nucleotide sequences of SB7-3

GCGTGCTTACACATGCAAGTCGAACGCTGAACCGGTTTCGGCCGGGGATGAGTGGCGAACGGGTGAGTAACACGTG  
 GGTAATCTGCCCTGTACTCTGGGATAAGCCTGGGAACTGGGTCTAATACCGGATATGACCGCTACAGGCATCTGT  
 GGTGGTGGAAAGTTCGGCGGTATGGGATGAACCCGCGCCTATCAGCTTGTGGTGGGGTAATGGCCTACCAAGG  
 CGACGACGGGTAGCCGGCCTGAGAGGGTGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGAGGC  
 AGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCCGCTGAGGGATGACGGCCTTCGGGTTG  
 TAAACCTCTTTCCGACGGGACGAAGCGAGAGTGACGGTACCTGGATAAGAAGCACCGGCTAACTACGTGCCAGCAG  
 CCGCGGTAATACGTAGGGTGCAGCGTGTCCGGAATTATTGGGCGTAAAGAGCTCGTAGGCGGTTTGTCCGCTCG  
 GCCGTGAAATCTCCACGCTTAACGTGGAGCGTGCGGTCGATACGGGCAGACTTGAGTTCGGCAGGGGAGACTGGAA  
 TTCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTCTGGGCCGATACTG  
 ACGCTGAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATAACCTGGTAGTCCACGCTGTAACGTTGGGCGCTA  
 GGTGTGGGCGACATTCACGTTGTCCGTGCCGTAGCTAACGCATTAAGCGCCCCGCTGGGGAGTACGGCCGCAAG  
 GCTAAAACCTCAAAGGAATTGACGGGGGCCGCAAGCGGCGGAGCATGTGGATTAATTCGATGCAACGCGAAGAA  
 CCTTACCTGGGCTTGACATGCGCCAGACATCCCAGAGATGGGGCTTCCCTTGTGGTGGTGTACAGGTGTGCATG  
 GCTGTGCTCAGCTCGTGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATCCTACGTTGCCAGCG  
 CGTTCATGGCGGGGACTCGCTGGGAGACTGACCGGGTCAACATCGGAGGAAGGTGGGGATGACGTCAAGTCATC  
 ATGCCCTTATGTCCAGGGCTTCACACATGCTACAATGGCTGGTACAGAGGGCTGCGATACCGCGAGGTGGAGCGA  
 ATCCCTTAAAAGCCGTCTCAGTTCGGATCGCAGTCTGCAACTCGACTGCGTGAAGTGGAGTCCCTAGTAAATCG  
 CAGATCAGCAACGCTGCGGAGAATACGTTCCCGGGCCTGTACACACCGCCCGTCACGTGATGAAAGTCGGTAAAC  
 CCCGAAGCCCATGGCCCAACCCGCAAGGGAGGGAGTGGTCAAGGTGGGACTGGCGATTGGGACGAAGTCGTACAAG  
 GTACCGTAAGTAACACC

#### The PCR amplified 16S rDNA nucleotide sequences of S39-7

TGCTTACACATGCAAGTCGAACGCTGAACCACTTTCGGGTGGGGATGAGTGGCGAACGGGTGAGTAACACGTGGGT  
 AATCTGCCCTGCACTCTGGGATAAGCCTTGGAAACGAGGTCTAATACCGGATATCACTCCTTCGCATGGAAGATGT  
 TGAAAGCTCCGGCGGTGCAGGATGAACCCGCGCCTATCAGCTTGTGGTGGGGTAGTGGCTACCAAGGGCAGCA  
 CGGGTAGCCGGCCTGAGAGGGTGACCGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGAGGCAGCAGT  
 GGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACC  
 TCTTTCGCCAGGGACGAAGCGCAAGTGACGGTACCTGGATAAGAAGCACCGGCTAACTACGTGCCAGCAGCCGCG  
 TAATACGTAGGGTGCAGCGTGTCCGGATTATTGGGCGTAAAGAGCTCGTAGGCGGTTTGTCCGCTCGGCCGTG  
 AAAATCTCCACGCTTAACGTGGAGCGTGCGGTCGATACGGGCAGACTTGAGTTCGGTAGGGGAGACTGGAATTCCT  
 GGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTCTGGGCCGATACTGACGCT  
 GAGGAGCGAAAGCGTGGGGAGCGAACAGGATTAGATAACCTGGTAGTCCACGCTGTAACGTTGGGCGCTAGGTGT  
 GGGCGACATCCACGTTGTCCGTGCCGTAGCTAACGCATTAAGCGCCCCGCTGGGGAGTACGGCCGCAAGGCTAAA  
 ACTCAAAGGAATTGACGGGGGCCGCAAGCGGCGGAGCATGTGGATTAATTCGATGCAACGCGAAGAACCTTAC  
 CTGGGCTTGACATGCGCCAGACATCCCAGAGATGGGGCTTCCCTTGTGGTGGTGTACAGGTGGTGCATGGCTGT  
 CGTACGTGCGTGTGAGATGTTGGGTTAAGTCCCGCAACGAGCGCAACCCTTATCCTACGTTGCCAGCGGCTTA  
 TGGCGGGGACTCGTGGGAGACTGCCGGGTCAACTCGGAGGAAGGTGGGGATGACGTCAAGTCATCATGCCCTTA  
 TGTCCAGGGTCTTCACACATGCTACAATGGCTGGTACAGAGGGCTGCGATACCGCGAGGTGGAGCGAATCCCTTAA  
 AGCCGGTCTCAGTTCGGATCGCAGTCTGCAACTCGACTGCGTGAAGTGGAGTCCCTAGTAAATCGCAAATCAGCAA  
 CGCTGCGGTGAATACGTTCCCGGGCCTGTACACACCGCCCGTCACGTGATGAAAGTCGGTAAACCCGAAGCCCA  
 TGGCCCAACCCTAAGGGAGGGAGTGGTCAAGGTGGGACTGGCGATTGGGACGAAGTCGTAAACGAAGTAACCGTAA

#### The PCR amplified 16S rDNA nucleotide sequences of KC19-1



GCGGGCTTACACATGCAAGTCGAACGCATGTAACCACTATTGCGGGTGGGGTAAATGGTTCGAAGGCATGTAGTAAC  
 ACGTGGGGTAATCTGCCCTGCACTCTGGGGATAACCTTGAAAACGAGGTCTAATACCGGTATATCACTGCTCTCGC  
 ATGGGGAATGTTGAAAAGCTCCGTGCGGCTGCAGGTTGAACCCGCGCCTATCCTTGTGGTGGGGTAGTGGCCTAC  
 CAAGCGACGACGGGTAGCCGCTGACAGGTTGACGGCCACACTGGGACTGAACACGGCCATACTCCTACTGGAG  
 GCGATGGGGAATATTGCACATGGGGCAAGCCTGATGCAACCACCCCGCTGAGGGATGACTGCCTTCGGGTGTAA  
 ACCTCTTTCCAGGGACAAGCGAGTGACGGTACCTGGATAAGAAGACCGGCTAACTACGTGCCAGCAGCCGCGGTA  
 ATACTAGGTGCGAGCGTTGTCCGGATTATTGGGCGTAAACAGCTCGTAAGCGGTTTGTGCGGTTCCGGCCGTGAAA  
 ATCTCCACGCTTAACGTGGAACGTGCGGTATACGGGCAGACTTGAGTTCGGTAGGGAGACTGGAATTCCTGGTGT  
 AGCGGTGAAATGCCAAATATCAGGAGGAACACCGGTGGCAAGGCGGTCTCTGGCCGATACTGACCTAGGACGAAAG  
 CTGGGGAGCGAACAGGATTAATACCCTGGTATCCACCTGTAAACTTGGGCGCTAGGTGTGGGCACATCCACTTGT  
 CCGTGCCGTAATAACGCATTAACGCCCGCCTGGGAGTACGGCCCAAGGTAAAACCTCAAAGGAATTGACGGGGCC  
 CGCACAAGCGGCGACATGTGGATTAATTCATGCAACGCGAAGAACCTTACCTGGCTTGACATGCGCCAGACATCCC  
 CAGAAATGGGGCTTCCCTTGTGGTGGTGTACAGGTGGTGCATGGCTGTGCTCAGCTCGTGTGAGATGTTGGGTT  
 AAGTCCCAGCAACGAGCGCAACCCCTTATCCTACGTTGCCAGCGCTTATGGCGGGACTCGTGGGAGATCTGCCGGG  
 ATCAACTCGAAGAAGTGTGGGGCATGAACATCAAGATCATCATGCCCCATTATGTCCAGGGTCTTACACATGCT  
 ACAATGGGCTGGCTACAGAGGGCTGCGATAACCCGAGGTGGAGCGAATCCCTTAAAGCCGGTCTCAGTTCGAATCG  
 CAGTTCGACTCCACTGCTGAAGTCGGAGTCCCTAGTAATCGCAAATCAGCACCGCTGCGGTGAATATCCCGGGC  
 CTTGTACACACCGCCGTCACGTATGAATGAAGTAACCCGAACCCATGGCCACCCTTAGAGGGAGTGGTCGAA  
 GGTGGGACTGGCGATTGGACCAATCGTGCAAGGTATCCGTA

### **The PCR amplified 16S rDNA nucleotide sequences of KC20-1**

ATAGCGGCGTGCTTACACATGCAAGTCGAACGCCTGAACCACTTTGCGGGTGGGGATGAGTGGCGAACGGGTGAGTA  
 ACACGTGGGGTAATCTGCCCTGCACTCTGGGATAAGCCTTGAAAACGAGGTCTAATACCGGATATCACTCTTCGCAT  
 GGAAGATGTTGAAAGCTCCGGCGGTGCAGGATGAACCCGCGCCTATCAGCTTGTGGTGGGGTAGTGGCCTACCA  
 AGGCGACGACGGGTAGCCGCTGAGAGGTTGACGGCCACACTGGGACTGAGACACGGCCAGACTCCTACGGGA  
 GGCAGCAGTGGGGAATATTGCACAATGGGCGCAAGCCTGATGCAGCGACGCCGCTGAGGGATGACGGCCTTCGGG  
 TTGTAACCTCTTTCGCCAGGGACGAAGCGCAAGTACGGTACCTGGATAAGAAGCACCGGCTAACTACGTGCCAG  
 CAGCCGCGGTAATACTAAGGTGCGAGCGTTGTCCGGATTATTGGGCGTAAACAGCTCGTAAGTCCGTTTGTGCGG  
 TCAGGCCGTGAAATCTCCACGCTTAACGTGGAGCAGTCCGGTGCATACGGGCAGACTTGAGTTCGGTAGGGGAGAC  
 TGGAAATCCTGGTGTAGCGGTGAAATGCGCAGATATCAGGAGGAACACCGGTGGCGAAGGCGGGTCTCTGGCCGA  
 TACTGACGCTGAGGAGCGAAAAGCGTGGGGAGCGAACAGGATTAGATACCCTGGTAGTCCACGCTGTAAACGTTGGG  
 CGCTAGGTGTGGGCGACATCCACGTTGTCGGTGCCGTAGCTAACGCATTAAGCGCCCCGCTGGGGAGTACGGCCC  
 AAGGCTAAAACCTCAAAGGAATTGACGGGGCCCCGCACAACGCGACATGTGATTAATTCATGCACAAAACCTTACC  
 TGCTTGACATGCCCAACATCCCCAATCTTCCCTTG

### **The PCR amplified 16S rDNA nucleotide sequences of K57-1**

## VITA

Miss Piyapat Sripairoj was born on July 30, 1980 in Khonkaen Province, Thailand. She received her Bachelor Degree of Science in Pharmacy (second class honors) in 2003 from the faculty of Pharmaceutical Sciences, Chulalongkorn University, Thailand.

