



CHAPTER II

EQUIPMENTS AND REAGENT

2.1 Instruments

(-20°C) Freezer (Krungthai Ltd., Thailand)

(-80°C) Bio-freezer (Bara Laboratory Co. Ltd., Thailand)

Autoclave:-

- Autoclave HA-30 (Hirayama Manufacturing Co., Japan)
- Autoclave model # LS-2D (Rexall Industries Co. Ltd., Thailand)

Automatic micropipette P2, P10, P20, P100, P200, P1000 (Gilson Medical Electrical S.A., France)

Balance: Satorius 1702 (Scientific Promotion Co.)

Centrifuge:-

- Centrifuge 5804 R (eppendorf, Germany)
- Centrifuge 5417 C (eppendorf, Germany)
- High speed microcentrifuge MC-15A (Tomy-seiko, Japan)
- High speed microcentrifuge model 1120 (Kubota Corporation, Japan)
- Microcentrifuge model SD220VAC (CE, Taiwan)
- Minicentrifuge (Costar, U.S.A.)

Dry bath incubator (Major Science, Taiwan)

Electronic balance: Asep EY220A (A&D Co. Ltd., Japan)

Gel documentation system: GeneCam FLEX1 (SYNGENE, EEC) / Digital graphic printer UP-D895 (Sony Corporation, Japan)

Gene pulser (Bio-Rad Laboratories, U.S.A.)

Hand-held engraving device (Super Tool, Arlec)

Heating block 1761G-26 (Sybron Thermermolyne Co., U.S.A.)

Horizontal gel electrophoresis apparatus:-

- Taitec Pico-2 (Taitec Corporation, Japan)
- MGU-402T (C.B.S. & Scientific Company, U.S.A.)
- GelMate 2000 (TJTTP : Thailand-Japan Technology Transfer Project)

Incubator BM-600 (Mettler GmbH, Germany)

Incubator shaker (Innova 4080TM, New Brunswick Scientific, U.S.A.)

Laminar flow: HT123 (ISSCO, U.S.A.)

Light box 2859 SHANDON (Shandon Scientific Co. Ltd., England)

Magnetic stirrer M21/1 (Franz Morat KG GmbH, Germany)

Magnetic stirrer and heater (Fisher Scientific, U.S.A.)

MicroPulser (BIO-RAD, U.S.A.)

Microwave oven TRX 1500 (Turbora International Co. Ltd., Korea)

PCR workstation model #P-036 (C.B.S. Scientific Co., U.S.A.)

pH meter model PHM 95 (Radiometer, Denmark)

Phosphor-Imager 400S (Molecular Dynamics, UK)

Power supply:-

- Power supply - EC135-90 (E-C Apparatus Corporation, U.S.A.)
- Power Pac 300 (BIO-RAD Laboratories, U.S.A.)
- Power supply - EPS 250 (C.B.S. & Scientific Company, U.S.A.)

Real-time detection system:-

- iCycler iQ™ Real-time detection system (Bio-Rad, U.S.A.)
- Rotorgene 3000 Thermal Cycler (CorbettResearch, Sydney, Australia)

Refrigerated microcentrifuge MIKRO 22R (Hettich Zentrifugen, Germany)

Spectrophotometer DU650 (Beckman, U.S.A.)

Stereomicroscope (Olympus, Germany)

Stirrer/Hotplate model PC-320 (Corning, U.S.A.)

Thermal cycler:-

- DNA Engine MJ Research PTC-200 Peltier Thermal Cycler
(ITOCHU Corporation, Thailand-Japan Technology Transfer Project)
- Mastercycle gradient (eppendorf, Germany)
- GeneAmp PCR System 2400 (Perkin Elmer, U.S.A.)
- iCycler™ Thermal Cycler/ iCycler™ Optical Module (BIO-RAD,
U.S.A.)

Touch mixer model 232 (Fisher Scientific, U.S.A.)

Ultrasonicator model 28H (Ney Dental Inc., U.S.A.)

Ultrasonic homogenizer (SONOPULS, BANDELIN, Germany)

Ultraviolet Transilluminator:-

- UV Transilluminator model TVC-312R/F (Spectronics Corporation,
U.S.A.)
- UV Transilluminator model 2001 microwave (San Gabriel California,
U.S.A.)

Vistra FluoroImager (Amersham, UK)

Votex Genie-2 model G560E (Scientific Industries Inc., U.S.A.)

Water bath:-

- Water bath model M20S (Lauda, Germany)
- Water bath model SH28L (Polyscience, U.S.A.)

2.2 Inventory supplies

Disposable pestles (Sigma, U.S.A.)

Hybond N+ nylon membranes (Amersham, UK)

iCycler iQTM Optical Tape (BIO-RAD, U.S.A.)

iCycler iQTM PCR Plates, 96 well (BIO-RAD, U.S.A.)

Microcentrifuge tubes 0.5, 1.5 ml (Axygen Hayward, U.S.A.)

Microcentrifuge tubes 0.5 ml and 1.5 ml (Bio-RAD Laboratories, U.S.A.)

Pipette tips 10, 200, 1000 μ l (Axygen Hayward, U.S.A.)

Thin-wall microcentrifuge tubes 0.2 ml (Axygen Hayward, U.S.A.)

2.3 Chemicals

100 base pair DNA Ladder (Promega Co., U.S.A.)

100 mM dNTPs : dATP, dCTP, dGTP and dTTP (Boehringer Mannheim, Germany)

Absolute ethanol (Merck, Germany)

Acrylamide (Merck, Germany)

Agarose, Seakem LE (FMC Bio products, U.S.A.)

Ammonium persulfate (Merck, Germany)

Beta-mercaptoethanol (Fluka, Switzerland)

Bromphenol blue (Merck, Germany)

Chloroform (Merck, Germany)

Coomassie brilliant blue R-250 (Sigma Chemical Co., U.S.A.)

Diethyl pyrocarbonate sulfoxide (DEPC) (Sigma Chemical Co., U.S.A.)

DyNAzyme™ II DNA Polymerase (Finnzymes, Finland):-

- DNA polymerase
- 10X Mg²⁺ - free buffer
- 50 mM MgCl₂ solution

Ethidium bromide (Sigma Chemical Company, U.S.A.)

Ethylene diamine tetraacetic acid, disodium salt dihydrate (Fluka, Switzerland)

GeneAmp PCR core reagent (GibcoBRL, U.S.A.):-

- *Taq* DNA polymerase
- 10X PCR buffer
- 50 mM MgCl₂ solution

Hydrochloric acid (Merck, Germany)

Isoamyl alcohol (Merck, Germany)

Isopropanol (Merck, Germany)

iQ™ SYBR® Green Supermix (BIO-RAD, U.S.A.)

Methanol (Merck, Germany)

N, N'-methylene-bis-acrylamide (Merck, Germany)

Phenol saturated solution (Amresco, U.S.A.)

RNase inhibitor (Bio Basic Inc., Canada)

Sodium acetate (Merck, Germany)

Sodium carbonate (Merck, Germany)

Sodium chloride (Merck, Germany)

Sodium dodecyl sulfate : SDS (Sigma Chemical Company, U.S.A.)

Sodium hydroxide (Merck, Germany)

Tris-(hydroxyl methyl)-aminomethane (Fluka, Switzerland)

TriReagent® (Molecular Research Center, Inc., U.S.A.)

TriZol Reagent (GibcoBRL Life Technologies Inc., U.S.A.)

Xylene cyanol (Sigma, U.S.A.)

2.4 Oligonucleotide primers

- Bio Basic Inc., Canada

- Bio service Unit, Thailand

- Biosynthesis Inc., U.S.A.

- Promega Coporation, U.S.A.

2.5 Enzymes

Ampli *Taq* DNA polymerase (Perkin Elmer Cetus, U.S.A.)

DyNazyme™ II DNA polymerase (Finnzymes, Finland)

Omniscript Reverse Transcriptase (Qiagen, germany)

Pfu DNA polymerase (Promega Corporation Medison, U.S.A.)

Proteinase K (Life Technologies, Inc., U.S.A.)

RNase Free DNase I (Promega Corporation Medison, U.S.A.)

RNase A (Sigma Chemical Co., U.S.A.)

Taq DNA polymerase (GibcoBRL Life Technologies Inc., U.S.A.)

T4 DNA ligase (Amersham Biosciences, U.S.A.)

2.6 Kits

Dynabeads[®] Oligo (dt)₂₅ (DYNAL, Norway)

NucleoSpin[®] Gel Extraction Kit (Macherey-Nagel, Germany)

NucleoSpin[®] Plasmid DNA Purification Kit (Macherey-Nagel, Germany)

Omniscript RT Kit (Qiagen, Germany)

pGEM[®]-T Easy Vector Systems (Promega, U.S.A.)

Rediprime[™] II random prime labeling system (Amersham Pharmacia Biotech, UK)

RNeasy Mini Kit (Qiagen, Germany)

SuperScript[™] II Reverse Transcriptase Kit (Invitrogen, U.S.A.)

Total RNA Isolation Mini Kit (Agilent, U.S.A.)

QIAprep Miniprep Kit (Qiagen, Germany)

QIAquick Gel Extraction Kit (Qiagen, Germany)

2.7 Software

BlastX (<http://www.ncbi.nlm.nih.gov/blast/Blast.cgi>)

Clustal X (Thompson, 1997)

GENETYX (Software Development Inc.)

Genomic Scaffolds (<http://www.hgsc.bcm.tmc.edu/projects/honeybee/>) at the Baylor College of Medicine

Interactive Fly (www.sdbonline.org)

Online Mendelian Inheritance in Man (www.ncbi.nlm.nih.gov)