CHAPTER I

INTRODUCTION

Chlamydia trachomatis is an obligate intracellular bacterium which has the ability to infect mucosal surfaces of the cervix, urethra, rectum, nasopharynx, and conjunctiva (1). It causes a wide range of diseases in human. In female, it is a common cause of cervicitis. The organisms can spread from the cervix to the endometrium and fallopain tubes, resulting in endometritis, pelvic inflammatory disease (PID) and salpingitis (2-8). Tubal occlusion, a sequelae of salpingitis , may cause ectopic pregnancy or infertility. In addition, Chlamydial salpingitis may be associated with perihepatitis (9-14). Chlamydial infection during pregnancy may adversely affect the newborn, resulting in neonatal conjunctivitis and infant pneumonia (1). In male, *C. trachomatis* is a common cause of non-specific urethritis. The organism may spread from the urethra to the epididymis , resulting in epididymitis. This painful serious complication may result in male sterility (15-18). In homosexual males , proctitis may occur following receptive anal intercause. The L1 to L3 serovars of *C. trachomatis* cause lymphogranuloma venereum which involves regional lymph nodes and produces systemic manifestation. In addition to genital infection, *C. trachomatis* is the ethiologic agent of trachoma, the leading cause of blindness in developing countries (1).

Clinical signs and symptoms of genital infection are mild or asymptomatic in both man and woman. Many cases of these patients go untreated or mis - diagnosed which lead to the complication of the diseases and promote the spreading of the infection in sexually active population group. The laboratory diagnosis of chlamydial infections is, therefore, essential for proper treatment in order to prevent serious sequelae in the patients and transmission of the organisms to susceptible individuals. The gold standard for detecting *C. trachomatis* from clinical specimens is the isolation of the agents in cell culture which has 100 % specificity and 70 to 80 % sensitivity (19-22). Since chlamydial cell culture is expensive, difficult to perform, time consuming, limited available, and needed for " cold chain" in collection and transportation of specimens, a method which is more rapid, sensitive and easier to perform has been sought. Several methods for the laboratory diagnosis of chlamydial infections have been developed, such as direct fluorescent antibody (DFA)(134,135,136), enzyme immunoassay (EIA) (139,140,141), and nucleic acid probe (142,143,146). However,both the immunological detection of chlamydial antigen and the use of nucleic acid probe lack the sensitivity to be useful for testing clinical specimens. The introduction of DNA amplification by polymerase chain reaction (PCR) provides a new powerful tool for diagnostic possibilities in infectious diseases. The PCR technique amplifies specific target of nucleic acid sequences many thousands of times in a few hours by using repeated cycles of oligonucleotide directed DNA synthesis. It has been used successfully to diagnose genetic diseases (153) and numerous

infectious diseases (31,148,154). Detection of *C. trachomatis* by PCR would thus be an extremely sensitive technique for early diagnosis of chlamydial infections.

Objectives

1. To detect *Chlamydia trachomatis* DNA by polymerase chain reaction (PCR).

2. To evaluate the efficiency of PCR for detection of *C. trachomatis* from clinical specimens.