CHAPTER I

INTRODUCTION

Cervical cancer remains an important health problem for women worldwide particularly in the developing countries. More than 80% of all cervical cancer cases are detected in the developing countries although in the developed countries as the United State also found 15,700 new cases in 1996 [1]. World Health Organization (WHO) has reported that the incidence rate of cervical cancer in the world is about 500,000 new cases each year and about 45% result in death [2].

Cervical cancer is originate from precancerous lesion which is known as cervical intraepithelial neoplasia (CIN). Three grades (CIN I-III) of severity are recognized dependent upon the proportion of thickness of epithelium replacing by atypical cell [3-6]. For decades, it has been suggested that the cervical cancer and their precancerous lesion behave like a sexually transmitted disease (STD)[7]. Previous studies focused on the etiologic role of sexually transmitted infections such as herpes simplex virus type 2 (HSV-2), *Chlamydia trachomatis,* and *Trichomanas vaginalis* [8-10]. At present, the experimental, clinical and epidemiologic evidences have been accumulating on the role of some types of human papillomavirus (HPV) in the pathogenesis of cervical cancer and CIN [11-23]. In addition to these factors, cigarette smoking, low socioeconomic status, use of oral contraceptive and number of sexual partners have been implicated as risk factors for cervical cancer and CIN [24-27].

HPV is a naked DNA virus with an 8 kilobase (kb) closed circular genome [26,28]. Classification of the viruses is based on the nucleotide sequences in a specific region. Until now, more than 70 different HPV types are recognized [29]. In addition, HPVs can also be classified on the basis of

the site of infection, resulting in two main HPV groups : cutaneous HPV and mucosal HPV. Cutaneous HPV most found infect on the keratinized surfaces usually on the hand and feet such as common and plantar warts. Mucosal HPV infections can be found in the genital tract, the respiratory tract, the oral cavity and the conjunctiva[26].

HPVs are not detectable by the common procedures used to diagnose most viral infection. HPV can not be isolated from clinical specimens by cell culture methods. In addition, serological method has no role in diagnosis of HPV infection because of the limitation in antigen preparation. Although the viral particles and capsid protein are often detectable within benign productive infection by electronmicroscopy or immunochemistry, both methods show inadequate sensitivity. Hence, the diagnosis of HPV infection has been depended mainly upon histologic interpretation of tissue biopsies [30]. Although morphological changes associated with HPV infection are easily recognizable and relative characteristic, histologic analysis provides little information about the type of HPV present.

Since molecular biology is introduced to detect HPV, there have been rapid advances and improvements in HPV detection and typing. There are two main methods, amplification method (Polymerase chain reaction ; PCR) and non-amplification methods (Dot blot hybridization; DH, Filter *in situ* hybridization; FISH, *in situ* hybridization; ISH, Southern blot hybridization; SH) [31]. Because non-amplification methods generally lack of sensitivity. Therefore, the amplification method, PCR is used in most of the cases. It is proved that PCR is the most sensitive and precise practice which can detect HPV-DNA even if only one copy of HPV-DNA exists in the cell [32].

CIN and cervical cancer are also the serious health problems for Thai women. Approximately 33% of all cancers occur in Thai women are cervical cancer [33]. However, there is a little information about the epidemiology of HPV infection in CIN and cervical cancer in Thai women. Therefore, the purpose of this study is to investigate the prevalence of HPV infection in CIN-III in Thai women.

Objectives of this study

1. To investigate the prevalence of HPV infection in CIN-III patients and in control group.

2. To detect and type HPV-DNA from CIN-III patients and from control group by PCR and Dot hybridization.