CHAPTER 1

INTRODUCTION AND OBJECTIVES

1.1 Introduction

All over the world, pork is an important food source, accounts for about 40% of total meat consumption and ranks first among all meat sources in the total consumption followed by beef, poultry, lamb and goat meat in descending order. Total meat consumption continues to increase and per capita consumption of pork is increasing in most of the developing countries (John and Wilson, 2002).

Vietnam is an agricultural country with a population of 84.1 million. 73.0% of the population live in the rural area (GSO, 2008). In Vietnam Agriculture plays an important role for the national economics since agricultural products contribute 21.8% to the GDP (EARSS, 2005). The animal husbandry contributed 22.3% to the agricultural production in 2006. Its growth rate has increased by 11.6% compared to the same time period of 2005 (VNECONOMY, 2006).

The major livestock in Vietnam are mainly pig, poultry, cattle, horse, goat and some others. Pork, however, plays a dominant role in the total livestock production, accounting for 80% of the total meat production (USDA, 2005). The meat consumption in Vietnam had also been increasing in recent years and according to the Ministry of Agriculture and Rural Development (MARD) Vietnam's annual per capita meat consumption (live weight) increased from 31.3 kg in 2004 to 35 kg in 2005 (USDA, 2005).

Hanoi is the capital city of Vietnam with a population of more than 6 million inhabitants (GSO, 2008). According to the Hanoi Sub-Department of Animal Health (CCTYHN, 2008), the daily meat consumption in Hanoi is 280 – 300 tons, among that the pork consumption amount estimates 200 – 250 tons. Vietnamese consumers prefer fresh pork and they are self-sufficient in supply and demand of pork production (Howard, 2006).

In the process of pork production, many potential stages such as the slaughtering, the storage, the transport, the processing and the handling for sale can

contribute to the contamination bacteria in fresh meat (Moldlab, 2003; Hanashiro et al., 2005). Through the food chain, meat bacteria can transfer to the human (WHO, 2002).

Salmonellosis has become an important public health problem throughout the world (Workman et al., 1999; Srifuengfung et al., 2005). The food-borne infection caused by Salmonella is one of the most frequently zoonoses today (Jørgensen et al., 2002). Even in developed countries where is manpower and financial resources to fight zoonoses, the infections of Salmonella are recognized as a significant hazard to humans (Bouvet et al., 2003). In the United States there are an estimated 1.4 million new cases of non typhoid Salmonella infections annually (Mead et al., 1999). E. coli is a contaminant bacterium and can be an indicator for environmental fecal pollution by enteric pathogenic bacteria (Moldlab, 2002). In Vietnam, the cases of food-borne infection caused by Salmonella spp. and E.coli and some others have been increasing (Wegener, 1999). It is accounted for 3,000 - 4,000 cases annually (MOH, 2005).

There have been some studies on contamination of micro-organisms in fresh pork meat (To, 1999; Phan et al., 2005; Van et al., 2007; Chu, 2007; Nguyen, 2007) but there have been a few studies on microbial contamination in fresh minced pork in Vietnam. IVERS

1.2 Significance of the study

In the global context the world population increases, the international trade of animal origin is widened, the living standard of people has improved considerably. Therefore the meat consumption will increase. It is very important to provide safe pork for meeting customers' needs and for protecting consumers' health. Knowledge about the local epidemiological situation with respect to the microbiological contamination of fresh minced pork is necessary for food business operators. It also supports information for the Veterinary Public Health Authorities regarding their future interventions with regard to controlling the food safety hazards from animal products to human.

1.3 Objectives

The objectives of this study are as follows:

1. To determine Total Aerobic Count in fresh minced pork.

2. To determine Escherichia coli count in fresh minced pork.

3. To estimate the prevalence of contamination of *Salmonella* spp. in fresh minced pork from the retail market in Hanoi, Vietnam.

4. To identify the potential risk factors associated with the contamination of *Salmonella* spp., *Escherichia coli* and Total Aerobic Count in fresh minced pork from the retail market in Hanoi, Vietnam.



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