1. Introduction

Canine atopic dermatitis (CAD) is the second most common allergic skin disease in dogs (Hillier and Griffin 2001). Particular breeds are known to be more likely to develop atopic dermatitis, including the Labrador/Golden retriever, English setter, West highland white terrier and English/Staffordshire bull terrier (Fraser et al 2008). In Thailand, the breeds that are commonly found to develop CAD, including Miniature poodle, Shih tzu, Pug, Bulldog, Great dane, Labrador/Golden retriever (Dr.Meena Sarikaputi - Personal communication). Although the disease is frequently found, the pathogenesis of the disease is still obscured. Recently several publications have revealed the importance of skin barrier, composed of several proteins including filaggrin , involucrin and LEKTI, encoded by *SPINK5* gene, in preventing in transepidermal water loss (TEWL) and the entry of infectious, toxic substances, and allergens (Descargues et al 2005; Proksch et al 2006). The disruption of skin barrier permits allergens to reach antigen presenting cells in subepithelial tissues, triggering hypersensitivity and allergic reaction. The aim of this study was to quantify the expression of K5, K10, IVL, FLG and LEKTI in lesional atopic, non-lesional atopic and healthy canine skin either at the protein and mRNA levels by immunohistochemistry and quantitative real-time polymerase chain reaction, respectively. The keratinocyte proliferation was also studied by Ki-67 expression. The association of the gene and protein expressions in atopic skin with the Canine Atopic Dermatitis and Severity Index (CADESI-03), which is similar to the human SCORAD index were investigated. Determining the expression pattern of these proteins would help, at least in part, unveil the pathogenesis of CAD.