Isolation and Classification of Intestinal Spirochetes Isolated from Dogs in Thailand by using Sodium Dodecylesulfate-PolyAcrylamide Gel Electrophoresis (SDS-PAGE)

Nuvee Prapasarakul1, Sasithorn Krutviman2, Naruporn Ritiron2, Chaowarit Sutaruk2, Waree Niyomtham1, Thitima Tripipat1, Indhira Kramomthong1

Abstract

Anaerobic intestinal spirochaetes of the genus Brachyspira are known worldwide to colonize in the intestines of the dogs, but there is no report about their prevalence, distribution or pathogenic potential in Thailand. The current study was undertaken to determine the prevalence of cultivable anaerobic intestinal spirochetes in dog population (n=151) and to assess the association of the microorganism with diarrhea and dog age. The samples were allocated to one of four categories according to their consistency; cigar shape (healthy), soft, watery and bloody stool. Under dark field microscopy, the observation rate was positive at 21.6% (33/151). Weakly beta-hemolytic intestinal spirochetes (WBHIS) were isolated from 16 of the 151 (10.6%) samples. The spirochetes from eleven of the 104 samples with non-healthy stool (10.6%) were isolated and 11% (4/36) were soft stool, 8.8% (3/34) were watery diarrhea and 11.6% (4/34) were bloody diarrhea. The isolation rate of puppy (<1 year) was 13.2% (12/91) and the rate of adult was 6.7% (4/60). The spirochetes were found in puppy with diarrhea at 14.8% (9/61). Finding of intestinal spirochetes was not significantly different between healthy and non-healthy dogs (P>0.05) but it tends to be more common in puppy with diarrhea particularly. The protein profiles of 16 isolates could be able to distinguished obviously using Sodium DodecyleSulfate-PolyAcrylamide Gel Electrophoresis (SDS-PAGE) technique. Ten out of 16 isolates were provisionally grouped into A group and 3 isolates were grouped in B group. Interestingly, the patterns of the other 3 isolates were quite similar to that of B. pilosicoli and grouped into Pilo group. Thai canine spirochetes were separated from Brachyspira hyodysenteriae and B. innocens. The study presents the first isolation of canine intestinal spirochetes in Thailand with moderate isolation rate. Our findings strongly support that Thai dogs also can harbor intestinal spirochetes which maybe an important reservoir host of pathogenic B. hyodysenteriae or B. pilosicoli.

Keywords : Dogs, Intestinal spirochetes, Brachyspira, SDS-PAGE, Sodium dodecylesulfate-PolyAcrylamide gel electrophoresis

1Department of Veterinary Microbiology, Faculty of Veterinary Science, Chulalongkorn University
26th year student, Faculty of Veterinary Science, Chulalongkorn University