Discrimination of Escherichia coli isolates recovered from mucosal contents of chicken intestines and different age by repetitive elements sequence-based PCR

ABSTRACT

Repetitive sequence-based PCR (rep-PCR) is a distinctive typing approach that is used to differentiate between bacterial strains. This method is also useful for studying bacterial diversity from different sources. In this study, four rep-PCR which are enterobacterial repetitive intergenic consensus PCR (ERIC-PCR), BOX-PCR, repetitive extragenic palindromic PCR (REP-PCR) and polytrinucleotide (GTG)5-PCR were evaluated for differentiation of eighteen Escherichia coli isolates to correct source based on part of intestine and age. These isolates were recovered earlier from ileal and caecal mucosal contents of chickens at a different age. The purpose of this study was to investigate the efficacy of four rep-PCR methods and composite of rep-PCR patterns to differentiate E. coli isolates to original sources of part of intestines and age based on the D index (discriminatory power determined based on Simpson's index of diversity calculated at similarity coefficient of 90%). The (GTG)5-PCR had the highest D index (0.9804) for part of intestine and age factors. The similar D index was observed in the composite of rep-PCR patterns. The lowest D index was observed in ERIC- and BOX-PCR at 0.9020 and 0.8039 for part of intestine and age factors, respectively. (GTG)5-PCR was also the most discriminative rep-PCR observed due to its ability to cluster 14I 3E and 14I 2X isolates, and 14C 1E and 14C 3E isolates correctly in part of intestine and age factors. It was concluded that (GTG)5-PCR is a promising tool for discriminating E. coli isolates extracted from chicken intestines.

Keyword: Rep-PCR; E. coli; Diversity; Chicken intestines