World Journal of Gastroenterology

Submit a Manuscript: http://www.wjgnet.com/esps/
Help Desk: http://www.wjgnet.com/esps/helpdesk.aspx
DOI: 10.3748/wjg.v6.iSuppl3.86

World J Gastroenterol 2000 September 15; 6(Suppl3): 86
ISSN 1007-9327 (print) ISSN 2219-2840 (online)

Rapid identification of LT$^+$ *E. coli* by means of PCR and its test comparisons

Ying-Xia Cui, Hai-Feng Shao, Yu-Hua Yang

Ying-Xia Cui, Hai-Feng Shao, Yu-Hua Yang, Medical Laboratory Center of Jinling Hospital, Nanjing 210002, Jiangsu Province, China

Author contributions: All authors contributed equally to the work.

Supported by A key project of the 8th Five-year Plan of the PLA, Research on the Comprehensive Prevention of Diarrhea among Troops, No. 91 A024-0058.

Correspondence to: Ying-Xia Cui, Medical Laboratory Center of Jinling Hospital, 305# East Zhongshan Road, Nanjing, China. Wjgnj@ publicl.Ptt.js..cn
Telephone: +86-25-4826808-58174
Fax: +86-25-4803061

Received: June 30, 1999
Revised: January 10, 2000
Accepted: July 10, 2000
Published online: September 15, 2000

Abstract

AIM: To select a test method for specifical, sensitive and rapid identif ication of LT$^+$ *E. coli*.

METHODS: Stool samples inoculated into LB solution were culture d for 4 h at 35 ℃. 10 μ boiled culture solution was taken to template. Two oligonucleotide primers were used in a polymerase chain reaction (PCR) procedure to amplify a highly conserved DNA sequence of the A subunit of the heat-labile enterotoxin. Detection of the 110 bp amplified product can be done by agarose gel electrophoresis. Thirty strains of known bacteria (LT$^+$ *E. coli* (EC-129), ST$^+$ *E. coli* (EC-130) and LT$^+$ ST$^+$ *E. coli* (EC-142), *Salmonella typhimurium*, *Salmonella typhi*, *Salmonella paratyphi A*, *Salmonella group C*, *Shigella sonnei*, *Enterobacter aerogenes*, *Alcaligenes sp*, *Providencia rettgeri*, *Proteus mirabilis*, *Morganella morganii*, *Pseudomouas aeruginosa*, *Aeromonas hydrophila*, *Klebsiella pneumoniae*, *Citrobacter divers us*, *Enterobacter cloacae*, 12 strains of *E. coli* isolated from bile samples) and 108 diarrhea samples were detected. A total of 108 diarrhea samples were compared with LT probe hybridization, modified Eleck (M-Eleck) and ELISA simultaneously.

RESULTS: By PCR, of the 30 strains of bacteria, only LT$^+$ *E. coli* and LT$^+$ ST$^+$ *E. coli* were positive; in 40 of the 108 diarrhea samples, 20 were positive and in the other 68 samples from infants, only five were found to be positive. Of the 25 positive samples by PCR, 23 were also found to be positive in the other 3 tests; 1 was found to be positive by M-Eleck and ELISA. Of the 83 negative samples by PCR, the same negative results were found by MEleck and ELISA, but 2 were found to be positive by LT probe hybridization. The overall coincidence rate was about 95%. Analysis of correlation showed a significant difference between PCR and other three tests ($P < 0.01$) and analysis of difference showed no significant difference ($P > 0.05$) between them. In the detection of LT$^+$ *E. coli* by means of PCR, the minimum number of target bacteria required was 50 CFU. The whole test was finished in 7 h.

CONCLUSION: Detection of LT$^+$ *E. coli* by PCR showed that the method is specific, sensitive and rapid.

Key words: *Escherichia coli*; Oligonucleotides; Polymerase chain reaction; Electrophoresis, agar gel; Diarrhea; feces; Enterotoxins

Cui YX, Shao HF, Yang YH. Rapid identification of LT$^+$ *E. coli* by means of PCR and its test comparisons. *World J Gastroenterol* 2000; 6(Suppl3): 86 Available from: URL: http://www.wjgnet.com/1007-9327/full/v6/iSuppl3/86.htm DOI: http://dx.doi.org/10.3748/wjg.v6.iSuppl3.86

E- Editor: Zhang FF

Published by **Baishideng Publishing Group Inc**
8226 Regency Drive, Pleasanton, CA 94588, USA
Telephone: +1-925-223-8242
Fax: +1-925-223-8243
E-mail: bpgoffice@wjgnet.com
Help Desk: http://www.wjgnet.com/esps/helpdesk.aspx
http://www.wjgnet.com