Rapid DNA extraction protocol from stool, suitable for molecular genetic diagnosis of colon cancer

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Abstract

Background: Colorectal cancer (CRC) is one of the most common cancers in the world and is curable if diagnosed at the early stage. Analysis of DNA extracted from stool specimens is a recent advantage to cancer diagnostics. Many protocols have been recommended for DNA extraction from stool, and almost all of them are difficult and time consuming, dealing with high amount of toxic materials like phenol. Their results vary due to sample collection method and further purification treatment. In this study, an easy and rapid method was optimized for isolating the human DNA with reduced PCR inhibitors present in stool. Methods: Fecal samples were collected from 10 colonoscopy-negative adult volunteers and 10 patients with CRC. Stool (1 g) was extracted using phenol/chloroform based protocol. The amplification of P53 exon 9 was examined to evaluate the extraction efficiency for human genomic targets and also compared its efficiency with Machiels et al. and Ito et al. protocols. Results: The amplification of exon 9 of P53 from isolated fecal DNA was possible in most cases in 35 rounds of PCR using no additional purification procedure for elimination of the remaining inhibitors. Conclusion: A useful, rapid and easy protocol for routine extraction of DNA from stool was introduced and compared with two previous protocols.

Reaxys Database Information

Author keywords

Colon cancer; DNA extraction; Stool

Indexed Keywords

EMTREE drug terms: chloroform; DNA; phenol; protein p53
EMTREE medical terms: article; cancer diagnosis; clinical article; clinical protocol; colon cancer; colonoscopy; controlled study; diagnostic procedure; DNA extraction; DNA isolation; exon; feces analysis; gene amplification; human; human genome; interterm comparison; molecular genetics; polymerase chain reaction; purification
MeSH: Adult; Base Sequence; Case-Control Studies; Colonic Neoplasms; Colorectal Neoplasms; DNA Primers; DNA, Neoplasms; Feces; Genes, p53; Humans; Molecular Biology; Polymerase Chain Reaction
Medline is the source for the MeSH terms of this document.

Chemicals and CAS Registry Numbers: DNA, 9007-49-2; chlorofomy, 67-66-3; phenol, 108-95-2, 3229-70-7; DNA Primers; DNA, Neoplasms

References (16)

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