

TRIPLEX POLYMERASE CHAIN REACTION ASSAY FOR DETECTION OF MAJOR SOIL-TRANSMITTED HELMINTHS, *ASCARIS LUMBRICOIDES*, *TRICHURIS TRICHIURA*, *NECATOR AMERICANUS*, IN FECAL SAMPLES

Orawan Phuphisut, Tippayarat Yoonuan, Surapol Sanguankiat, Kittipong Chaisiri, Wanna Maipanich, Somchit Pubampen, Chalit Komalamisra and Poom Adisakwattana

Department of Helminthology, Faculty of Tropical Medicine,
Mahidol University, Bangkok, Thailand

Abstract. *Ascaris lumbricoides*, *Trichuris trichiura*, and *Necator americanus* are medically important soil-transmitted helminths (STHs) occurring frequently worldwide including Thailand. Fecal examination using a microscope has been recommended as the gold standard for diagnosis of STH infections, but suffers from low sensitivity. Recently, highly sensitive and specific assays, such as multiplex quantitative PCR, has been established, but the high cost and need for special instruments are still barriers limiting their applications in routine diagnosis. Therefore, a conventional multiplex PCR assay, with its lower cost and greater simplicity, was developed, for the simultaneous detection of STHs in fecal samples. The multiplex PCR assay was species-specific to the three STHs, and could detect one copy of DNA target. Compared with microscopic examination of fecal samples, sensitivity and specificity of the multiplex PCR was 87% and 83%, respectively. This multiplex PCR assay provides an alternative method for routine diagnosis of STHs infection, and might be applied for epidemiological studies of STHs in endemic areas.

Keywords: soil-transmitted helminth, multiplex PCR, sensitivity, specificity

Correspondence: Dr Poom Adisakwattana,
Department of Helminthology, Faculty of
Tropical Medicine, Mahidol University, 420/6
Ratchawithi Road, Bangkok 10400, Thailand.
Tel/Fax: 66 (0) 2643 5600
E-mail: poom.adi@mahidol.ac.th