Development of the rapid test kit for the identification of Campylobacter spp. Based on Loop-mediated isothermal amplification (LAMP) in combination with a Lateral flow dipstick (LFD) and gold Nano-DNA probe (AuNPs) / Dueantem Thongphueak, Kosum Chansiri, Thayat Sriyapai, Supatra Areekit, Somchai Santiwatanakul, Piyada Wangroongsarb

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Abstrak

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Development of the Rapid Test Kit for the Identification of Campylobacter spp. Based on Loop-mediated Isothermal Amplification (LAMP) in Combination with a Lateral Flow Dipstick (LFD) and Gold Nano-DNA Probe (AuNPs)
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ABSTRAK
The detection of Campylobacter spp. in meat products was developed by using loop-mediated isothermal amplification (LAMP) combined with DNA-based bioassay methods, including a lateral-flow dipstick (LFD) and gold nano-DNA probe (AuNPs) assay. The LAMP primers were designed from the conserved nucleotide regions of Campylobacter spp. The analytical sensitivity of the LAMP-LFD and LAMP-AuNPs analysis was 360 fg/μl. The analytical specificity of LAMP-based assays showed no cross-reactions to Listeria monocytogenes, Salmonella Typhimurium, Escherichia coli, Bacillus cereus, Pseudomonas aeruginosa, Staphylococcus aureus, Enterobacter aerogenes, Serratia marcescens, Vibrio parahaemolyticus, Vibrio cholerae, Klebsiella oxytoca and Citrobacter diversus.The sensitivity, specificity and accuracy of both LAMP-LFD and LAMP-AuNPs for the detection of pre-enrichment cultures from raw chicken meat samples were 100%, 95% and 96.67%, respectively. Since the processing time of LAMP-based assays is 60-90 minutes, it is applicable as a point-of-care screening test for food safety and as a process control of Campylobacter spp. contamination.