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COMPARATIVE STUDIES ON LOOP MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) ASSAY AND CONVENTIONAL PCR FOR DETECTION OF SALMONELLA SPP. FROM ANIMAL ORIGIN FOOD

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Loop mediated isothermal amplification (LAMP) is a novel molecular detection method that is more rapid and simpler than PCR. The objective of the present study was comparative evaluation of LAMP and conventional PCR for the detection of *Salmonella spp*. from animal origin foods. A total of 383 samples of various animal origin foods comprising of 233 different meat (viz. 50 mutton, 50 chicken, 73 buffalo meat and 60 pork) and 50 each of fish, eggs and milk were collected from retail shops located in and around Mumbai city and were analysed by using cultural, conventional PCR and LAMP method. A LAMP assay targeting the invA gene of *Salmonella* was standardized. On screening of 383 food samples, 66 (17.23%) *Salmonella* isolates was recovered by culture method, of which 15, 8, 0, 10, 14, 9 and 10 were isolated from milk, fish, egg, mutton, chicken, buffalo meat, and pork, respectively with corresponding prevalence rate observed as 30, 16, 0, 20, 28, 12.32 and 16.66%. Out of these, 64 isolates (96.96%) were detected by conventional PCR, whereas LAMP could detect all 66 (100%) *Salmonella* isolates. The optimal temperature for the LAMP assay was 65°C for 60 min with a detection limit upto 4 ng/µl concentration of DNA, whereas PCR could detect the DNA upto 400 ng/µl of DNA. The sensitivity of LAMP was found to be 100 times more than conventional PCR. Both LAMP and PCR assays were 100% specificity after screening all 66 *Salmonella* organisms. Thus, the study revealed that LAMP assay was equally specific with a shorter detection time when compared to PCR in the identification of *Salmonella*. Moreover, LAMP was found to be 100 times more sensitive than PCR. The LAMP assay is a promising alternative method for the rapid identification of *Salmonella* and could be used in resource-limited laboratories at field levels.

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