Alkaline lysis – Loop mediated Isothermal Amplification (AL-LAMP) assay for the species authentication of buffalo meat, pork and mutton

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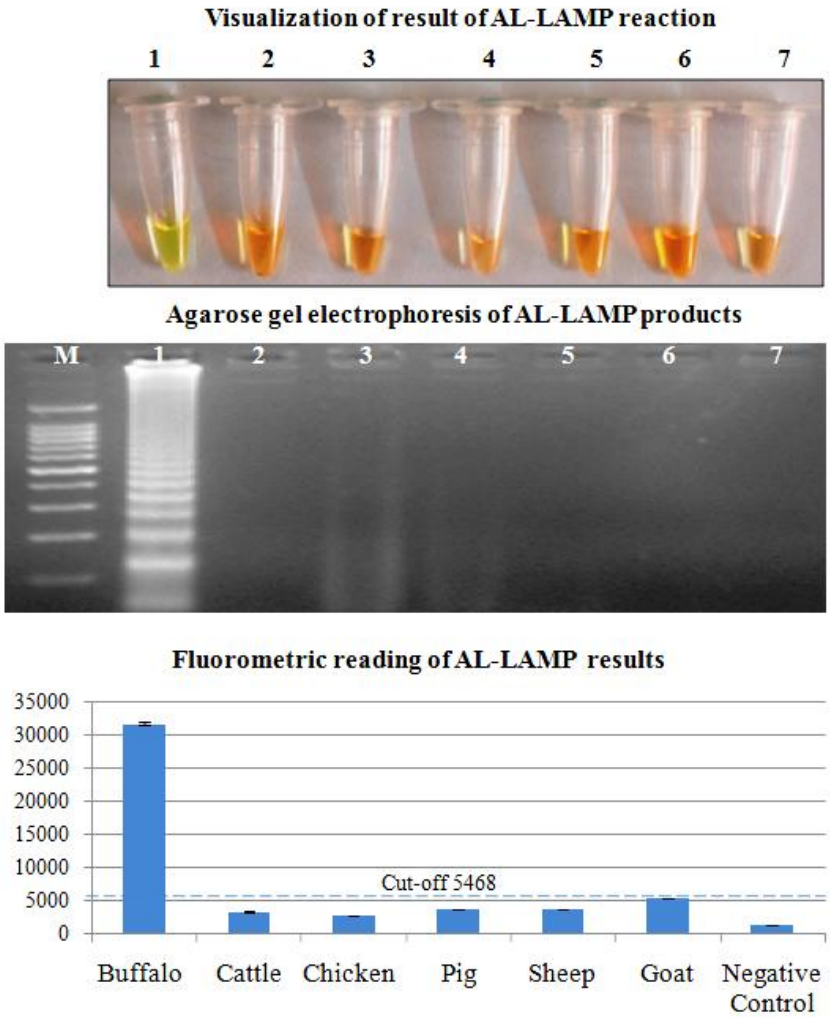
Brief description about the technology

AL-LAMP is a simple method for species identification of meat which combines Alkaline Lysis (AL) method of DNA extraction and Loop Mediated Isothermal Amplification (LAMP). Visual detection of presence of target DNA signal in the tube is accomplished by the color change using the SyBr Green I dye. Technique is suitable for the specific detection of origin of meat samples in raw, cooked and adulterated meat samples. Dependable amplification was possible in thermally processing meat samples heated even up to 121 ºC for 30 minutes. Species specific primers for LAMP amplification were designed for Buffalo meat, Pork and Mutton. Cross-amplification of the related species was excluded by incorporating DNA from closely related species in the reaction assay. The AL method of DNA preparation was found economic, less cumbersome and easy method compared to other traditional methods. Further, DNA amplification using LAMP principle precludes need for costly sophisticated equipment such as a thermal cycler, agarose gel electrophoresis unit and gel documentation unit. Combination of alkaline lysis method of DNA extraction with LAMP based detection of amplified signal and visual colour comparison of result interpretation obviates hitherto used employed PCR based or amplification methods or post-PCR requirements such as gel electrophoresis. The novel approach (AL-LAMP technique) was found robust and handy, even for resource compromised laboratories engaged in the food analysis that require authentication of origin of meat and meat products.



Species authentication of buffalo meat by AL-LAMP assay. Green colour indicates presence of buffalo DNA while orange colour indicates it's absence.

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