



ISOTHERMAL DETECTION OF MEAT SPECIES IN FOOD PRODUCTS

PATENT NO. PI 2019007501



DNA
extraction

LAMP assay
oligonucleotide
primers

LAMP
assay

Result: specificity &
sensitivity
of the LAMP assay

TECHNOLOGY

DNA-based detection of multiple meat species in food products by way of loop-mediated isothermal amplification (LAMP) assay.

PROBLEM STATEMENT & CURRENT ISSUES

Detection of species (spp.) fraud in meat products is important for consumer protection especially on the halal and health issues.

The higher demand for meat and meat products accompanied by their escalating cost makes them prone to fraudulence: e.g. adulteration, substitution and mislabeling.

There have been a number of analytical methodologies for meat spp. authentication using expensive instruments such as RT-PCR, GC and LC.

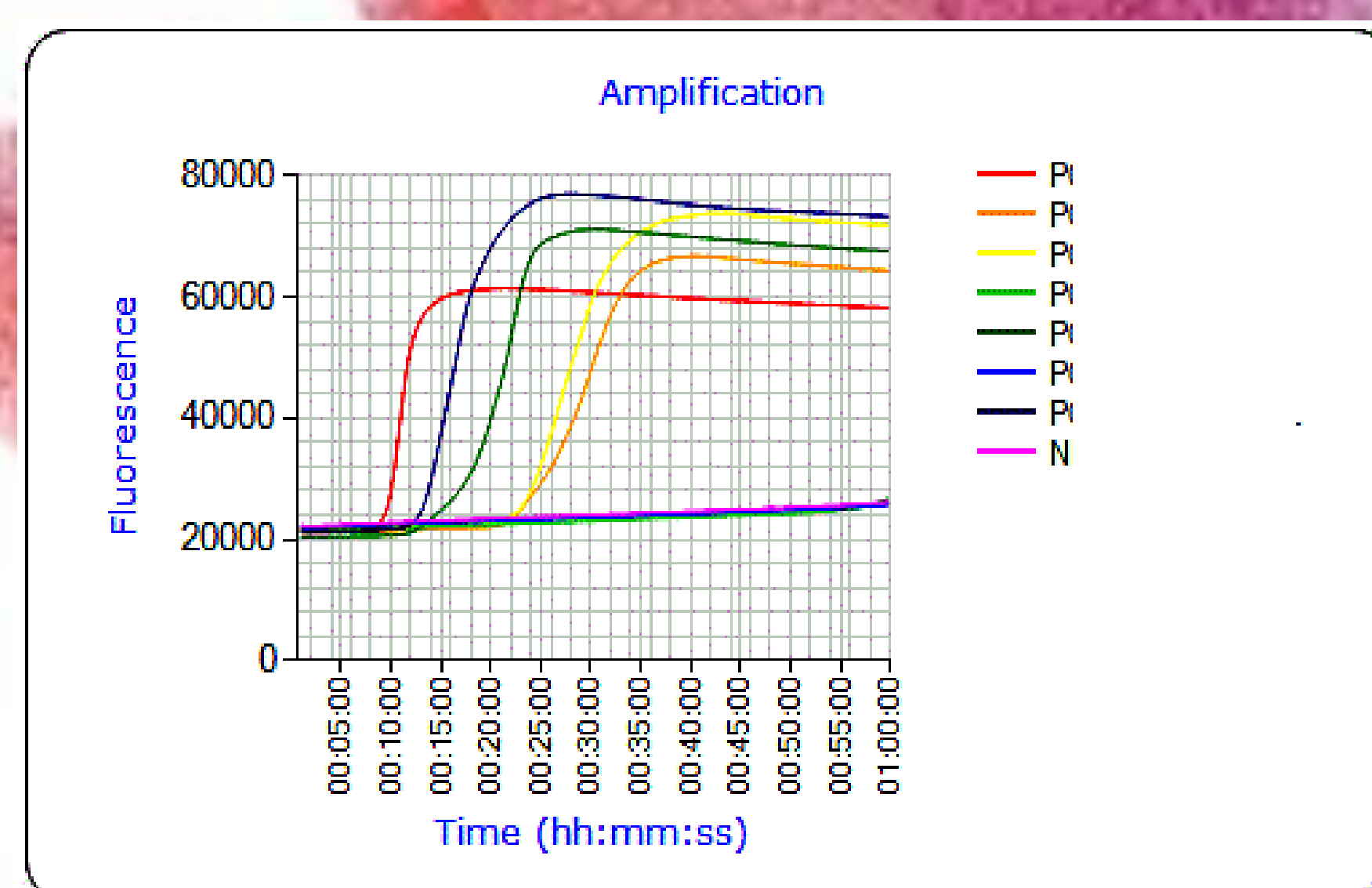
These analytical approaches have been widely used in various countries and organizations for authenticating commercial meat-based products. However, these methods are relying on laboratory expertise and operation of special and expensive equipment.

LAMP is another recent extension of nucleic acid amplification method that does **not** require the **expensive machine** and the reaction runs as **sensitive** as and even **faster** than PCR. These save cost and time.

INVENTIVENESS & NOVELTY

The invention is a rapid and sensitive LAMP assay with specific primers for detecting multiple meat spp. for food authentication or adulteration.

It can detect DNA of three meat spp; **rat, cat and dog** which are yet to be available in the routine halal analysis which is normally focusing on porcine elements.



USEFULNESS & APPLICATION

The LAMP model provides a sensitive detection of cat, dog and rat meat DNA while being cheaper and faster than the current PCR approaches.

This assay is using a portable fluorometer (Genie® II, Optigene, UK), which is a very compact, lightweight and easy to use instrument with built-in rechargeable Lithium-Polymer battery; making the whole assay suitable for use not only in the laboratory but also in the field.

IMPACT OF THE PRODUCT

We developed a rapid and sensitive LAMP model to identify rat, cat and dog DNA in meat-based samples.

These are unlawful meat spp. for muslim to be consumed as well as for health reasons.

These meats are not routinely checked as compared to porcine elements but cases of adulteration have been reported elsewhere.

MARKET POTENTIAL

The LAMP model can be used by regulatory bodies and QC officers in industry to authenticate meat spp. in food products.

TRL 4 – Lab validation



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