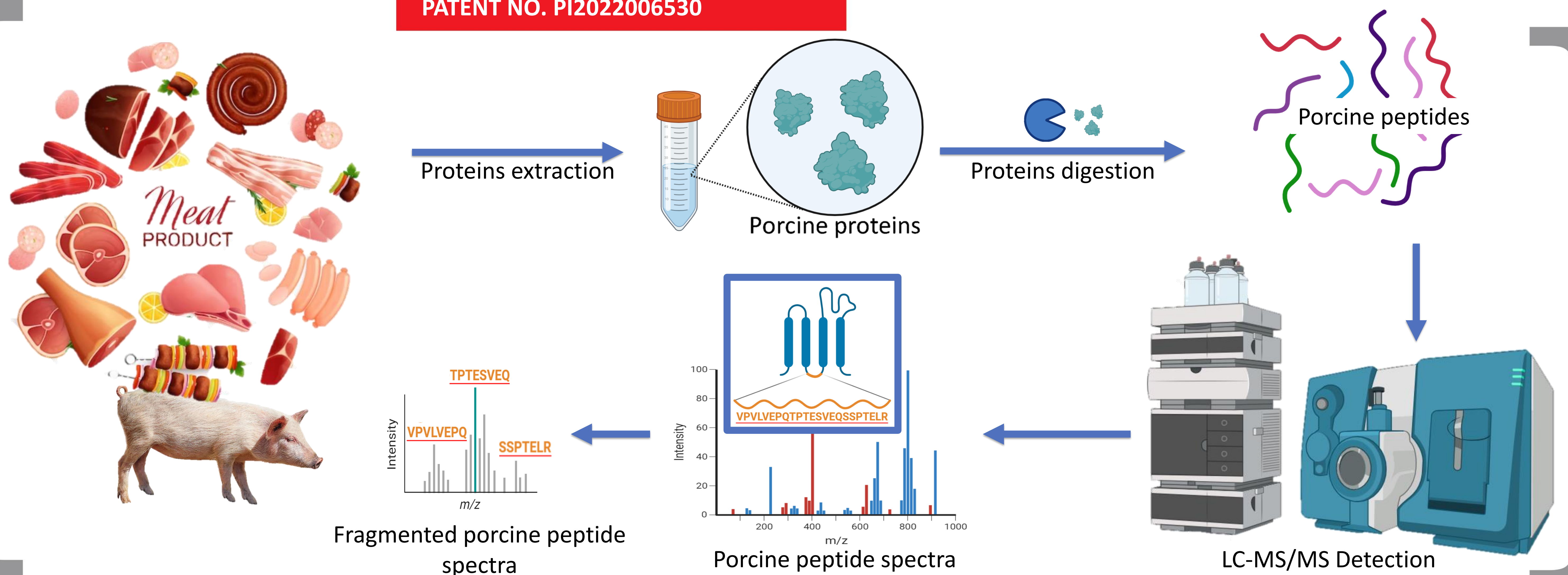


# LC-MS/MS Method For Non-Halal Authentication of Raw or Processed Meat Sample

PATENT NO. PI2022006530



## BRIEF TECHNOLOGY

The invention relates to porcine peptides, in particular to a method for non-halal authentication of raw and processed meat sample through liquid chromatography tandem mass spectrometry (LC-MS/MS).

## CURRENT ISSUES

- There is **no alternative and complementary approach** for halal meat authentication, which currently relies solely on the detection of porcine DNA through the qPCR method.
- The qPCR method can give incorrect results due to DNA degradation or contamination, especially for the highly-processed industrial meat samples.
- The qPCR method involves complex laboratory procedures, sterile reagents/tools, and a clean environment.

## INVENTIVENESS & NOVELTY

- These porcine peptides have been confirmed as porcine-specific using the UniProt database (a trusted resource for protein data), to ensure the effectiveness of the LC-MS/MS method in non-halal meat authentication.
- The LC-MS/MS method identifies porcine peptides by their mass-over-charge ( $m/z$ ) ratio and then focuses on their fragmented peptides  $m/z$  to ensure specificity in non-halal meat authentication.
- The LC-MS/MS method employs a consensus approach by detecting these porcine peptides as well as their fragmented peptides for non-halal meat authentication.

## USEFULNESS & APPLICATION

- As an alternative method and biomolecule, it **enhances the confidence level** in the qPCR result for non-halal meat authentication.
- The LC-MS/MS method remains **reliable and robust** because the porcine peptides remain intact even though the meat samples undergo harsh industrial processes.
- The LC-MS/MS method involves simple laboratory procedures and **does not require sterile reagents/tools**.

## IMPACT OF THE PRODUCT

- The integrity of halal analysis is enhanced when combined with the qPCR method for non-halal meat authentication. The target biomolecule is porcine peptides rather than porcine DNA.
- The porcine peptides have the potential to be used in the development of a rapid test kit for non-halal meat authentication.

## MARKET POTENTIAL

- Halal industry – in Malaysia, Indonesia, Singapore, Brunei, and Thailand market.
- Private company/GLC/enforcement agencies in providing laboratory testing, inspection, certification, and verification solutions.
- Cultured/lab-grown meat company.

## TECHNOLOGY READINESS LEVEL (TRL)

TRL 6 -Demonstration in real environment



Project Leader : Ts. Mohd Hafis Yuswan, Ph.D., P.Tech.  
Dept./Faculty : Halal Products Research Institute  
Email : hafisyuswan@upm.edu.my  
Phone : 03-9769 1835  
Expertise : Proteomics, Halal Science, and Chemometrics

#UNSDG



[www.sciencepark.upm.edu.my](http://www.sciencepark.upm.edu.my)