

The efficiency of genomic DNA extraction using the AllEx® Meat Genomic DNA Kit in five types of processed meat products

Experimental Conditions

Materials



AllEx®64 Automated Nucleic Acid Extraction System
[AEX064]



AllEx® Meat Genomic DNA Kit
[950-048, 950-096]

Sample & Extraction Information

Type	Processed meat product				
Sample					
	Canned ham	Sausage	Pork cutlet	Dry pet food	Wet pet food
Main ingredient	Pork			Chicken	
Target	Genomic DNA				
Sample amount	25 mg				
Elution volume	100 µl				
Extraction protocol	Genomic DNA-P2				
Operating time	21' 53''				

Protocol

AllEx® Meat Genomic DNA Kit

* For more details and methods, please refer to [the manual of AllEx® Meat Genomic DNA Kit](#).

Preparation of Proteinase K Solution

To obtain 20 mg/ml of proteinase K solution, add 1.2 ml of PK Storage Buffer to one bottle of lyophilized Proteinase K (24 mg), and gently invert to dissolve.

Sample Preparation

1. Transfers 25 mg of the sample into a 1.5 ml microcentrifuge tube (not provided).
2. Add 300 µl of Buffer CL and 20 µl of proteinase K solution (20 mg/ml).
3. Incubate each sample using a thermomixer at 1,500 rpm for 45 min at 65 °C.
4. The canned ham, sausage, and frozen pork cutlet samples (excluding pet food) are centrifuged at 13,000 rpm for 10 min at 4 °C.
5. Carefully transfer 200 µl of the supernatants to 1st (7th) well of the cartridge, avoiding the fat and debris layer.
6. Dispense 10 µl of RNase A Solution (20 mg/ml) to 3rd (9th) well of the cartridge.

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Results

Sample (sample amount)	Yield (µg)	CV	A ₂₆₀ /A ₂₈₀	CV
Canned ham (25 mg)	1.2	0.01	1.66	0.01
Sausage (25 mg)	3.9	0.04	1.93	0.02
Pork cutlet (25 mg)	3.1	0.43	1.95	0.04
Dry pet food (25 mg)	14.5	0.15	1.85	0.02
Wet pet food (25 mg)	6.1	0.16	1.51	0.01

Table 1. Assessment of DNA yield and purity from processed meat products

Genomic DNA was extracted from five processed meat products using the AllEx® Meat Genomic DNA Kit (n=3) on the AllEx®64 Automated Nucleic Acid Extraction System. The yield and purity of the extracted nucleic acids were measured using a NanoDrop™ 2000 spectrophotometer.

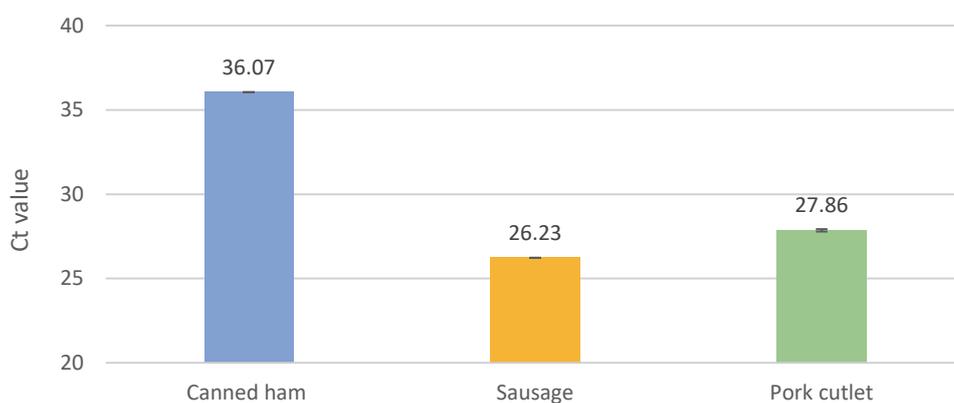


Figure 1. qPCR results of the extracted genomic DNA from canned ham, sausage, and pork cutlet

Genomic DNA extracted from canned ham, sausage, and pork cutlet samples (n=3) was used as a template for real-time PCR amplification of the swine GAPDH gene (150 bp). qPCR was performed using HyperScript™ One-step RT-PCR Master Mix (602-110) on the CFX96™ System.

Conclusion

- A study of five types of processed meat products found that the DNA extracted from canned ham was comparatively lower than the DNA yield from the other four products.
- Real-time PCR has been utilized to successfully amplify the swine GAPDH gene from various samples containing pork ingredients, including canned ham, sausage, and frozen pork cutlets.
- The consumption of fat-rich processed meat products (e.g., canned ham, sausage, and frozen pork cutlet) has been associated with the presence of residual magnetic beads in the eluted DNA. In such cases, the utilization of centrifugation at a low temperature (4 °C) as an alternative to room temperature has been demonstrated to facilitate fat separation and minimize residual magnetic beads.

Ordering Information

Cat. No.	Product	Size
AEX064	AllEx®64 Automated Nucleic Acid Extraction System	1 Unit
950-048	AllEx® Meat Genomic DNA Kit (Single Type)	48T
950-096	AllEx® Meat Genomic DNA Kit (Plate Type)	96T