

MEAT INSPECTION IN A MEAT FACTORY CELL CONCEPT

Ole Alvseike^{1*}, Truls Nesbakken², and Miguel Prieto³

¹Animalia, Postboks 396 Økern, 0396 Oslo, Norway

²Dept. of Food Safety and Infection Biology, Faculty of Veterinary Medicine, Norwegian University of Life Sciences, Oslo, Norway

³Department of Food Hygiene and Technology, Veterinary Faculty, University of León, León, Spain

*Corresponding author email: ole.alvseike@animalia.no

Abstract – Efficient technology to improve food safety.

Key Words – workstation, control, innovation

I. INTRODUCTION

The suggested Meat Factory Cell (MFC) concept will apply three principal changes to meat production and processing:

1. Work partly organised in cell stations instead of lines
2. Combine and merge elements of the today's separate processes and disciplines "slaughter" and "meat primal cutting".
3. "Disassemble" the carcass from outside-in without removal of internal organs before presenting "a separated carcass for inspection"

Codex alimentarius has drawn an international set of principles for a risk-based meat inspection and hygiene in the meat chain [1]. Meat inspection programs shall ensure that only healthy animals are slaughtered for human consumption, and ensure that meat from animals represents no risk to human health.

The objective of this work is to draft an alternative procedure for meat inspection based on a new "MFC" concept of slaughter and cutting. The procedures shall fulfill the principles of *Codex alimentarius* and public health targets within the EU-legislation.

II. MATERIALS AND METHODS

The European Food Safety Authority (EFSA) has suggested a methodology for benefit risk assessment in foods [2]. Figure 1 gives a schematic overview of the elements in the assessment. We will assess pros and cons with the traditional meat inspection versus pros and cons with the alternative MFC inspection procedure. Here some preliminary considerations are presented.

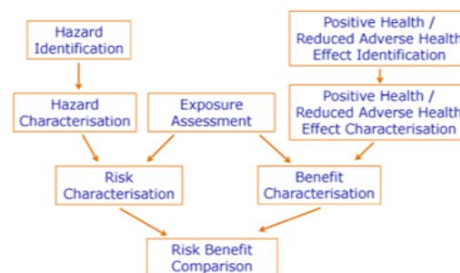


Fig 1. EFSA's risk-benefit assessment scheme

III. RESULTS AND DISCUSSION

General needs for improvement of meat inspection systems:

1. Food Business Operators' business intelligence systems should be developed to handle Food Chain Information (FCI) and meat quality data arising in the abattoirs.

2. Individual identification of pigs for slaughter required to support FCI also through abattoirs, e.g. Radio Frequency Identified hooks.
3. Outdated approval stamps should be exchanged with systems carrying more relevant information or ID, e.g. barcoded tags, prints, electronic marks or tattoos.
4. Decontamination should be applied and targeted after approval for cuts not going to heat treatment, e.g. edible offals and trimmings intended for dry cured products.

Dimensions where MFC is not expected to make significant changes:

1. The MFC does not affect *ante mortem* inspection.
2. A complete carcass should be presented for *post mortem* inspection also in MFC (Figure 2).
3. As a general rule pathological changes will be similarly detected in MFC.
4. Specific subclinical infections (e.g. salmonella) are not more easily detected in MFC either.

Dimensions where MFC is expected to provide benefits:

1. Significantly reduced faecal and non-faecal contamination of primal cuts.
2. Entire GI-tract removal obtainable.
3. Predilection sites for abscesses, umbilicus and backbone, is not transected by a splitting saw. If splitting of backbone is indicated, splitting can be performed with reduced risk for cross-contamination afterwards.
4. A more effective and primal cut-adapted cold storage regime.
5. Parts intended for processed meats may be manufactured immediately without prior cooling of trimmings.
6. Diagnostic tools could more easily be applied for verification and sorting, e.g. a range of electromagnetic sensors, image analysis and equipment.



Fig 2. Imagined meat inspection in MFC

IV. CONCLUSION

Today's meat inspection is the basic level for access to market. However, alternative documented approaches should be allowed and appreciated. The MFC will most likely improve the hygiene and facilitate the inspection in pig slaughter and primal cutting. Innovations are highly needed on traceability and FCI systems, and the core technologies are available but not exploited. Decontamination should be applied after approval and grading. Legislative demands should be worded in functional terms. If legislation is lagging behind technological advances, it will impede improvements in hygiene and food safety.

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