

## NEW METHOD FOR DETERMINATION OF DRIP LOSS IN PORK MUSCLES

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### Background

The water holding capability of meat (the ability to avoid drip loss) is a very important quality parameter. The consumers find that too much meat juice in the retail packs is unacceptable just as the manufacturing firms find that a big thawing or cooking loss is unwanted.

**Definition:** The drip loss is an expression of the meat's lack of ability to hold on to the natural meat juice in the muscles and muscle fibres.

This paper discusses a gravimetric method where the drip loss is defined as the juice emanating from a precisely defined sample under reproducible conditions.

A high drip loss might be due to a denaturing of the muscle proteins, cold shrinking and/or a low ultimate pH.

It is not possible to compare the results from different methods for determination of the drip loss in meat directly. When comparing drip loss results from different experiments, it is therefore important that the same method is used.

An OECD Working group [1] has recommended a method where a standard piece of meat is placed in a closeable container with net bottom. The new method, which is the subject of this paper, is a development of this method. However, it is a more simplified method, which makes it easier, simpler and quicker to use under production conditions. When the quality of pigmeat is evaluated in large scale investigations, the drip loss has to be determined in a standardised, well-documented and practical manner.

### Objectives

The method has been developed for evaluation of the longissimus dorsi muscle, but we do not expect any problems in using the method on other muscles.

### Method

The method is performed as follows:

The day after slaughter the muscles to be analysed are taken from the carcass. Within one hour hereafter a 25 mm slice is cut at a right angle to the muscle fibre direction. Shortly after (within seconds) the sample is cut using a 25 mm cork borer in the fibre direction. It is then placed in a special container equipped with a lid to avoid evaporation and loss of meat juice outside the container. The container is stored for 24 hours at 4–6°C before the drip loss is determined by weighing.

### Results and discussion

It is evident that if an investigation requires a large number of samples, it must be possible to handle all the samples reliably.

Other methods have been described e.g. by Honikel [2] and Lundström [3]. The first method is performed by hanging the sample wrapped in a plastic bag on a hook (hanging drip loss). The second method is performed by placing the sample on a tray with holes (drip loss on tray). We have tested both methods along with the new method (the container method) and the conclusion is that the new method is best.

The new method has the following advantages:

- it is easier to handle at abattoir conditions
- it is easier to perform in a reproducible way
- higher sensitivity, determined as the range from minimum to maximum values.

**Easy to handle:** The weight of all the containers is determined in advance in the laboratory using a high performance balance. At the abattoir the technician can concentrate on selecting the samples and putting them into the containers. After the storage for 24 hours, maybe in a transportable refrigerator, the containers are brought to the laboratory. The weight of the container with meat is recorded in the laboratory. Hereafter the meat is taken from the container, carefully dried with absorbent paper and weighed.

**Easy to perform in a reproducible way:** Only simple operations are carried out at each step. The important operation, the weighing, is performed in a laboratory under the best conditions. The method is reproducible. This is important when performing an investigation running over a span of time with different technicians involved.

High sensitivity: The sample is cylindrical, 25 mm in diameter and 25 mm in length. It is therefore a small sample with a large surface area in relation to the mass. The sample is placed in the container on lamellas with a minimum area touching the surface. The range between minimum and maximum values from the 3 methods was compared on 42 longissimus dorsi muscles with the following results:

- The container method: 12.5 %
- The hanging method: 10 %
- The tray method: 5 %

Differences in the meat: Due to the fact that meat is inhomogeneous, the container method gives more detailed information about the drip loss from the muscle. Therefore, it might be an advantage to take out two samples per slice and average the results to get a more saying result. Because the meat sample is small when it is cut it is possible to avoid fat and membranes which contributes to a higher sensitivity.

### Conclusion

A method to determine drip loss in pork, longissimus dorsi muscles, is described and compared with two other methods. The new method is found to have a high sensitivity and it is easy to perform in a reproducible way and it is easy to handle at abattoir conditions. This means that this method is very well suited for investigations designed to compare e.g. the effect of different treatments and differences in breeding on drip loss. Due to the higher sensitivity it will give higher absolute values than the other methods. The values found with the method cannot be related directly to the amount of loose water e.g. in retail packs.

### References

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