

Can the sensory quality of chicken meat be improved?

by Renate Thieme and Steve Ladbrook, Micro-Plus GmbH, Stadtoldendorf, D-37627, Germany.

The digestaron poultry concept has been proven worldwide to advantageously influence the performance parameters and, therefore, the profitability of chicken meat production. Small scale institute evaluations have demonstrated improvements to carcass composition and this led to professional taste panel studies on the sensory quality of chicken meat.

In conjunction with the Georg-August-University in Göttingen, Germany, a professional taste panel has performed trials to evaluate the sensory quality of broiler thigh and breast meat.

Sensory analysis

In order to perform the sensory analysis, 120 as-hatched Ross 308 birds were randomly divided into a control group and treatment group. Needless to say, the only difference in the diets was the inclusion of the phytogenic feed additive in the treatment group, all other ingredients were exactly the same. After a 32 day period, 50 birds from each group were randomly chosen to conduct the sensory analysis. At 32 days the control group weighed on average 1,562g and the treatment group 1,610g. The carcass yield increased in the treatment group to 75.2%, with the control at 74.6%.

The evaluation was on the thigh meat which was grilled at 180°C and served to an 18 member trained taste panel. Table 1 shows the results. The tenderness and general impression were significantly enhanced in the treatment group, with a strong ten-

Table 1. Sensory analysis of thigh meat.

Criteria	Sample A without digestaron	Sample B with digestaron
Tenderness	2.17 ^a	1.83 ^b
Succulence	2.33 ^a	1.94 ^a
Flavour/aroma	2.28 ^a	2.28 ^a
General impression	2.39 ^a	2.00 ^b

Scale from 1 = superior to 4 = unsatisfactory
^{a,b} Difference statistically significant ($p < 0.10$)



dency to more succulent meat. In a second similar study at this university, carried out at a different time with the same genotype broilers, the meat was again grilled at 180°C with the cooking time adjusted by using a core probe to 70°C. A trained taste panel assessed 56 pieces of breast meat.

A hot air cooker (Lainox Heart with Interactive Cooking System) and core probe was used. After cooking, each piece of breast meat was sliced into three equal parts and placed on a paper tray (see photograph).

In order to avoid mistakes and to be able to trace each piece of meat back to the original bird the position of each piece on the grill and the grill in the cooker was recorded. The paper trays were marked with numbers usually used for triangle tests (like 22-24-26).

With the three pieces from each sample of meat two triangles were built using two pieces as a double sample in one triangle and the remaining piece as a single sample.

The test person had, of course, not known what the triangle contained and 14 persons were totally independently involved in the taste panel. In order to simplify the procedure and to standardise, for statistical analysis, the description was given as more juicy, less juicy, tender or harder. Special notes could also be made.

Therefore it was possible to control if the answer was correct. In total four triangles were tested, with always a short break in between, from 09.30am to 11.30am.

In the first and second triangle test, 4 incorrect and 10 correct answers were recorded. The next test resulted in 7 to 7

with the fourth triangle giving five incorrect and nine correct answers. The breast meat from the digestaron group was 36 times recognised as juicier or more tender than that from the control group. For a total of 20 times the answers were incorrect or insufficient (statistical significance of 0.001).

To obtain additional information, the other portions of breast meat from the above evaluation were sent to Food GmbH in Jena, an accredited laboratory, to analyse for the content of intramuscular fat. In the samples of the control group an average of 1.17% intramuscular fat was detected. In the samples from the digestaron treatment group an average of 1.25% was found.

Although the difference was not statistically significant there was a clear indication of a higher level of fat in the treated samples. The standard deviation for the control group was 0.4405 and that for the treatment group 0.3123. It is well known that the taste of meat is influenced by the level of intramuscular fat and its consistency.

Trial conducted in the UK

A trial was conducted in the UK, at an independent sensory evaluation unit, to benchmark the eating quality of chickens with digestaron in the feed with two other sources of chicken. The chickens were randomly selected from supermarket shelves.

The breast meat from whole roast chickens was assessed subjectively for acceptability of aroma, flavour, texture and aftertaste on a scale of 1 (extremely acceptable) to 8 (extremely unacceptable).

The panellists were also asked to make an objective assessment of all the characteristics on a scale of 0-100. The results showed a general taste preference for the chickens with digestaron in all aspects including aroma, flavour, texture and aftertaste.

In all these studies on chicken thigh and breast meat, the use of digestaron in the feed positively changed the sensory quality in the direction of juicier and more tender.

Research has shown that consumers prefer more succulent and tender meat. It is believed that these studies with a digestive enhancer are unique. They provide added value to the use of digestaron poultry. ■