In order to study the influence of increasing vitamin E supplements during the growing-finishing period on the quality of meat and meat products a feeding experiment with 100 male castrates of modern hybrid pigs kept under single feeding conditions was designed. The experiment comprised 4 groups of 25 animals each in the live weight range from 25 to 105 kg. Treatments were 4 DL-\(\alpha\)-Tocopherylacetate (\(\alpha\)-TAc) levels in the diet. The \(\alpha\)-TAc content in the control group (I) was 33 mg/kg feed. Experimental group II received an additional \(\alpha\)-TAc supplementation of 100 mg/kg and experimental group III 200 mg/kg. The animals of group IV were fed additionally 1.2 g \(\alpha\)-TAc per day during the last 3 weeks of the finishing period.

Meat quality was determined in the loin (\(M. \ longissimus \ dorsi\)) and in backfat as well as in cooked and raw ham. The criteria \(\alpha\)-Tocopherol content (\(\alpha\)-TOH), concentration of secondary lipid oxidation products (TBARS) and organoleptic properties were analysed in fresh and stored samples as depending on the variables duration, temperature and packaging.

The results can be summarised as follows.

1. The different vitamin E supplies did not show a significant effect on growth performance. Over all groups the daily weight gain averages 810 g and the feed conversion ratio was calculated to be 2.64 kg per kg live weight gain.

Due to the different vitamin E supplies slaughter performance did not show any significant effects as well. On average in all groups dressing percentage amounted to 79 % and weight loss of the carcass halves after cooling amounted to 2 %. The same was observed for the meat/fat ratio of the \(M. \ longissimus \ dorsi\). Over all groups the mean muscle area was found to be 42 cm\(^2\) and the fat area 21 cm\(^2\).

2. In the fresh loin the vitamin E supplements significantly (p<0.05) increased the \(\alpha\)-TOH concentration from 2.42 µg/g (group I) to 4.86 (group II), 5.64 (group III) and 4.28 µg/g (group IV).

In the backfat the corresponding \(\alpha\)-TOH contents were found to be 9.45 µg/g in group I, 19.76 µg/g (group II), 24.30 (group III) and 19.68 µg/g (group IV) with differences between all groups being significant (p<0.05).

Chilled storage over 2 weeks caused a slight decrease of the \(\alpha\)-TOH concentrations in the loin by 12 % in group I, 11 % (group II), 16 % (group III) and 9 %
(group IV), respectively. During 26 weeks of frozen storage the α-TOH contents in the experimental groups decreased significantly (p<0.05).

In backfat only groups I and II showed a significant decrease of the α-TOH concentrations by 44 % and 29 %, when it was stored refrigerated for 2 weeks (p<0.05).

Corresponding to the vitamin E supplies the α-TOH levels in the fresh prepared cooked hams differed. They increased from 2.47 µg/g (group I) to 3.79 (group II), 5.11 (group III) and 4.44 µg/g (group IV) respectively. The differences proofed to be significant (p<0.05). Refrigerated storage under vacuum did not show an effect on the vitamin E concentrations.

In fresh prepared raw ham correspondingly the α-TOH contents in muscle tissue significantly increased with an elevated vitamin E supply, from 1.95 µg/g (group I) to 3.73 (group II), 4.40 (group III) and 3.80 µg/g (group IV) (p<0.05).

3. The TBARS concentration in fresh *M. longissimus dorsi* was not affected by the α-TAc supplementation. Refrigerated storage over 2 weeks triplicated the content in controls (group I) significantly from 0.058 mg MDA/kg to 0.180 mg MDA/kg (p<0.05) whereas only a tendency towards an increase was observed in the experimental groups. After 10 and 26 weeks of frozen storage the TBARS concentrations amounted to 0.05 and 0.06 mg MDA/kg, respectively.

In backfat refrigerated storage over 2 weeks led to an exponential TBARS increase. However, the values in the experimental groups were found to be significantly lower compared to the control group, when storage time was 8 days (p<0.05). Frozen storage over 26 weeks under vacuum showed a significant increase of the TBARS concentrations (p<0.05). The values were duplicated as compared to the initial levels. An influence of the vitamin E supply on the TBARS content in the course of the frozen storage was observed but proofed not to be significant.

In cooked ham neither storage at 4 °C over 2 weeks nor different vitamin E supplies showed an effect on TBARS concentrations. In contrast, a significant decrease from 0.126 to 0.102 mg MDA/kg muscle tissue was detected in fresh prepared raw ham as a consequence of the different vitamin E supplies (p<0.05).

4. After 10 weeks of frozen storage the sensory traits tenderness, juiciness and flavour, analysed in loin, as well as rancidity in backfat were not affected by the
6. Summary

vitamin E supply. The same was found for appearance, consistency, flavour and
taste of cooked and raw ham, when stored refrigerated.

Although the high vitamin E supplements as applied in this experiment caused
higher $\alpha$-TOH concentrations in various tissues, no specific effect on the quality of
food of animal origin was detected, when the dietary vitamin E supplementation met
the requirements.

In chops and raw ham but not in cooked ham dietary vitamin E supplements exceed-
ing 33 mg $\alpha$-TAc/kg feed improved the oxidation stability, but positive effects on the
organoleptic properties were not observed.