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# Effect of dietary regimen and of feeding maltodextrins and dextrose on meat and fat quality of immunocastrated

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| Abstract: | This research aimed to verify the effects of restricted vs ad libitum feeding and of the dietary inclusion of maltodextrins (M) and dextrose (D) on the qualitative traits of muscle longissimus dorsi (LD) and on fatty acid (FA) composition of subcutaneous adipose tissue of immunocastrated intermediate pigs.<br>To this goal, 36 male pigs (Italian Duroc x Italian Large White crossbred) were used. The subjects, after having received the second immunocastrating injection at 162 days of age, had been fed for 5 weeks, till slaughtering (144.51 ± 9.70 kg live weight (l.w.)), with one of the three experimental diets: control-ad libitum (CL), control-restricted at 7.5% l.w.0.75 (CR) and with M+D (3.5 + 3.5%)-ad libitum (MD). At slaughter, a sample of LD muscle and subcutaneous adipose tissue were collected from each left-half carcass at the last rib level. At 24h post mortem on the LD samples, pH, colour (CIEL*a*b*, 1976), protein (CP) and intramuscular lipid (IMF) contents (on the fresh and cooked muscle), drip and cooking loss, oxidative stability (TBARS) and tenderness (WBSF) were measured. Moreover, FA composition of backfat was determined.<br>The data were submitted to ANOVA with the dietary treatment as independent variable. The two degrees of freedom of the treatment effect were split up a priori in two orthogonal contrasts: CR vs the average of (CL+MD) and CL vs MD. The CR pigs exhibited lower IMF ($P<0.05$), both in the fresh (2.75% vs 3.41%) and cooked muscle (3.83% vs 5.15%), higher CP in the fresh muscle (24.04% vs 23.36%, $P<0.05$) and a less coloured meat, as indicated by its higher Hue value ($P<0.05$). Indeed, CR group showed a higher content of polyunsaturated FA (15.50% vs 13.23%, $P<0.01$) and a lower content of saturated FA (41.46% vs 42.91%, $P<0.05$). The feeding regimen did not affect pH, drip loss, cooking loss, TBARS and tenderness of LD muscle. No difference was found between CL and MD pigs, except for the ω-6/ω-3 ratio, lower in MD (16.70 vs 15.54, $P<0.01$).<br>Thus, in our experimental conditions, the dietary inclusion of M and D did not markedly affect meat quality characteristics and the FA composition of backfat of immunocastrated intermediate pigs fed ad libitum, whereas the dietary regimen exerted a considerable influence especially on CP and IMF contents of LD and on lipid FA composition of subcutaneous adipose tissue. |


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# Effect of dietary regimen and of feeding maltodextrins and dextrose on meat and fat quality of immunocastrated pigs

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This research aimed to verify the effects of restricted *vs ad libitum* feeding and of the dietary inclusion of maltodextrins (M) and dextrose (D) on the qualitative traits of muscle *longissimus dorsi* (LD) and on fatty acid (FA) composition of subcutaneous adipose tissue of immunocastrated intermediate pigs.

To this goal, 36 male pigs (Italian Duroc x Italian Large White crossbred) were used. The subjects, after having received the second immunocastrating injection at 162 days of age, had been fed for 5 weeks, till slaughtering (144.51 ± 9.70 kg live weight (l.w.)), with one of the three experimental diets: control-*ad libitum* (CL), control-restricted at 7.5% $l.w.^{0.75}$ (CR) and with M+D (3.5 + 3.5%)-*ad libitum* (MD). At slaughter, a sample of LD muscle and subcutaneous adipose tissue were collected from each left-half carcass at the last rib level. At 24h *post mortem* on the LD samples, pH, colour (CIEL*a*b*, 1976), protein (CP) and intramuscular lipid (IMF) contents (on the fresh and cooked muscle), drip and cooking loss, oxidative stability (TBARS) and tenderness (WBSF) were measured. Moreover, FA composition of backfat was determined.

The data were submitted to ANOVA with the dietary treatment as independent variable. The two degrees of freedom of the treatment effect were split up *a priori* in two orthogonal contrasts: CR *vs* the average of (CL+MD) and CL *vs* MD. The CR pigs exhibited lower IMF ($P<0.05$), both in the fresh (2.75% *vs* 3.41%) and cooked muscle (3.83% *vs* 5.15%), higher CP in the fresh muscle (24.04% *vs* 23.36%, $P<0.05$) and a less coloured meat, as indicated by its higher Hue value ($P<0.05$). Indeed, CR group showed a higher content of polyunsaturated FA (15.50% *vs* 13.23%, $P<0.01$) and a lower content of saturated FA (41.46% *vs* 42.91%, $P<0.05$). The feeding regimen did not affect pH, drip loss, cooking loss, TBARS and tenderness of LD muscle. No difference was found between CL and MD pigs, except for the ω-6/ω-3 ratio, lower in MD (16.70 *vs* 15.54, $P<0.01$).

Thus, in our experimental conditions, the dietary inclusion of M and D did not markedly affect meat quality characteristics and the FA composition of backfat of immunocastrated intermediate pigs fed *ad libitum*, whereas the dietary regimen exerted a considerable influence especially on CP and IMF contents of LD and on lipid FA composition of subcutaneous adipose tissue.

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