

This is the peer reviewed version of the following article:

Effect of dietary regimen and of feeding maltodextrins and dextrose on meat and fat quality of immunocastrated pigs / Belmonte, A.M., Minelli, G., Macchioni, P., Mezzetti, F., Scutaru, C., Volpelli, L.A., Lo Fiego, D.P.. - In: ITALIAN JOURNAL OF ANIMAL SCIENCE. - ISSN 1828-051X. - 16:Supplement 1(2017), pp. 209-209. (ASPA 22nd CONGRESS Perugia 13-16 june 2017).

*Terms of use:*

The terms and conditions for the reuse of this version of the manuscript are specified in the publishing policy. For all terms of use and more information see the publisher's website.

29/06/2026 23:55



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

Journal:	<i>Italian Journal of Animal Science</i>
Manuscript ID	Draft
Manuscript Type:	Abstract Submission
Date Submitted by the Author:	n/a
Complete List of Authors:	<p>Belmonte, Anna Maria; Universita degli Studi di Modena e Reggio Emilia, Centro per il Miglioramento e la Valorizzazione delle Risorse Biologiche Agroalimentari (BIOGEST-SITEIA)</p> <p>Minelli, Giovanna; Universita degli Studi di Modena e Reggio Emilia, Life Sciences; Universita degli Studi di Modena e Reggio Emilia, Centro per il Miglioramento e la Valorizzazione delle Risorse Biologiche Agroalimentari (BIOGEST-SITEIA)</p> <p>Macchioni, Paolo; Univ Bologna, Dip. Scienze e Tecnologie Agro-Alimentari</p> <p>Mezzetti, Francesco; Universita degli Studi di Modena e Reggio Emilia, Centro per il Miglioramento e la Valorizzazione delle Risorse Biologiche Agroalimentari (BIOGEST-SITEIA)</p> <p>Scutaru, Corina; Universita degli Studi di Modena e Reggio Emilia, Life Sciences</p> <p>Volpelli, Antonella; Universita degli Studi di Modena e Reggio Emilia, Life Sciences; Universita degli Studi di Modena e Reggio Emilia, Centro per il Miglioramento e la Valorizzazione delle Risorse Biologiche Agroalimentari (BIOGEST-SITEIA)</p> <p>Lo Fiego, Domenico Pietro; Universita degli Studi di Modena e Reggio Emilia, Life Sciences; Universita degli Studi di Modena e Reggio Emilia, Centro per il Miglioramento e la Valorizzazione delle Risorse Biologiche Agroalimentari (BIOGEST-SITEIA)</p>

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.

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 ( $144.51 \pm 9.70$  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  $\omega$ -6/ $\omega$ -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.

SCHOLARONE™  
Manuscripts

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

Anna Maria Belmonte,<sup>1</sup> Giovanna Minelli,<sup>1,2</sup> Paolo Macchioni,<sup>3</sup> Francesco Mezzetti,<sup>1</sup> Corina Scutaru,<sup>2</sup> Luisa Antonella Volpelli,<sup>1,2</sup> Domenico Pietro Lo Fiego<sup>1,2</sup>

<sup>1</sup>Centro per il Miglioramento e la Valorizzazione delle Risorse Biologiche Agroalimentari (BIOGEST-SITEIA), Università di Modena e Reggio Emilia, Italy

<sup>2</sup>Dip. Scienze della Vita, Università di Modena e Reggio Emilia, Italy

<sup>3</sup>Dip. Scienze e Tecnologie Agro-Alimentari, Università di Bologna, Italy

Corresponding author: [annamaria.belmonte@unimore.it](mailto:annamaria.belmonte@unimore.it)

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.<sup>0.75</sup> (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.

### Acknowledgements

The Authors thank Dr. G. Della Casa (CREA-SUI, Unità di Ricerca per la Suinicoltura - San Cesario sul Panaro –MO, Italy) for taking care of animals, and for formulating and supplying the feeds.