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MEAT QUALITY AND BOAR TAINT VACCINATION

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The drawbacks for the producer of raising castrates rather than boars are well established. They convert feed into lean meat less efficiently and they suffer the mortality and set back you would expect from such a traumatic and stressful form of management. In addition, producers in some markets are under increasing pressure to adopt more animal-friendly alternatives to castration to control boar taint.

On that basis, the welfare and production advantages of using boar taint vaccine alone would suggest that it would be a more attractive option than castration. However, according to at least one expert, the thing that will ensure the commercial success of vaccination is its positive effects on the carcass.

Dr Tadeu Silveira from the Institute of Food Technology in São Paulo has reviewed the results of studies from around the world which have looked at the impact of the vaccination approach on quality measures. Presenting his findings to a satellite meeting at the recent ICoMST congress, he said that changing to vaccination consistently results in an increase in the production of lean meat and a reduction in the amount of back fat compared to castration. In pigs slaughtered at a target age the increase in lean meat was between 1.6kg and 4.22kg in studies conducted between 2006 and 2008, reflecting improvements in both carcass weight and carcass composition.

“This shows the economic advantages for both the fresh and processed products markets,” he said. “The difference between studies is due to the variation in genetics, production systems, the way of monitoring animals and nutrition.”

The same outcome has been seen in the results obtained by different Brazilian companies that have conducted validation work on the vaccine since 2007.

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“If we take the four most important cuts – shoulder, loin, ham and neck – we see a significant increase in lean meat in the carcass.”

Growing numbers of pig producers around the world are adopting vaccination as an alternative to castration thanks to its advantages in terms of feed conversion and animal welfare, said Dr Silveira. But meat quality and consumer acceptance are key factors in determining whether the technology would be a success.

Objective measures of meat quality have not found any difference in pH, drip loss, luminosity and composition of colour, said Dr Silveira, who is an expert in slaughter technology and meat quality. Other studies have confirmed that meat from vaccinated animals is at least as good as that from castrated animals in terms of tenderness and overall acceptability to consumers.

“But the meat from entire males showed a higher percentage of dissatisfied consumers and was significantly less well accepted than meat from physically castrated, vaccinated or female pigs,” he added.

One study carried out by the Institute of Food Technology in São Paulo found that overall acceptance was higher for the meat from vaccinated pigs: cooked loin steaks from vaccinated animals were preferred by 66% of testers compared to 34% who preferred the pork from castrated pigs. When asked if they would buy meat from vaccinated pigs, 74.8% of consumers said they certainly or probably would. The corresponding figure for meat from castrated pigs was 58.4%.

“In conclusion, the commercial trials have confirmed the earlier results,” Dr Silveira told delegates at the meeting organised by Pfizer Animal Health. “The production of entire, vaccinated males rather than castrates results in more lean meat and, in some cases, meat quality parameters and sensory attributes are improved.

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“The possibility of stopping physical castration without adversely affecting meat quality and carcass quality ensures the success of boar taint vaccination technology,” he concluded.

The boar taint vaccine was the subject of a number of posters and presentations at ICoMST 2009, which was held in Copenhagen. The technology has been in commercial use for over ten years in Australia, but it is only in the last few years that it has started to generate interest in other parts of the world. Although animal welfare, growth efficiency and carcass quality are obvious benefits for producers who currently castrate, there are also potential gains for those markets which have adopted early slaughter of boars as a way of reducing the risk of tainted meat.

In non-castrating markets the vaccine provides a means for producers to raise pigs to heavier weights and thus make the most of the superior growth rates in older boars – but without the drawbacks of boar-like behaviour or boar taint.

The benefits of adopting vaccination to reduce boar taint will no doubt vary from market to market and will certainly be assessed by individual producers in the context of their own production systems. However, producing high quality pork is one benefit that is relevant no matter what rearing system is used – so perhaps Dr Tadeu will be proven right.

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Dr Silveira graduated from the University of São Paulo, ESALQ, in 1976 as an agronomy engineer. He concluded his master of applied science in Food Technology at the University of New South Wales, Sydney, Australia in 1984. A PhD in Food Technology was obtained from the University of Campinas in 1997. His research centres on slaughter technology and the factors which affect meat quality and quantity; evaluation of the physiological responses of farm animals to the large number of stressors they experience during production, marketing and at slaughter; on line methods to evaluate meat quality, shelf life of fresh meat and meat products.

Table 1: Summary of 18 sensory studies assessing the eating quality of pork from Improvac vaccinated boars.

Country (reference)	Panel type	Treatments compared				Outcome regarding pork from vaccinated pigs
Mexico *	Consumer	PC	IMP	G		Equivalent to castrates and gilts
Chile *	Consumer & Expert	PC	IMP			Equivalent to castrates
Brazil [11]	Consumer	PC	IMP			Superior to castrates
Philippines [12]	Consumer	PC	IMP	G		Equivalent to castrates and gilts
Australia *	Consumer	IMP	B	G		Equivalent to gilts and better than boars
South Africa *	Expert	PC	IMP	B		Equivalent to castrates and better than boars
Spain [6]	Consumer	PC	IMP	B	G	Equivalent to castrates and gilts and all better than boars
USA *	Expert	PC	IMP			Equivalent to castrates
China *	Consumer	PC	IMP	B		Equivalent to castrates and no different to boars
Thailand *	Expert	PC	IMP	B		Equivalent to castrates and no different to boars
Thailand [2]	Expert	PC	IMP	B	G	Equivalent to castrates and gilts and all better than boars
Korea [8]	Expert	PC	IMP			Equivalent to castrates
Korea [9]	Expert	PC	IMP	B	G	Equivalent to castrates and gilts and better than boars
Japan *	Consumer	PC	IMP	B		Equivalent to castrates and boars
United Kingdom[10]	Expert	IMP	B			Superior to boars
Australia *	Consumer	PC	IMP	G		Equivalent to castrates and gilts
Australia [3]	Consumer	PC	IMP	B		Equivalent to castrates and both better than boars
Australia [4]	Consumer	PC	IMP	B	G	Equivalent to castrates and gilts and all 3 better than boars

PC = physical castrate; IMP = Improvac vaccinated; B = non-vaccinated entire boar; G = female pig/gilt; * Data on file with Pfizer Animal Health, New York, NY