



TECHNICAL BULLETIN

Pfizer Animal Health

Consumer Acceptance of IMPROVAC®

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Introduction

Global population growth will continue to place pressure on the world's pork supply. To meet demand, the pig industry must become more efficient. One way to increase efficiency is to raise boars rather than castrates.¹ However, pork from some boars can have an offensive smell and taste, known as 'boar taint'. Hence most of the world's boars are physically castrated early in life. While this is effective in controlling boar taint there are issues with castration that make it undesirable. Compared to boars, castrates are less feed efficient, often grow slower, and are fatter with less lean meat. Animal welfare and environmental concerns also accompany physical castration.²

IMPROVAC®, a vaccine to control boar taint, gives pig producers a powerful tool to address these challenges. By providing an animal welfare and environmentally friendly alternative to castration, IMPROVAC allows producers to benefit from the natural growth and carcass quality advantages of boars while controlling boar taint.

However, before the use of IMPROVAC can become common practice, it must be shown to be acceptable to consumers. At one level this means proving that its use can reliably produce pork of high eating quality. Multiple sensory studies in a range of countries clearly demonstrate that pork from boars given IMPROVAC is of equivalent sensory quality (odor, flavor, juiciness, tenderness, and overall acceptability) to pork from female or castrated pigs.³⁻⁶

Consumer acceptance, however, also involves factors beyond meat quality. Concerns about food safety, animal welfare, and the environmental impact of modern farming practices also influence attitudes to the introduction of new technologies.

This paper reviews some of the evidence that proves that the use of IMPROVAC is acceptable to consumers.

KEY POINTS

- IMPROVAC is a novel immunological product for the control of boar taint that works solely through the immune system of the pig.
- IMPROVAC is not a hormone and has no hormonal or pharmacological activity, is not a genetically engineered product, and contains no microbiological agents.
- Consumer surveys were conducted in Sweden, Australia, Switzerland, Korea, Netherlands, Germany, and France, asking consumers to express their attitudes regarding boar taint control using vaccination or physical castration.
- Results from all countries consistently indicated consumer preferences for use of a vaccine for the control of boar taint as long as meat taste was equivalent to that provided by castration.
- Concern about animal welfare was the primary factor prompting consumers to prefer boar taint vaccination instead of castration.

Swedish Consumer Survey

In 2005, 285 Swedish consumers completed a mail survey comparing their preferences for pork from either immunocastrated boars, physically castrated boars, or non-castrated boars in a willingness-to-pay choice experiment model.⁷



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The survey investigated tradeoffs for pork quality by considering the consequences related to product attributes associated with animal welfare (type of housing, castration, tail docking, fixation or crating of sows), taste quality (fat content and risk of boar taint), and use of vaccines to control boar taint. Participants received a short script designed to reduce bias, and an information sheet explaining the choices offered. Consumers were asked to choose 1 of 2 theoretical pork chop alternatives, with no opt-out alternative, in 6 choice sets.

Consumers reported a positive attitude toward the consumption of pork where boar taint was controlled by vaccination compared to physical castration. Conversely, consumers reported a negative attitude for pork from intact boars (where boar taint was not controlled) compared to physical castrates. A significant positive “willingness-to-pay” was recorded for boar taint control by vaccination, in contrast to a significant negative willingness-to-pay for no castration (i.e., risk of boar taint). In this survey, consumers were influenced more by concern for animal welfare than by any concern for the use of boar taint vaccines. Consumers also placed higher value on pork from physical castrates than from intact boars, suggesting that food eating quality concerns with regard to boar taint outranked animal welfare concerns. In this study, the use of vaccination to control boar taint was considered a desirable product attribute, allowing consumers to maintain high eating quality while also improving the well-being of pigs. It was concluded that the vaccine approach to the control of boar taint was a socially viable alternative to physical castration.

Australian Consumer Survey

This study involved 4 in-depth focus groups.^{3,8} The objective was to explore consumer reaction to boar taint and the use of vaccines to control boar taint, and to examine how knowledge of boar taint vaccines might affect attitudes toward pork. The 4 groups represented regular pork consumers (eat pork at least once every 2 weeks) of an Asian background, regular pork consumers of a non-Asian background, occasional pork consumers (at least once per month) of a non-Asian background, and lapsed pork consumers (once per 3 months but less than previously) of a non-Asian background. When interpreting the results it must be remembered that Australia is an unusual market in that most male pigs are reared entire.

In general, Australian consumers had not heard the term “boar taint” but almost all of the participants had tasted

pork with “off” or “strong objectionable” odor or flavor. Many assumed that the pork had spoiled and blamed the retailer. The explanation of boar taint as the source of undesirable odor/flavor was plausible to these consumers. Interestingly, Asian consumers reported fewer instances of objectionable odor/flavor, primarily because their pork came from Asian butchers who sold only female pigs. Participants accepted the fact that the boar taint vaccine was not a hormone or chemical. They saw vaccination in general as a natural process, which ranked highly when compared with other practices such as physical castration or tail docking. The use of IMPROVAC was seen as a favorable alternative to physical castration.

When offered a sample of pork from boars vaccinated with IMPROVAC, all of the participants accepted the sample and agreed to serve the pork to their family. They were given a questionnaire to assess their thoughts on the quality. The overwhelming feedback was that the quality was excellent and pork from the boars vaccinated against boar taint was clearly preferred to pork from intact boars.

This Australian consumer attitude study provides further evidence that boar taint vaccines are readily accepted as a favorable alternative to physical castration.

Swiss Consumer Survey

IMPROVAC was recently approved for use in Switzerland, and a survey of Swiss consumers was conducted in preparation for market release.⁹ The survey was designed to understand consumers’ attitudes towards vaccination to control boar taint as an alternative to physical castration. A total of 971 consumers were surveyed, representing the primary persons responsible for purchase and preparation of meat.

Participants were provided with a short description of the methods as well as the positive and negative aspects of 2 alternatives for the control of boar taint — vaccination and physical castration. The latter description included mention of the possible use of anesthesia. After considering the provided information, the consumers were asked to rank their opinions on a scale of 1 to 7, with 1 representing completely acceptable, 4 neutral, and 7 completely unacceptable. Significantly more consumers rated vaccination as acceptable compared to physical castration; 78% scored vaccination in the top 3 responses for acceptability compared to only 33% for physical castration (Figure 1).

Regarding their preference for each method, 77% of consumers preferred the vaccination approach and 16% were

neutral. In contrast, only 7% preferred physical castration (Figure 2). When asked about their attitude to consuming pork produced with either method, 60% said they would try to only eat pork produced by the vaccination method and 33% said they were happy to eat pork produced with either method of taint control. Only 5% said they would try to eat only pork produced by physical castration.

The Swiss survey confirms the earlier studies and clearly indicates that vaccination to control boar taint is an acceptable alternative to physical castration in the minds of consumers.

Korea, Netherlands, Germany, and France

The same type of market research as conducted in Switzerland was very recently repeated in Korea, the Netherlands, Germany, and France.¹⁰ Minor changes were made to the methodology; in particular, for Europe the description of physical castration was changed to make it clear that it referred to physical castration with the use of anesthesia. Although the use of anesthesia is not standard practice at the present time, it may soon become so in some countries.

While the numbers vary slightly with country, the consistent finding is the same as the Swiss study. The overwhelming majority of consumers in each country preferred the vaccination method of boar taint control compared to physical castration, even with the use of anesthesia. In Korea, 62% preferred the vaccination method, while results for France, Germany, and the Netherlands were 71%, 61%, and 74%, respectively (Figure 3).

Dutch consumers also showed a greater prior knowledge of boar taint and both methods of boar taint control than consumers in France or Germany (Figure 4).

Discussion

For both welfare, environmental, and production reasons, a substitute for physical castration early in life is desirable. While a number of potential alternatives exist, none is currently as reliable or practical as vaccination which works by

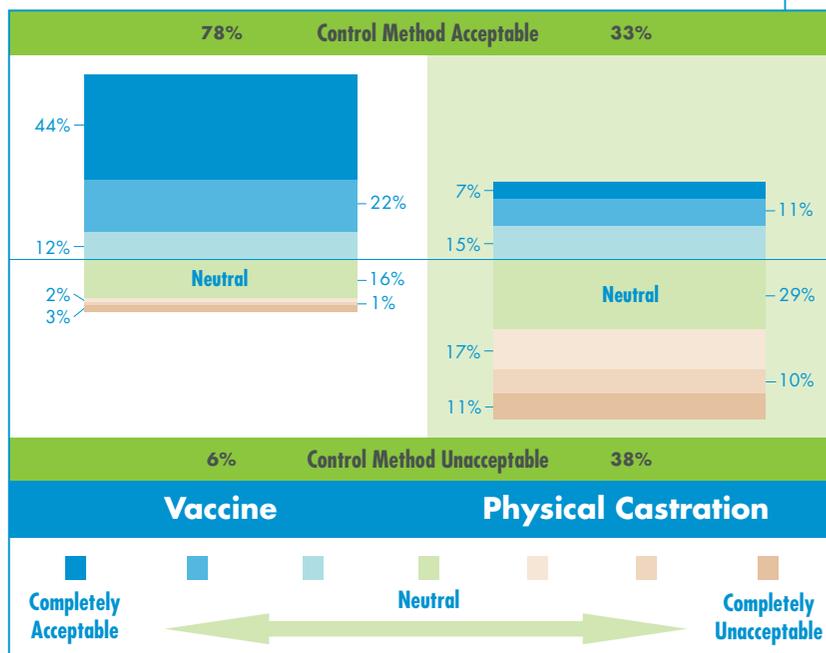


Figure 1: Percentage of Swiss respondents (n=971) finding either physical castration or vaccination acceptable.

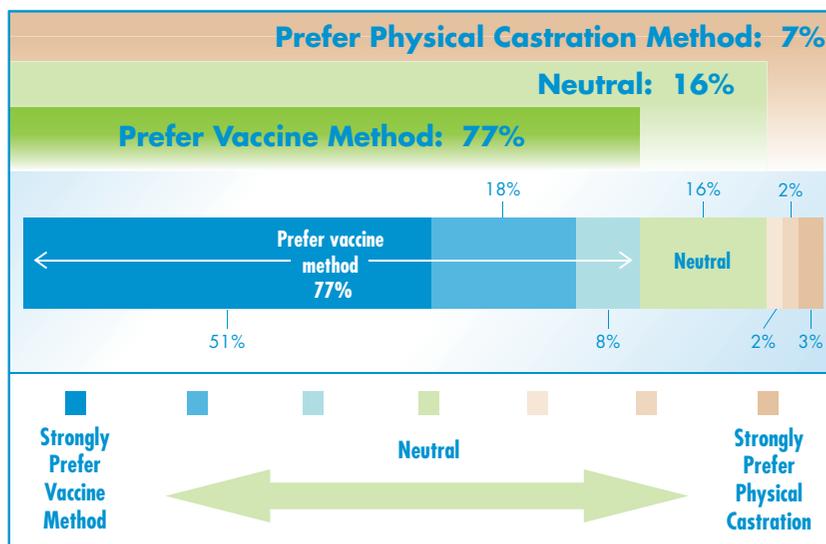


Figure 2: Preference of Swiss consumers (n=971) for either vaccination or physical castration as the preferred method of taint control.

stimulating the development of antibodies that suppress testicular function and, thus, the development of boar taint. From a scientific perspective, the food safety of IMPROVAC is clear. IMPROVAC contains a protein antigen that lacks any hormonal or pharmacological activity and is not active when given by mouth.¹¹ It leaves no residues in meat that can affect people and, in common with most vaccines, IMPROVAC has been granted a zero-day withdrawal

period in over 50 countries where it is currently approved, reflecting the inherent food safety.

From a consumer psychology perspective, however, scientific data are not always sufficient to allay concerns. A tradition of consumer unease exists regarding the use of new technologies in food production, particularly in Europe. IMPROVAC provides an unusual case-study in that consumer concerns can be addressed not only with scientific facts but also by pointing to positive benefits to a range of stakeholders, including the treated pigs. Participants in the surveys reviewed in this paper deemed vaccination to control boar taint as the preferable choice compared with physical castration. For Europe, this outcome is consistent with recent Eurobarometer findings showing that European consumers give a high weighting to animal welfare-friendly production practices.¹²

Conclusions

The conclusions from the studies presented signal positive and accepting consumer attitudes for using vaccines to control boar taint. The overwhelming majority of the 5300+ participants from 7 countries found vaccination to control boar taint to be acceptable and a preferable method compared with physical castration. ■

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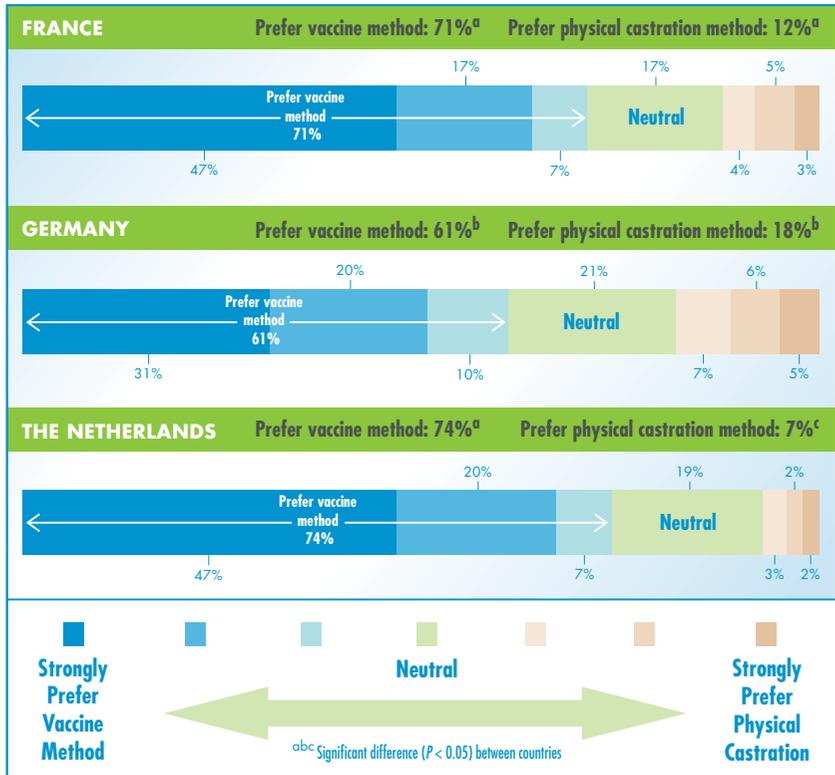


Figure 3: Preference of French (n=993), German (n=1006), and Dutch (n=1001) consumers for either vaccination or physical castration as the preferred method of taint control.

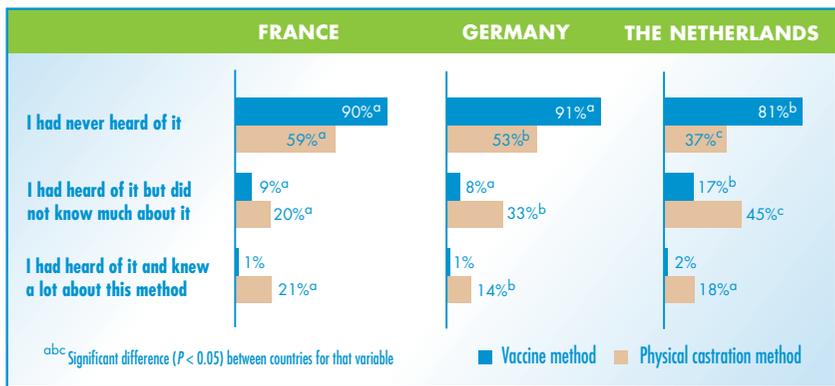


Figure 4: Prior awareness of boar taint by French, German, and Dutch consumers.