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Sustainable innovation to improve meat tenderness: the consumer acceptance

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Abstract

The improvement of meat tenderness using proteolytic treatments with exogenous enzymes is an alternative to post mortem aging (Gerelt et al. , 2000; Koochmaraie, 2006). The application of enzyme treatment may be a useful option to support beef industry in their efforts to meet consumer expectations for product quality and consistency. (Miller et al, 2001; Platter et al., 2003; Mennecke et al. , 2007; Han et al. 2009; Liu et al. 2011; Toohey et al. 2011).

The main goal of this innovation is the improvement of tenderness and palatability of some cuts of beef that are generally underutilized and sold at lower price than primal cuts (Sullivan et al., 2010). In addition, treatments with exogenous enzymes could be more effective than post mortem aging in improving tenderness of rustic breeds such as Podolian breed which provides meat with optimal nutritional characteristics. The use of proteolytic treatments with exogenous enzymes on meat from Podolian cattle could be an opportunity for valorizing and improving meat of this autochthonous breeds that represent an important resource in Southern Italy livestock (Marino et al. 2006, Marino et al. 2013).

Finally, the potential impact on beef tenderness of exogenous enzymes would permit the reduction of production costs and of environmental impact compared to traditional aging of meat. The aging process is prohibitive in term of costs for local meat processors because of the need to store large quantities of meat for extended periods with very high energy expenditure and a consequent negative effect on the global environment. From that point of view the enzymatic treatments, showing positive impacts on consumers, producers and environment, represent a good alternative to the traditional method.

Successful implementation and commercialization of technology foods depends on the societal acceptance of the technology and the new products that will result from its application (Magnusson and Hursti, 2002;; Biltekoff, 2010; Verneau et al., 2014). It is therefore important to study the acceptance of technology and the factors that might influence attitudes toward this new technology. In the case of limited knowledge, perceived risks and perceived benefits are influenced by social trust (Costa-Font et al., 2008;

Vandermoere et al., 2010). We assume that some factors as trust in science, trust in food industry, attitude toward technology, and preferences for healthy food could influence perceived risks and perceived benefits.

The theoretical framework we adopted is a Path Model in which we assume that perceived benefits and perceived risks influence willingness to buy “beef with enzymatic treatments”.

The model included variables such as trust in science, trust in food industry and retail, attitude toward technology and preference for healthy food.

Data was collected by means of a survey to a sample of 400 beef consumers representing food purchaser in Italy over 18 years of age. To achieve our goal a structured questionnaire was submitted to consumers and Principal Component Analysis, followed by Structural Equation Model (SEM) was performed. To estimate the parameters STATA 13 program was used.

Results showed that the chosen factors influenced perceived benefits and perceived risks. Willingness to buy beef treated with exogenous enzymes was strongly influenced by perceived benefits and weakly influenced by perceived risks.

Keywords : sustainability, meat tenderness, consumer attitude

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