Selenium from Se-enriched lactic acid bacteria as a new Se source for growing-finishing pigs

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Abstract

The goal of the trial was to determine the efficacy of Se from Se-enriched lactic acid bacteria in accumulation of Se in the muscle tissue and to evaluate its effect on meat quality in finisher pigs. In group I (n = 12) the feed was supplemented with inorganic sodium selenite, in group II (n = 12) with Se from Se-lactic acid bacteria, in group III (n = 12) with Se from Se-enriched yeast and pigs in group IV (n = 11) were fed non-supplemented basal diet. The experimental feed mixtures were supplemented with 0.3 mg Se per kg and were fed for a period of 3 month before slaughter. The use of Se from Se-enriched lactic acid bacteria resulted in comparable accumulation of Se in the muscle tissue as with sodium selenite, and in lower accumulation in comparison with Se from Se-enriched yeast. We did not find any differences in parameters of meat quality among experimental groups. It is concluded that Se from Se-enriched lactic acid bacteria has a comparable accumulation in the muscle tissue as sodium selenite and it does not negatively influence the meat quality.

Key words: pork, meat quality, Se-enriched yeast, glutathione peroxidase

Introduction

Selenium is an important trace element. It is an integral part of enzyme glutathione peroxidase (GSH-Px) which is responsible for protection against peroxidative damage (Tappel 1974). The most common consequence of selenium deficiency in pigs is mulberry heart disease (Lindberg et al. 1972). Inorganic and organic Se sources can be used in pig diet. Several studies have demonstrated that inorganic Se is not as effective in accumulating Se in tissues as organic Se (Mahan and Parret 1996, Mahan et al. 1999). Selenium from Se-enriched yeast is so far the most common organic Se source. The better utilization efficiency of Se from Se-enriched yeast was demonstrated and is caused by high content of selenomethionine (Kelly and Power 1995, Whanger 2002). The use of Se-enriched yeast in growing-finishing swine resulted in higher concentrations of Se in the muscle tissue without influencing negatively the meat quality (Mahan et al. 1999, Wolter et al. 1999, Mateo et al. 2007). Also studies in broiler chickens have revealed that animals receiving Se-enriched yeast had higher Se muscle concentrations than those on inorganic treatment (Spears et al. 2003, Ševčíková et al. 2006).

The use of other organic Se sources in animals’ diet has been rarely reported. For instance, Ševčíková et al. (2006) have use Se from Se-enriched alga