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Assessment of the bacterial impact on the post-mortem formation of zinc protoporphyrin IX in pork meat

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Abstract

The post-mortem accumulation of the heme biosynthesis metabolite zinc protoporphyrin IX (ZnPP) in porcine muscle is associated with both a meat-inherent and a bacterial enzymatic reaction during meat storage. To estimate the bacterial impact on ZnPP formation, meat and meat-like media were investigated by HPLC-FLD (and MALDI-TOF-MS) after inoculation with a representative microorganism (*P. fluorescens*). Results indicate the principal ability of meat-inherent bacteria to form ZnPP in meat extracts and meat-like media, but not on the meat muscle. Thus it was concluded that the ZnPP formation in meat is due to a meat-inherent enzymatic reaction induced by porcine ferrochelatase (FECH), while the bacterial (FECH) induced reaction seems to be not significant.

Keywords

meat storage; pseudomonas; post mortem chemistry; microorganisms; proteolysis; fluorescence

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