Antioxidative activity of Green Tea or Rosemary extracts against protein oxidation in the production of pork sausages

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Raw materials for processed meat products are often stored and distributed as frozen. Depending on handling, storage time and storage conditions the meat varies in quality and may be oxidatively stressed. The present study investigated the effect of natural extracts from green tea or rosemary on the development of protein oxidation during the production of pork sausages from oxidatively stressed meat. Sausages were prepared from pork, which had been exposed to UV-light (48 h, 5 °C), by a traditional recipe (control) or the same recipe added Green Tea extract (500 ppm active compound) or Rosemary extract (400 ppm active compound). The pork sausages were heated to a center temperature of 75 °C, and then rapidly cooled. Results showed a significant ($P = 0.0001$) loss of protein thiols in samples added Green Tea extract. In agreement, increased levels of cross-linked myosin heavy chain was found by addition of both Green Tea extract ($P = 0.009$) and Rosemary extract ($P = 0.04$) indicating a prooxidative effect of the extracts on protein disulfide cross-linking. On the contrary, protein carbonyl formation were significantly reduced by addition of Green Tea extract ($P < 0.0001$) or Rosemary extracts ($P = 0.006$). Overall, the results demonstrated that phenolic antioxidants are able to reduce protein carbonylation, but inefficient against protein disulfide cross-link formation.