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Antioxidant effect of onion (*Allium cepa*) on lipid oxidation and sensory quality of cooked pork sausages

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Lipid oxidation, which may produce changes in meat quality parameters, is a major cause of deterioration of shelf life of meat products. To counteract these effects natural antioxidants such as rosemary, tea and onion can be used over synthetic antioxidants. Hence, the main purpose of this study was to suppress lipid oxidation the using antioxidant effects of onion (*Allium cepa*). An Onion water extract (OWE) and an onion ethanol extract (OEE) were prepared and freeze dried. The Total phenolic content (TPC) of OWE, OEE and commercial onion powder (OP) were analyzed using the ISO method. Different levels of OP, OWE, OEE, and 0.01% BHT were used in a meat model system, and lipid oxidation was measured using 2-thiobarbituic acid-reactive substances (TBARS). The control sample as well as 0.25% OP and 0.01% BHT incorporated sausages were prepared for sensory evaluation. pH, water holding capacity (WHC), colour of the sausage were also measured. The findings of the study showed that the highest ($P < 0.05$) TPC was in OP compared with OWE and OEE. Moreover, the meat model system incorporated with 0.25% OP showed the lowest TBARS ($P < 0.05$) though it had the same TPC as the 0.5% OWE, and the 0.34% OEE. This may be due to the different types of phenolic compounds in the different extracts. Furthermore, the 0.25% OP incorporated sausages showed a lower ($P < 0.05$) TBARS value than the 0.01% BHT incorporated sausages, which emphasized that natural antioxidants have high antioxidant effects. Moreover, the taste, texture and overall acceptance of OP incorporated sausages were higher ($P < 0.05$) than BHT incorporated and negative control pork sausages. Furthermore, the instrumental colour values did not show significant differences between OP and BHT incorporated pork sausages and control pork sausages. Since OP counteracts the effect of lipid oxidation while providing high sensory attributes, onion can be used as a source of natural antioxidants over synthetic antioxidants. Hence OP can be incorporated as a natural antioxidant in commercially processed meat products.

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