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The Thesis Submitted for the Degree of M.Sc (in the field of Food hygiene and quality control)

Effect of Rheum ribes extract as an alternative to nitrite on total count of processed meat.

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Abstract:

Introduction: Nitrates and nitrites are considered to be among the main and most important additives used in the production of processed meat products. Due to the potential health risks associated with excessive use of nitrites, such as the formation of carcinogenic and mutagenic nitrosamines, there has been concern about their use in sausages.

Reducing the amount of nitrate and nitrite in meat emulsions, while desirable from a health standpoint, can lead to increased lipid oxidation. The compounds resulting from oxidation reactions are capable of reacting rapidly with oxygen. Due to the potential hazards associated with synthetic preservatives such as nitrites and nitrates, and consumers' preference for healthy and natural products, there has been a movement towards using natural antioxidants in food products.
The use of natural preservatives to increase the shelf life of meat products is a new technological development that involves using plant extracts, powders, and essences due to their antimicrobial and antioxidant properties. One such plant is Rheum ribes, which has antibacterial and antioxidant properties.

Methods: In the first part of this study, Rheum ribes extract was extracted by distillation. In the second part, after preparing of sausages, 3 control groups were prepared. control number 1 without nitrate and extract, number 2 contained nitrate and served as a positive control, and number3which was industrial sausages. 3 Samples were prepared containing different concentrations (1%, 3%, and 5%) of Rheum ribes extract as a natural preservative. The total microbial count was measured using a statistical analysis called “repeated measures” to compare the logarithmic number of bacteria over the course of the experiment using SPSS 26 software.

Discussion and Conclusion: The P-value for the between-subjects effect in the repeated measures test was analyzed to compare the mean logarithmic number of bacteria between different treatments with a 95% confidence level. At the end of this experiment, it was observed that 1% extract had the greatest effect in preventing overall microbial growth. Additionally, the sausages showed desirable results in terms of shelf life and taste for 45 days.