

**EFFECTS OF VEGETABLE POWDERS AS
NITRITE SOURCES ON THE
PHYSICOCHEMICAL, MICROBIOLOGICAL
AND SENSORY CHARACTERISTICS OF
COOKED SAUSAGES**

By

IBRAHIM MOHAMMAD MOHIDDIN ISMAIL
B.Sc. Agric. Sci. (Food Science), Fac. Agric., Damascus Univ., 2014

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ABSTRACT

Due to the potential health risks associated with nitrite, nitrite substitutes from vegetable sources were investigated in meat products. Therefore, in this study cooked sausages, manufactured with 0.438 % celery powder, 0.425 % parsley powder, 0.29 % red beet powder and 0.404 % spinach powder were prepared. Sausage samples treated with these powders were compared with a control treatment containing sodium nitrite (C+) and a control treatment free of nitrite (C-). Red beet powder increased the value of a^* in the sausage sample, thus protecting the desired red color during storage and there were significant differences between the samples treated with vegetable powders and the control samples at the end of the storage period. Sausage samples treated with sodium nitrite (C+) had the largest residual nitrite concentrations during all storage periods over 4 weeks compared to sausage samples treated with vegetable powders. After 4 weeks of storage, significant differences were observed in the TBA values between the control sample treated with sodium nitrite (C+) and all sausage samples treated with vegetable powders. At the end of storage, the count of lactic acid bacteria was higher in samples treated with vegetable powders. Sausage samples containing vegetable powders and cherry powder inhibit the growth of *Listeria monocytogenes* more effectively than the control sample treated with sodium nitrite (C+). *Clostridium perfringens* counts decreased in the control sample treated with sodium nitrite (C+) and sausage samples containing vegetable powders. The numbers of *Staphylococcus aureus* in all samples slightly decreased during storage. The largest reduction in the count of *Staphylococcus aureus* was in the sausage sample containing parsley powder.

Key words: Nitrite, celery, parsley, red beet, spinach, cooked sausage, *Listeria monocytogenes*, *Clostridium perfringens*, *Staphylococcus aureus*

DEDICATION

I dedicate this work to whom my heartfelt thanks; to my father for his support, to my mother for her prayers, as well as to my brother and for all the support he lovely offered along the period of my post-graduation.

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