

## Effect of partial replacement of nitrate with annatto seeds powder in the physical and chemical properties of chilled beef sausages

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**ABSTRACT:**

The objective of the present study is to evaluate the partial replacement of nitrate with annatto seeds powder at different percentages in the physical and chemical characteristics of chilled beef sausages under 4°C for 21 days. In this study, six different percentages of annatto seed powder treatments were analyzed *viz.*, T<sub>1</sub> (100% nitrite sodium); T<sub>2</sub> (80% sodium nitrite, 20% annatto powder); T<sub>3</sub> (60% sodium nitrite, 40% annatto powder); T<sub>4</sub> (40% sodium nitrite, 60% annatto powder); T<sub>5</sub> (20% sodium nitrite, 80% annatto powder) and T<sub>6</sub> (100%, annatto powder). The treatments were stored for the storage periods of 1, 7, 14 and 21 days. Then results were analyzed after the physical and chemical tests conducted. The following results were obtained:

- The addition of annatto seed powder to chilled beef sausages led to a significant increase (P<0.01) in the moisture, protein and fat percentages during the cold storage period as compared with sodium nitrite treatments.
- The treatments with the levels of annatto seed powder was higher than the sodium nitrite levels which have showed a higher percentages in water holding capacity in meat.
- The results of the addition treatments of annatto seed powder showed a significant decrease (P<0.01) in peroxide value in fresh chilled beef sausages as compared than to the sodium nitrite treatment during the storage period.
- The addition of annatto seed powder to chilled beef sausages have a significant increase (P<0.01) in myoglobin concentration as compared to the sodium nitrite treatment during the storage period.

It can be concluded that the addition of annatto seed powder to fresh beef sausages, in cold storage and with different storage periods has achieved higher antioxidant efficiency through lower oxidation indicators such as peroxide value, increased myoglobin concentration and improved water holding capacity in meat.

**Keywords:**

Annatto seeds, Sodium nitrate, Beef sausages, Chemical, Physical properties.