CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
22165

Project Title
Determination of Nitrate and Nitrite in Meat Products

Abstract

Objectives/Goals
To determine the levels of nitrate and nitrite in six different meat products by ion chromatography.

Methods/Materials
The six meat samples namely, ham, chicken hotdog, salami, pepperoni, bologna, and beef franks were analyzed. The samples were homogenized in water, centrifuged at a high speed, and filtered through tx acrodisc filters. Then the nitrate and nitrite contents were determined by ion chromatography using the Dionex DX-600 Chromatography system with a UV detector.

Results
The levels of nitrate and nitrite were calculated in mg/Kg. Three seperate runs were carried out for each of the six meat samples and then the average was calculated for each meat sample. The results showed thx salami had the highest level of total nitrate + nitrite (143.92 mg/Kg). Pepperoni had the lowest level o| total nitrate + nitrite (43.98 mg/Kg). The six meat samples were ranked from highest to lowest levels of| total nitrate + nitrite as follows: salami, bologna, ham, chicken hotdog, beef franks, and pepperoni. Th| USDA approved level for total nitrate + nitrite is 200 mg/Kg.

Conclusions/Discussion
There was a large variation in the levels of nitrate and nitrite in various meat samples. Salami had mor| than three times the total amount of nitrate + nitrite than pepperoni. Since nitrite is a carcinogen and| nitrate can convert into nitrite after digestion, the consumption of meat products that have high levels of total nitrate + nitrite should be done with caution.

Summary Statement
I analyzed six meat products for their nitrate and nitrite contents.

Help Received
Used lab equipment at the UCSD Glycotechnology Core Laboratory under the supervision of my mother who is a research associate there.