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## Changes in nutrient levels for three fresh pork loin cuts between 1992 and 2010

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### Abstract

Since nutrient composition of pork has changed over the past two decades, a collaborative study was conducted by scientists at the US Department of Agriculture (USDA), Texas Tech University and the National Pork Board to determine current nutrient values. The purpose was to obtain analytical nutrient data for three highly consumed fresh pork products in the USDA National Nutrient Database for Standard Reference (SR) and to compare the results to data obtained in 1992. Bone-in baby back ribs (BKR), boneless sirloin roast (SRB), and bone-in blade chops (BCB) were purchased from 12 retail outlets using a nationwide sampling plan developed for USDA's National Food and Nutrient Analysis Program. Nutrient values for proximate, cholesterol, and minerals were determined by commercial laboratories using validated methodology including quality control procedures. The 1992 data used for comparison were derived from analyses of samples of raw fresh pork retail cuts which were obtained from supermarkets in 15 cities across the US in a nation-wide market basket study. Nutrient values from 1992 and 2010 for equivalent cuts were statistically evaluated using a paired two-tailed T-test (critical value  $p < 0.05$ ). Comparing 2010 values to 1992 values, moisture was significantly higher ( $p < 0.001$ ) while total fat was lower ( $p < 0.001$ ) in all three cuts. Cholesterol was significantly less in two of the three cuts. Sodium values for 2010 were higher in all three cuts by 7-24% but still below 90 mg/100 g. Phosphorus was higher ( $p < 0.05$ ) in 2010 whereas iron was lower ( $p < 0.001$ ). Values for potassium, calcium, and zinc varied between the two data sets. This research updates the values in SR and provides current and accurate data for use in nutrition monitoring and policy.

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## 1. Introduction

The pork industry has introduced changes in breeding practices and swine nutrition to improve attributes of the meat such as muscle color, water holding capacity and palatability [1]. Since the early 1990's, changes in animal husbandry practices and industry procedures led to the availability of leaner cuts. Studies initiated in 2010 were the first updates to nutrient values for fresh pork products in the USDA National Nutrient Database for Standard Reference (SR) since 1992. To update these values a collaborative study was conducted by scientists at ARS/USDA, Texas Tech University, and the National Pork Board to determine current nutrient content in three highly consumed fresh pork products and to compare the new data to values reported in 1992. The cuts chosen for evaluation were baby back ribs, sirloin roast, and blade chops. They were analyzed in the raw state. The information obtained from this study was used to update the USDA National Nutrient Database for Standard Reference (SR).

Nomenclature	
BKR	Baby back ribs, bone-in
SRB	Sirloin roast, boneless
BCB	Blade chops, bone-in
Separable lean only	Lean meat after external trim fat and seam fat have been removed, prior to analysis
Separable lean and fat	Combination of external trim fat, seam fat, and meat
Separable fat	External trim fat and seam fat
Refuse	Weights of connective tissue and bone, which are combined and reported as "refuse"
Proximates	Ash, moisture, total fat, and protein

### 1.1. Objectives

- To update the nutrient profiles of 3 popular fresh, pork loin cuts in the USDA National Nutrient Database for Standard Reference (SR): Baby back ribs, bone-in (BKR); sirloin roast, boneless (SRB); and blade chops, bone-in (BCB).
- To compare the nutrient values for three cuts analyzed in 2010 to values reported in 1992.

## 2. Methods

### 2.1. Sampling

Three fresh pork cuts were pre-ordered and purchased from 12 retail outlets (4 regions, 3 outlets per region) using the nationwide sampling plan developed for the USDA National Food and Nutrient Analysis Program (NFNAP) [2] and shipped frozen to Texas Tech University for trimming and preparation. These samples were used for obtaining the 2010 data. The 1992 data were derived from analyses of 11 fresh retail cuts obtained from a nation-wide basket survey consisting of retail supermarket meat cases in 15 cities across the US [3].

### 2.2. Preparation of raw sample composites

Only raw popular pork loin cuts such as BKR, SRB, and BCB were used for this study. Separable fat, bone and connective tissue were removed from each raw cut prior to analysis. The lean tissues from each of these cuts were used for individual composites, which were homogenized and then analyzed for nutrient content. Analyses of proximates, minerals, cholesterol, thiamin, niacin, and riboflavin were

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