Nutrient composition of pork – updated data for the Czech Database of Food Composition

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Abstract
Nutritional values of raw and cooked pork cuts – shoulder, shoulder blade, loin, belly and cured pork shoulder blade and of raw separable fat were determined. Nutritional values of pork intended for industrial processing, and for respective kinds of raw pork cuts with various proportions of separable fat currently offered to the consumer, were calculated considering the contributing constituents. The results were documented according to the EuroFIR standardized methodology for full value documentation compatible with the EuroFIR e-Search facility system. The data on the composition of selected kinds of raw and cooked pork were updated and included in the newly compiled on-line Czech Database of Food Composition (http://www.czfcdb.cz). Compared with older Czech data, significantly lower fat and energy contents were found.

Introduction
Updated and reliable data on nutrient composition are essential for nutrition labeling, nutrition research and dietary practice. Existing Czech composition data originate mainly from 1970s and 1980s, when food composition programme was active in former Czechoslovakia. Further on in the Czech Republic only non-coordinated data generation and compilation existed. The basic outputs between 1993 and 2007 comprised printed tables - Food Tables (1993). Tables of nutritive values of fruits and vegetables (1996). Nutrition tables for milk and milk products (2001), software applications for example SW Nutricom (1998), or online tables designed for evaluation of the Food Consumption Basket (2004). In 2007 the Centre for Food Composition Database (FCDB), supported by the Czech Ministry of Agriculture, was established. The main objectives of the new initiative were to launch a sustainable FCDB Programme for the country, compile a pilot FCDB, and generate and document original Czech analytical data and a draft proposal for online tables. The priority was to develop a database with a structure compatible with other European FCDBs. During the last years, changes in animal husbandry practices and industry procedures led to availability of leaner meat cuts. Furthermore, the consumers tend to trim meat prior to consumption. Updation of meat composition data reported in recent years USA and Australia.

Objectives
The aim of this work was to update data on nutrient composition of pork in the newly compiled Czech Database of Food Composition and reflect thus the changes in husbandry, Czech butchering and processing and eventual trimming practice.

Material
Pork shoulder boneless, pork shoulder blade boneless, pork loin boneless, pork leg boneless, pork belly, pork shoulder blade boneless cured – 2 packages (0.7-1.2 kg) purchased at 3 retail stores in Prague

Sampling diagram
Sample lean
Sample separable fat
Homogenation
Baking no fat or water added
Sample separable fat
Sample baked
Separation of fat
Homogenation ratio 1:1.1

Pork belly – only skin was separated before analysis of raw and baked meat
Pork shoulder blade cured – separable fat removed only after boiling

Documented example

<table>
<thead>
<tr>
<th>Sample</th>
<th>Package 1</th>
<th>Package 2</th>
<th>Package 3</th>
<th>Package 4</th>
<th>Package 5</th>
<th>Package 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homogenation</td>
<td>2.0</td>
<td>1.5</td>
<td>1.0</td>
<td>2.1</td>
<td>1.5</td>
<td>1.0</td>
</tr>
<tr>
<td>Homogenation ratio 1:1.1</td>
<td>1:1</td>
<td>1:1</td>
<td>1:1</td>
<td>1:1</td>
<td>1:1</td>
<td>1:1</td>
</tr>
</tbody>
</table>

Pork leg – separable fat removed only after boiling

Foods with data newly generated

Pork, fresh, shoulder, separable lean only, raw
Pork, fresh, shoulder, separable lean and 5% separable fat, raw
Pork, fresh, shoulder, separable lean and 10% separable fat, raw
Pork, fresh, shoulder blade, boneless, separable lean only, raw
Pork, fresh, shoulder blade, boneless, separable lean and 3% separable fat, raw
Pork, fresh, shoulder blade, boneless, separable lean and 5% separable fat, raw
Pork, fresh, shoulder blade, boneless, separable lean and 10% separable fat, raw
Pork, fresh, shoulder blade, boneless, separable lean only, roasted
Pork, fresh, loin, boneless, separable lean only, raw
Pork, fresh, loin, boneless, separable lean only, roasted
Pork, fresh, loin, boneless, separable lean and 1% separable fat, raw
Pork, fresh, loin, boneless, separable lean and 3% separable fat, raw
Pork, fresh, loin, boneless, separable lean and 5% separable fat, raw
Pork, fresh, loin, boneless, separable lean and 10% separable fat, raw
Pork, fresh, loin, boneless, separable lean only, roasted
Pork, fresh, leg, separable lean only, raw
Pork, fresh, leg, separable lean only, roasted
Pork, fresh, leg, separable lean and 1% separable fat, raw
Pork, fresh, leg, separable lean and 3% separable fat, raw
Pork, fresh, leg, separable lean and 5% separable fat, raw
Pork, fresh, leg, separable lean and 10% separable fat, raw
Pork, fresh, leg, separable lean only, roasted
Pork, fresh, belly, boneless, raw
Pork, fresh, belly, boneless, roasted
Pork, smoked, shoulder blade, boneless, raw
Pork, smoked, shoulder blade, boneless, cooked
Pork, smoked, shoulder blade, boneless, commercially thermally treated
Pork, fresh, separable fat, raw
Pork, production meat V-1 (Catalogue of meat 2004)
Pork, production meat V-2 (Catalogue of meat 2004)
Pork, production meat V-3 (Catalogue of meat 2004)
Pork, production meat V-4 (Catalogue of meat 2004)
Pork, production meat V-5 (Catalogue of meat 2004)
Pork, production meat V-6 (Catalogue of meat 2004)

* Data calculated considering the contributing constituents.

Comparison of fat content in present study with former Czech data

<table>
<thead>
<tr>
<th>Sample</th>
<th>Total fat (g/100g)</th>
<th>Present study*</th>
<th>CZ table**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pork shoulder boneless</td>
<td>7.2 - 11.8</td>
<td>14.4</td>
<td>18.3</td>
</tr>
<tr>
<td>Pork shoulder blade boneless</td>
<td>11.1 - 17.2</td>
<td>18.3</td>
<td></td>
</tr>
<tr>
<td>Pork loin boneless</td>
<td>4.4 - 5.5</td>
<td>17.1</td>
<td></td>
</tr>
<tr>
<td>Pork leg</td>
<td>3.2 - 5.5</td>
<td>12.1</td>
<td></td>
</tr>
</tbody>
</table>

* Fat content in purchased packages
** Fat content in CZ tables—Food Tables (Perlin, 1993)

Conclusion
The data on the composition of selected kinds of raw and cooked pork were updated. The results were documented according to the EuroFIR standardized methodology for full value documentation compatible with the EuroFIR e-Search facility system. The data are included in the newly compiled on-line Czech Database of Food Composition (http://www.czfcdb.cz). Compared with older Czech data, significantly lower fat and energy contents were found.

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