Mendel University of Agriculture and Forestry in Brno

Agri-food research

Food safety
Department of Genetics

- **Meat quality:**
  - Genetic background of the intramuscular fat content in pigs

- **Milk quality:**
  - Genetic variability of important genes coding milk proteins
Association of the variants of the gene for fatty acid binding protein with content of intra-muscular fat confirmed.

<table>
<thead>
<tr>
<th>Allele</th>
<th>IMF (%)</th>
</tr>
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<tbody>
<tr>
<td>HH</td>
<td>2.1</td>
</tr>
<tr>
<td>Hh</td>
<td>1.95</td>
</tr>
<tr>
<td>hh</td>
<td>1.9</td>
</tr>
</tbody>
</table>

HH Hh hh
Variability of the κ-CSN gene and its association with milk components

- Czech pied:
  - BB: 0.15
  - AA: 0.35
  - AB: 0.5

- Holstein:
  - BB: 0.08
  - AB: 0.38
  - AA: 0.54

Graph showing kappa-casein percentages for AA, AB, and BB genotypes.
Department of Food Technology

- **Food Quality**
  - Probiotics in fermented foods
  - Functional foods: enrichment of poultry meat with n-3 PUFA

- **Food safety**
  - Mycotoxins in the food chain
  - Phthalic acid esters in the food chain
  - Biogenic amines in fermented foods
Counts of probiotics in fermented milk products

- **L. acidophilus**: $10^6$ CFU/g
- **L. rhamnosus**: $10^5$ CFU/g
- **B. lactis**: $10^4$ CFU/g

Days: 0, 5, 10, 15, 20, 25, 30, 35
Long-chain n-3 PUFA in poultry meat

![Graph showing long-chain PUFA n-3 equivalent in different experimental sets. The x-axis represents the experimental set, and the y-axis represents the concentration in mg/100 g. The bars are color-coded, and some sets are labeled with letters A, B, C, D, and E.](image-url)
Mycotoxins in barley and malt

![Graph showing DON levels in barley and malt samples]

- DON (µg/kg) on the y-axis
- Sample numbers (1-19) on the x-axis
- Purple bars represent barley
- Brown bars represent malt

Sample 5 has the highest DON levels for both barley and malt.
Accumulation of di-butyl phthalate and di-ethylhexyl phthalate in chicken tissues

![Bar graph showing the accumulation of DBP and DEHP in different chicken tissues.]

- **DBP (K)**
- **DEHP (K)**
- **DBP (N)**
- **DEHP (N)**
- **DBP (V)**
- **DEHP (V)**
- **DBP (Ž)**
- **DEHP (Ž)**

**Tissues:**
- Muscles
- Skin
- Adipose tissue
- Liver

**Concentration (mg/kg-1):**
- 0
- 0.5
- 1
- 1.5
- 2
- 2.5
- 3
- 3.5

**DBP and DEHP concentrations in different tissues:**
- DBP and DEHP concentrations are generally higher in liver compared to other tissues.
- DEHP concentrations are significantly higher than DBP concentrations in liver.
Phthalates in carp meat before and after fish-farming

- DBP: 0.6 to 0.8 mg/kg
- DEHP: 0.2 to 0.4 mg/kg
- Σ DBP + DEHP: 1.0 to 1.8 mg/kg
Biogenic amines: TYRAMINE as an indirect sympathomimetic drug

TYRAMINE: NA reuptake inhibition
MAO saturation
NA effect
VASOCONSTRICTION
Tyramine content in Dutch-type cheese from various producers differs significantly.

- Producer R: $y = 0.88x - 31.4$
  - $R^2 = 0.33$, $P<0.001$

- Producer H: $y = 0.50x - 6.3$
  - $R^2 = 0.29$, $P<0.001$
Tyramine is distributed very unevenly in Dutch-type cheese

- **Edge (E):**
  \[ y = 1.19x - 34.3 \]
  \[ R^2 = 0.53, P<0.001 \]

- **Core (C):**
  \[ y = 0.19x - 3.5 \]
  \[ R^2 = 0.33, P<0.001 \]
PCR detection of tyrosine decarboxylase gene

1- negative control, 2- *E. durans*, 3- *E. faecalis*, 4- *E. durans*,
5- *E. casseliflavus*, 6- *E. durans*, 7- positive control