EFFECT OF PROCESSED MEAT RELATED COMPOUNDS ON COLON CELLS

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Introduction
- Red and processed meat consumption is correlated with a higher risk for colorectal cancer
  → recommendations for maximum intake
- The underlying mechanisms remain unclear

- Our approach:
  1. \textit{In vitro} cell-based models
  2. Single compounds related to meat consumption
  3. Exposure with low doses for a longer time

Materials and methods
- Colon cancer cell lines
- Metabolites linked to meat consumption

<table>
<thead>
<tr>
<th>Compound</th>
<th>Origin</th>
<th>Expected effect</th>
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</thead>
<tbody>
<tr>
<td>Butyrate</td>
<td>Undigested fiber</td>
<td>+</td>
</tr>
<tr>
<td>Hemin</td>
<td>Red meat matrix</td>
<td>-</td>
</tr>
<tr>
<td>Kynurenine</td>
<td>Red meat digest</td>
<td>[1]</td>
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</tbody>
</table>

- 2 major setups:
  1. Short term exposure (3 days)
  2. Long term exposure (>10 days)

- Follow-up: cell viability, protein content, colony-forming capacity, IncuCyte Live Cell Analysis technology, Seahorse XF technology.

Short-time-high-dose exposure
HT-29 cells were exposed to the compounds for 3 days

Long-time-low-dose exposure

- Effect on viability and washout

  - Butyrate
  - Hemin
  - Kynurenine

Conclusions
- "Longer" exposure is possible, relevant and results in measurable effects
- Butyrate induces growth stimulation (energy source) and growth inhibition (differentiation), and is a good control for the different models
  - Hemin and kynurenine increased cell proliferation, total colony area and decreased oxygen consumption rate, and may therefore play a role in the link between red meat and CRC

References