Introduction

Meat Processing induces the formation of mutagenic and cytotoxic compounds. These frequently co-occur in low concentrations, thus the study of its toxicological interactions is crucial to avoid biases in Risk Assessment.

Goals

- In vitro cytotoxicity interactions in intestinal epithelial cells.
- Determine synergistic and antagonistic effects between the contaminants.

Methodology

- Cell viability evaluation by the MTT assay
  - 72 h exposure to contaminants alone or in binary combination
  - 1. 1250 cells/well
  - 2. 12 h adherence
  - 3. Treatment with compounds

Chou-Talalay method for interactions assessment

Results

Individual Dose Response Studies

Table 1. Determination of IC50 and individual parameters for BaP and PhIP.

<table>
<thead>
<tr>
<th></th>
<th>Caco-2 cells</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>r</td>
<td>m</td>
<td>IC50 (µM)</td>
</tr>
<tr>
<td>BaP</td>
<td>0.94</td>
<td>0.478</td>
<td>35.9</td>
</tr>
<tr>
<td>PhIP</td>
<td>0.87</td>
<td>0.483</td>
<td>299.6</td>
</tr>
</tbody>
</table>

Conclusion

- A synergistic interaction between PhIP and BaP was found at all tested concentrations.
- The synergistic effect between BaP and PhIP is stronger at lower concentrations which is relevant in real scenarios of exposure.

Future Steps

1. Evaluate hepatic cytotoxicity and inflammation
   - THP-1 cells
2. HepG2 cells

References:

1. Bouvard, V.; et al. The Lancet Oncology 2015, 16(16), 1599-1600.