**THE ANTILISTERIAL ACTIVITY OF A GREEN TEA INFUSION IN VITRO AND ITS APPLICATION TO COLD-SMOKED SALMON**

**BACKGROUND**
- High occurrence of *Listeria monocytogenes* (LM) in cold-smoked salmon.
- Consumers demand for "natural alternatives" to synthetic chemicals.
- Antibacterial activity of green tea catechins (especially epigallocatechin gallate; EGCg) against Gram-positive bacteria.

**OBJECTIVES**
1. To determine the minimum inhibitory and the non-inhibitory concentration values (MIC and NIC) of a standardised green tea infusion on LM.
2. To evaluate the antilisterial activity of the green tea infusion on cold-smoked salmon.

**MATERIAL AND METHODS**

**STEP 1:** To infuse dried green tea, maximizing the yield of polyphenols (especially the antilisterial component EGCg)\(^1\). Then quantify its total polyphenol content.

**STEP 2:** To determine in vitro broth microdilution method\(^2\) the MIC and NIC of the green tea infusion and of its serial dilutions on LM using Bioscreen C, which measured the turbidity at 492 nm.

**STEP 3:** To conduct a challenge test\(^3\) on two prepared samples of cold-smoked salmon in order to compare and determine the potential use of green tea against the pathogen on this food matrix.

**RESULTS**

**STEP 2**
Turbidity measurement of the column-filled Honeycomb wells every 15 min.

![Graph](image1)

**Figure 1:** Growth curves of LM Scott A incubated at 37 °C - 24 h at different concentrations of polyphenols (mgeq\(_{\text{GAE}}\)/ml) and the positive control (LM Scott A) measured at 492 nm.

**STEP 3**

**Challenge test**

**Sample Preparation**
- LM Scott A
- Inoculated Smoked Salmon
- SFIT
- Inoculated and Treated Smoked Salmon

**Green Tea Infusion**

**Table 1**

<table>
<thead>
<tr>
<th>Sample</th>
<th>Lag phase (days)</th>
<th>Max rate (log CFU/g/day)</th>
<th>Growth potential (log CFU/g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SFI</td>
<td>5,14 ± 2,91</td>
<td>0,22 ± 0,064</td>
<td>2,82(^a)</td>
</tr>
<tr>
<td>SFIT</td>
<td>6,55 ± 2,43</td>
<td>0,26 ± 0,045</td>
<td>4,31(^b)</td>
</tr>
</tbody>
</table>

**Figure 2**

**A**

NIC 4,01 mgeq\(_{\text{GAE}}\)/ml

**MIC 5,40 mgeq\(_{\text{GAE}}\)/ml

**Figure 3**

<table>
<thead>
<tr>
<th>aw</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>0.98</td>
</tr>
<tr>
<td>b</td>
<td>0.95</td>
</tr>
<tr>
<td>c</td>
<td>0.92</td>
</tr>
<tr>
<td>d</td>
<td>0.9</td>
</tr>
</tbody>
</table>

**Figure 4**

**Counts of LM** on the cold-smoked salmon samples (SFI and SFIT) stored at 8 °C during the challenge test\(^3\).

**Figure 5**

**The inhibition profile of the polyphenolic content (mgeq\(_{\text{GAE}}\)/ml) against LM Scott A, fitted using a modified Gompertz curve.**

**REFERENCES**

