Effects of Degree of Roast and Application Form of Incorporated Coffee on Inhibition of Oxidation in Raw Refrigerated Minced Pork and Sensory Analysis of Cooked Pork Patties with Added Coffee

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Antioxidant Capacity of Coffee in Raw Refrigerated Minced Pork and Sensory Analysis of Cooked Pork with Added Coffee

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SAMPLE PREPARATION and KEY ASSAYS

CONTROL
(no coffee or rosemary)

LIGHT ROAST
Lyophilized brewed coffee
Lyophilized spent coffee
Ground coffee
1 g coffee/kg pork

DARK ROAST
Lyophilized brewed coffee
Lyophilized spent coffee
Ground coffee
1 g coffee/kg pork

ROSEMARY
rosemary
0.2 g/kg pork

Packaged under high-oxygen MAP (Fig. 2), refrigerated at 4°C for 20 days.

KEY FINDINGS

Table 1. Results of the tetrad discrimination test, showing that participants could only tell the difference between pork with and without added coffee on day 3 of storage (p<0.05).

<table>
<thead>
<tr>
<th>Day</th>
<th>Correct</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>20</td>
<td>24</td>
</tr>
<tr>
<td>7</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>12</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>14</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>17</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>20</td>
<td>23</td>
<td>24</td>
</tr>
</tbody>
</table>

Table 2. Results of the hedonic sensory evaluation, showing that participants' degree of liking was not affected by the addition of coffee to pork patties (p=0.05).

<table>
<thead>
<tr>
<th>Day</th>
<th>Tenderness</th>
<th>Juiciness</th>
<th>Overall Flavor</th>
<th>Overall Liking</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>p-value</td>
<td>p-value</td>
<td>p-value</td>
<td>p-value</td>
</tr>
<tr>
<td>No</td>
<td>0.67 ± 1.72</td>
<td>0.21</td>
<td>0.53 ± 1.73</td>
<td>0.36 ± 1.73</td>
</tr>
<tr>
<td>Coffee</td>
<td>0.70 ± 1.34</td>
<td>0.44 ± 1.46</td>
<td>0.67 ± 1.25</td>
<td>0.67 ± 1.28</td>
</tr>
</tbody>
</table>

Fig. 2. Minced pork treatments were stored in MAP packaged trays with 74-84% O₂ and 16-26% CO₂. An unopened tray was used on each day of data collection.

Fig. 3. TBARS levels for negative control and pork with added coffee. All treated pork had TBARS levels significantly lower (p<0.05) than that of the negative control after day 7. However, no consistent significant differences among TBARS levels of treated pork samples were detected (Fig. 3).

Fig. 4. Percent metmyoglobin (MetMb) in pork samples from day 12-20.

Fig. 5. Thiol levels in pork samples from day 12-20.

CONCLUSIONS

Compared to pork without any added antioxidant, coffee inhibits lipid oxidation and does not promote protein oxidation.

While consumers may be able to distinguish between pork with and without added coffee, their degree of liking remains the same.

SIGNIFICANCE OF FINDINGS

Light or dark roasted coffee in lyophilized brew, spent, or ground forms could be comparable to rosemary oleoresin as an antioxidant when added to raw minced pork.

ACKNOWLEDGEMENTS

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REFERENCES