Pasta fortification: Impact of different iron sources on color

Background

- Fortified pasta can change their color depending on the iron source
- Industry asked for iron sources which have no influence on the appearance of pasta

Testing

- 6 different iron sources
- Dosage: 60 ppm iron (highest average value in flour fortification standards)
- Tested in spaghetti made from untreated hard wheat flour (12% protein) and water, produced by using pasta machine Sela type TR 75W
- Moisture content of dough: 32%
- Drying: 24h, 35°C, 60% r.H.
- Evaluation of cooked pasta compared with non-enriched pasta

Conclusion

- Ferric pyrophosphate, ferric orthophosphate and electrolytic iron did not show any impact on the appearance of pasta

<table>
<thead>
<tr>
<th>Iron source</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-enriched</td>
<td>Ferric pyrophosphate</td>
<td>Ferric orthophosphate</td>
<td>Electrolytic iron</td>
<td>Ferrous fumarate</td>
<td>Ferric sodium EDTA</td>
<td>Ferrous sulfate</td>
<td></td>
</tr>
<tr>
<td>Relative bio-availability (WHO) 21-74%</td>
<td>25-32%</td>
<td>50-75%</td>
<td>100%</td>
<td>&gt;100%</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance compared to non-enriched pasta</td>
<td>Comparable</td>
<td>Comparable</td>
<td>Comparable</td>
<td>Brighter</td>
<td>Much brighter</td>
<td>Greyish</td>
<td></td>
</tr>
<tr>
<td>Pictures</td>
<td><img src="image1" alt="Picture" /></td>
<td><img src="image2" alt="Picture" /></td>
<td><img src="image3" alt="Picture" /></td>
<td><img src="image4" alt="Picture" /></td>
<td><img src="image5" alt="Picture" /></td>
<td><img src="image6" alt="Picture" /></td>
<td></td>
</tr>
</tbody>
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For further information please contact:
Lena Kampehl,
R & D Vitamin Premixes
Phone: +49 4102 202-421
E-mail: lkampehl@muehlenchemie.de