A Brief Introduction to Lactosan A/S
LACTOSAN A/S:

- Company in Lactosan Sanovo Holding Group.
- Annual turnover: 40 million EUR.
- 235 employees worldwide.
- Manufacturing sites and application centres in Europe and South America.
- Broad portfolio of pure cheese powders, cheese blends and selected range of dried shredded cheese.
- Export to more than 50 countries worldwide.
- Global network of agents and distributors.
Sales by Type of Application

- **Snacks**: 28%
- **Biscuits and Other Baked Products**: 21%
- **Dips/Dressings/Dry Mix/Sauces**: 15%
- **Imitation and Processed Cheese**: 9%
- **Flavours**: 15%
- **Ready-to-Eat**: 7%
- **Creams**: 3%
- **Confectionary**: 2%
- **Pet and Baby Food**: <1%
Lactosan NCB
Introduction to Taste Enhancers and their Applications
Aroma Active Components in Lactosan NCBs

- **What provides this effect?**
- **The complex composition of:**
  - Free amino acids
  - Peptides
  - Milk fat
  - Free fatty acids
  - Small amount of IMP and GMP
  - Low molecular substances
  - Carboxylic acids?
Interesting ways for Aroma Development

- Caboxylic acids have influence on Umami taste (Drake et al., 2007)
- And more.....
- Cheese powders contain some carboxylic acids!
- Is the level of carboxylic acid cheese type specific?

Drake, S.L. et al. (2007): Sources of Umami Taste in Cheddar and Swiss Cheeses. In Journal of Food Science Sensory and Nutritive quality of Food
Thage, B.V. (2003): Transamination capacity of Lactobacillus in relation to amino acid catabolism and flavour of hard and firm cheese, Ph.D. thesis, Department of Dairy and Food Science, KVL, Denmark
Caboxylic acids

Figure 1: Unpublished results from analysis made by AnalyCen 2005 according to information received from laboratory: Method; GC DJS 114, dec. 1998
Effect on flavour

Purac Biochem

According to Boerboom, Principal Scientist at Purac Biochem, each acid has a specific taste profile and the sourness can be understood by the amount of dissociated and undissociated acids together.

### Some rules of thumb

<table>
<thead>
<tr>
<th>Acid</th>
<th>Taste Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic</td>
<td>volatile, vinegar</td>
</tr>
<tr>
<td>Citric</td>
<td>citrus, fruity</td>
</tr>
<tr>
<td>Lactic</td>
<td>persistent, mild, creamy, dairy</td>
</tr>
<tr>
<td>Fumaric</td>
<td>clean persistent dry</td>
</tr>
<tr>
<td>Malic</td>
<td>Apple, grape, fruity</td>
</tr>
<tr>
<td>Gluonic (GDL)</td>
<td>low sourness even at low pH.</td>
</tr>
</tbody>
</table>
Flavours Direct, UK

suggest that acids provide impact and juiciness. Furthermore, acids can contribute to a specific flavour e.g. vinegar note or over-all freshness.

Lactosan

Our best guess in relation to the positive properties of carboxylic acids in food - and according to the commercial flavour houses - the carboxylic acids are of major importance for the “watering effect in the mouth” and the taste release.
A New Opportunity
Natural Flavour Enhancement
Nordbakken 2
DK-5750 Ringe
Denmark
E-mail: lactosan@lactosan.com
Website: www.lactosan.com