Characteristics of HiPP ORS 200 Apple:

- suitable for infants from 4 months and toddlers
- pleasant taste of natural ingredients
- no added sweeteners and flavouring
- no added lactose
- no added milk protein
- gluten-free
- ready to drink – convenient use

List of ingredients: water 83%, apple juice 16%, maltodextrin, iodized table salt, potassium citrate, acidity regulator citric acid

HiPP ORS 200 Apple was developed according to ESPGHAN criteria for ORS:

<table>
<thead>
<tr>
<th></th>
<th>HiPP ORS 200 Apple</th>
<th>ESPGHAN ORS2, 3, 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osmolarity (mOsm/l)</td>
<td>240</td>
<td>225 - 260</td>
</tr>
<tr>
<td>Sodium (mmol/l)</td>
<td>60</td>
<td>50-60</td>
</tr>
<tr>
<td>Glucose (mmol/l)</td>
<td>78</td>
<td>74 - 111</td>
</tr>
<tr>
<td>Potassium (mmol/l)</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Citrate (mmol/l)</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Chloride (mmol/l)</td>
<td>61</td>
<td>60</td>
</tr>
</tbody>
</table>

HiPP ORS 200 Apple is an alternative to our established product HiPP ORS 200 Carrot and Rice.

HiPP ORS 200 Apple

Apple-based Oral Rehydration Solution

Literature:
Acute gastroenteritis (AGE) is a common problem in infants and toddlers.

- The incidence is between 0.5 to 2 episodes per child and year in children <3 years in Europe\(^2\).
- The course of the disease is usually mild in Europe\(^2\).
- It is associated with a substantial number of hospitalizations\(^2\).

ESPGHAN/ESPID\(^*\) recommends\(^2\):

- oral rehydration as a „first-line therapy“ in children with AGE.
- hypo-osmolar ORS with sodium 50-60 mmol/l (ESPGHAN ORS).
- rehydration should be started as soon as possible.

**Study Apple ORS**

### Efficacy and safety of the Apple ORS\(^1\)

<table>
<thead>
<tr>
<th>Design</th>
<th>double-blind, randomised, controlled</th>
</tr>
</thead>
</table>
| Participants | n = 147  
Children with AGE with mild to moderate dehydration  
(3 - 9 % loss of body weight) |
| Age of children | 4 to 48 months |
| Intervention period | 7 days after AGE was diagnosed |
| Control group | Standard ESPGHAN ORS |
| Experimental group | Apple-based ORS |

**Outcomes**

- **Primary:** Proportion of successfully rehydrated children (including the following parameters: resolution of signs of dehydration, adequate weight gain and production of urine)
- **Secondary:** ORS intake, weight gain, vomiting, unscheduled intravenous therapy, return to the emergency department within a week, duration of diarrhoea, hospitalization, adverse events

**Result:** The Apple ORS is as safe and effective as the established standard ESPGHAN ORS\(^1\).

The experimental group (Apple ORS) had the tendency to consume higher amounts of ORS.

### ORS intake in ml/kg

**ORS intake in ml/kg**

<table>
<thead>
<tr>
<th></th>
<th>first 24h</th>
<th>in total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group</td>
<td>0 - 80 ml/kg BW</td>
<td>0 - 90 ml/kg BW</td>
</tr>
<tr>
<td>Experimental group</td>
<td>90 ml/kg BW</td>
<td>100 ml/kg BW</td>
</tr>
</tbody>
</table>

* 10.2 ml/kg BW in experimental group (Apple ORS)

**Intention-to-treat analysis**

- Apple ORS as a attractive variety of flavour.

\(\text{**ESPGHAN/ESPID* recommends}^2\)

- oral rehydration as a „first-line therapy“ in children with AGE.
- hypo-osmolar ORS with sodium 50-60 mmol/l (ESPGHAN ORS).
- rehydration should be started as soon as possible.