Abstract: Diarrhoea is a relative frequent affection in the new born, affection that rapidly leads to a syndrome of dehydratation, as a result of the hydro-electrolytic and acidobasic equilibrium particularities of the new born. The first stage in the physiopathogenic treatment of diarrhoea is the oral rehydratation. The aim of the scientific research is to prove the efficiency and the superiority of the osmolarity reduction of the oral solutions of rehydratation in the treatment of diarrhoea in the new born.

Keywords: diarrhoea, oral rehydratation, reduced osmolarity oral rehydration solutions.

INTRODUCTION
Premises

The research theme represents a new approach in the treatment of acute gastroenterocolitis, that is the reduction of the osmolarity of the oral solutions of rehydratation in acute gastroenterocolitis in the new born and is due to the following reasons.

PURPOSE OF THE RESEARCH

- The large frequency of acute gastroenterocolitis still remains a major cause of mortality and morbidity in children, counting 1.8 million of deaths in the children under the age of 5 and approximately 17% of the total of the infantile deaths.(1) In reality, diarrhoea is the major clinical expression of water and electrolytes disorder at the level of the digestive tube, including their absorption and secretion processes.(2)

- The new born has a maximum rhythm of accomplishing ADS (acute dehydratation syndrome) consecutively to the acute gastroenterocolitis, due to the particularities of the hydroelectrolytic and acidobasic metabolism.(3,9)

- The therapeutic attitude recommended by WHO (World Health Organization), of oral rehydratation, as the first stage of the therapeutic protocol for the treatment of ADS, secondarily to any type of diarrhoea, in acute gastroenterocolitis.(4,12) Oral rehydratation has numerous advantages: it is a simple, comfortable, easy to approach method (even at home), with a very good cost/efficiency relation.(5,6)

- Recent data regarding a new approach in the oral rehydratation of acute gastroenterocolitis.

The research and the studies developed starting with 2002, have revealed that in osmotic and secretory diarrhoea, reduced osmolarity rehydration solutions are very benefic.(7)

- According to the physiopathologic data in acute gastroenterocolitis of viral or parasitary etiology, as in persistent diarrhoea, faecal sodium excretions are relatively reduced (50 mmol/l), while stool osmolariy > the sum of the faecal electrolytes (Na + K) faecal x 2, indicating the existence of the osmotic diarrhoea, with the incomplete absorption of the nutrients. (2,3,16)

- The oral rehydratation formulae recommended by WHO-ORS were determined taking into account the losses of Na+ from the faeces: Na >90 mmol/l of the secretory diarrhoea with an osmolarity of 311 mmol/l.(10) Recent studies show that these formulae have also certain limits, in the sense that they do not reduce the volume of the stools, neither the length of diarrhoea.(8) It results that ORS formula with 90 mmol/l Na+ and 311 mmol/l osmolarity is not ideal for the rehydratation of the new born with osmotic diarrhoea. Reduced osmolarity rehydration solutions (RORS) would be benefic.(7,11,13,15)

- RORS decrease the intraluminal osmolarity, favouring the absorption of electrolytes through the action of solvent drag!(14) Recent studies show the advantages of the use of the reduced osmolarity rehydration solutions in secretory diarrhoea as well.(13,16,18)

Objectives
(RORS) benefic or not in the treatment of acute gastroenterocolitis in the new born?

**MATERIAL AND METHOD**

The scientific research method that I considered opportune was the sample method.

**Researchers sample:**

The new born hospitalized in the Pediatric Clinic of the city of Sibiu, between: 01.10.2007 – 30.09.2008

**Hospitalization diagnosis: acute enterocolitis**

- Aqueous diarrhoea
- Mild ADS
- Without severe malnutrition - G correlated with the age > percentile 60

**The new born with the following affections were excluded from the research:**

- Systemic infections under AB treatment;
- Muco-sanguinolent evacuations.

**The research period:** 01.10.2007- 30.09.2008 – Pediatric Clinic of the city of Sibiu

Total of the hospitalized patients 0 – 18 years old = 5,850

Total of the hospitalized patients: 0 – 1 year old = 1,410

Total of the patients included in the study: 0 – 1 year old = 236 (16,73% of the hospitalized new born)

**Table no. 1. New born repartition per age groups:**

<table>
<thead>
<tr>
<th>Age (months)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 – 6 months</td>
<td>122</td>
</tr>
<tr>
<td>7 – 12 months</td>
<td>114</td>
</tr>
</tbody>
</table>

**Table no. 2. New born repartition per age groups:**

<table>
<thead>
<tr>
<th>Age (months)</th>
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<tbody>
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<td>114</td>
</tr>
</tbody>
</table>

**Picture no. 1. Cases repartition per age groups:**

**Picture no. 2. Cases repartition according to the type of rehydrated solution.**

**Table no. 3. Composition of rehydration solutions.**

<table>
<thead>
<tr>
<th>Ingredients (mmol/l)</th>
<th>RORS</th>
<th>WHO-ORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Na</td>
<td>60</td>
<td>90</td>
</tr>
<tr>
<td>K</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Cl</td>
<td>51</td>
<td>80</td>
</tr>
<tr>
<td>Citrate</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Glucose</td>
<td>89</td>
<td>111</td>
</tr>
<tr>
<td>Osmolarity</td>
<td>230</td>
<td>311</td>
</tr>
</tbody>
</table>

The composition of the used rehydration solutions:

- WHO - ORS solution = GESOL 311 mmol/l (Na = 90mmol/l);
- RORS solution = Humana Elektrolit 230 mmol/l (Na = 60mmol/l).

**Picture no. 3. Cases repartition according to the type of rehydrated solution.**

The oral rehydration scheme was that recommended by IOMC.(5)

1. during the 4 hours of therapy: 50 - 100 ml/kgc = according to the clinical form;
   - 50 ml/kgc – mild form of ADS < 5%;
   - 100 ml/kgc – medium for of ADS 5 – 7 %.

2. 4 hours later: (+)50 ml/each evacuation. The administration will be made at room temperature; the pill will be dissolved, fractioned in small quantities and administered at short periods of time during the proposed period of time.

After oral rehydration, the early feed is to be instituted, according to the new recommendations.(5,12)

1. Early feed!
   - New born fed naturally or mixed
   - Continuation of the breast feeding
   - New born artificially fed:
     - < 5 l: Lactose-free milk
     - > 5 l: BV; mixed up meat; cereals, rice, fruits/vegetables (OP+BV, OP+flat apple or OP+banana, SM+PL+CM);
     - day 4 = standard powered milk

+ 50 - 100 ml ORS (between meals) for each evacuation or 10 ml/kgc/evacuation.

**Study management**

- Anamnesis
  - Origin environment
  - Onset of the disease

- Dietetic errors
- Other associated affections
- Symptoms (inappetence, vomiting, thirst or the refuse of the feeding bottle)
- Stools number and aspect
- Diet and other treatments administered at home

**Clinical examination**
- Nutrition general condition (IP, IN)
- Loss of weight
- Clinical signs of ADS

**Laboratory examinations:**
- Establishing the etiology
  - Coprocystogram, repeated plate culture of faeces, virusologic studies
  - (Ag rotavirus), coproparasitologic examination.
- Presence of the infection - HLG, VSH, PCR, fibrinogen
- Physiopathologic disorders.
  - HE and AB equilibrium:
    - Serum ionogram (Na, K, Cl, Ca, Mg)
    - Astrup parameters (pH, pCO₂, BE, BS)
    - ECG
  - Hemoconcentration syndrome (Ht, Pt)
  - Renal insufficiency – urea, creatinine
  - Adaptive reactions – glycaemia
- Complications:
  - Systemic infections (hemoculture)
  - Cerebral oedema (ex. FO, LCR, EEG)
- Parenteral focus:
  - ORL sphere (radiography sinuses, pharynx examination)
  - Respiratory (pulmonary radiography, IDR - PPD)
  - Urine culture

**Monitoring:**
1. Clinically: daily monitoring:
   - Vital signs
   - Increta, excrta
   - Weight
   - Fever curve
   - Stools frequency and aspect /24h
   - Diarrhoea length
2. Paraclinically: upon hospitalization, day 3, day 6, upon discharge
   - Usual blood determinations: HLG, ionogram and Astrup parameters
   - Stool examination: ph of the stool, faeces culture
3. Treatment
   - PEV (12-24 hours in ADS 5-7%)
   - Oral rehydration with ORS (quantity, length of rehydration)
   - AB
   - Intestinal Eubiotics

**RESULTS**

<table>
<thead>
<tr>
<th>Age</th>
<th>Rural</th>
<th>Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 6 l</td>
<td>82</td>
<td>40</td>
<td>122</td>
</tr>
<tr>
<td>7 - 12 l</td>
<td>56</td>
<td>58</td>
<td>114</td>
</tr>
</tbody>
</table>

**Table no. 4. Origin environment**

**Picture no. 3. Origin environment in the age group between 0-6 months**

**Picture no. 4. Origin environment in the age group between 7-12 months**

**Pictures no. 5 and 6. Cases repartition per gender**

*AMT, v. II, no. 2, 2009, p. 166*
Repartition pe sexe a cazurilor fem.; 102; 43% masc.; 134; 57%

**Picture no. 7. Acute enterocolitis**

**Picture no. 8. Acute enterocolitis**

**REFERENCES**