

# **Efficacy of Novalac<sup>®</sup> AD<sup>™</sup> in the Treatment of Infantile Rotavirus**

## **Enteritis**

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**Abstract:** **Objective** To observe clinical efficacy of Novalac AD<sup>™</sup> in infantile rotavirus enteritis. **Methods** 20 infants with rotavirus enteritis but without dehydration and/or acidosis were selected to be fed by Novalac AD<sup>™</sup> for one week. **Results** Effective rate was 100%. All 20 subjects stool turned normal and systemic symptoms disappeared after treatment, with 17 within 48 h (85%, 17/20) and 3 within 72 h (15%, 3/20). **Conclusion** Novalac AD<sup>™</sup> has a significant effect on infantile rotavirus enteritis.

**Key words:** Rotavirus; Enteritis; Novalac AD<sup>™</sup>

Rotavirus is double stranded RNA virus, genus of reoviridae and it is the main agent of infantile diarrhea in autumn and winter. Rotavirus primarily infects infants aged from 6 months to 2 years. Currently there is no special medical therapy with good effects; the clinical conventional therapy focuses on symptomatic and supportive treatment.

The course of illness is comparatively long, which greatly influences the health and growth of children.

Bayer Healthcare Co., Ltd. put Novalac<sup>®</sup> AD<sup>™</sup> formula antidiarrheal milk powder into the market in 2008 which provided a new diet therapy for clinicians. However, how is its efficacy? In order to answer this question, we have adopted Novalac<sup>®</sup> AD<sup>™</sup> formula milk powder to cure 20 cases of infants suffering from rotavirus and have got very good effects just for reference of clinicians.

### **1 Subjects and methods**

**1.1. General materials** The 20 cases were selected from infants of Department of Pediatrics, Beijing Friendship Hospital Affiliated to Capital Medical University from October, 2008 to June, 2009; 9 boys and 11 girls, aged from 14 days to 18 months and the course of disease was 1~3 days. Stool was defecated 5~10 times one day and it was loose stool or yellow stool. Therein 5 infants were accompanied with fever and 4 infants were accompanied with vomiting while the combined dehydration and acidosis was not found in all cases. Routine examination of stool: no red cells, no pyocytes, white cells 1~2/HP, a few fat pellets being found in several cases. The antigen of rotavirus in stool was tested positive.

**1.2 Therapies** The infants were fed with Novalac<sup>®</sup> AD<sup>™</sup> formula antidiarrheal milk

powder for one week. The dosage is shown in table 1.

**1.3 Criteria of efficacy** Referring to complementary suggestions of criteria of diarrhea efficacy<sup>[1]</sup>, the criteria were established: excellent effects: after 72 hours of treatment, the properties and times of stool returned to normal and all symptoms disappeared; effective: after 72 hours of treatment, the properties and times of stool were significantly improved and all symptoms were obviously better; ineffective: after 72 hours of treatment, the properties and times of stool were not improved or even deteriorated.

**1.4 Follow-up** All cases were called to follow up changes of illness every day.

## 2 Results

After treatment with Novalac<sup>®</sup> AD<sup>TM</sup> formula antidiarrheal milk powder, the effective rate was 100%. 17 cases' stool returned to normal and all of their symptoms disappeared within 48 hours, accounting for 85% of all cases (17/20); 3 cases' stool returned to normal and all of their symptoms disappeared within 72 hours, accounting for 15% of all cases (3/20). The efficacy was very remarkable.

Table 1 The milk consumption of Novalac<sup>®</sup> AD<sup>TM</sup>

Baby age (month)	<1	1~	2~	3~	4~	5~	>6
Baby weight (kg)	4	5	6	6.5	7	7.5	>7.5
Daily feeding frequency	6~7	5	5	5	4	4	3
The amount of each deployment* (number of milk powder spoon)	3~4	4	4~5	6	6~7	6~7	7
Warm water (ml)	90~120	120	120~150	180	180~210	180~210	210

Note: \* As part of the diverse diet one spoon of milk equit to 4.3 g milk

## 3 Discussions

After infection of rotavirus, lesion involved were mainly found in duodenum and jejunum and stomach, ileum and caecum were infected in some cases. The virus mainly invades epithelial cells of intestinal villi; virus replicated in cells. Consequently microvilli shortened and disappeared, cells were necrosed and exfoliated and declined in the number; cells were replaced by epithelial cells and the small intestinal absorption area was reduced and thus dysfunction of water and electrolyte absorption was resulted and diarrhea was formed. On the other hand, the replaced cuboidal epithelium was not mature and the activity of disaccharidase, especially lactase was low. As a result, dysfunction of disaccharide decomposition and absorption was resulted; disaccharide was decomposed into organic acid by bacteria; this further increased osmotic pressure of intestinal tract so that water and electrolyte were lost and severe watery diarrhea was caused<sup>[2]</sup>. Rotavirus enteritis could lead to secondary lactose intolerance, hence diarrhea worsened, which is the key reason of time extension of diarrhea.

At present the diarrhea treatment direction is to correct or to prevent abnormality of water and electrolyte and reduce dehydration, to improve clinical symptoms and regain formed stool, to rapidly supplement energy and easily digested and absorbed nutrients, to avoid secondary lactose intolerance, to avoid protein allergy, to improve appetite and guarantee nutritional intake.

Novalac<sup>®</sup> AD<sup>™</sup> formula antidiarrheal milk powder's characteristics are that it is the only one which can simultaneously meet needs of hypotonicity and polyelectrolyte, rapidly add water and relieve dehydrating symptoms; diverse carbohydrate can be easily digested and absorbed to quickly supplement energy; no lactose, cane sugar,  $\beta$ -lactoglobulin, glutelin, soy protein are added to avoid risks of secondary disaccharide intolerance and protein allergy; Dietary fiber and rice milk help with the rapid recovery of stool properties. The scientific formula effectively relieves diarrhea of infants. Our explored results show that stool properties and times of 20 infants returned to normal and all body symptoms disappeared after they ate Novalac<sup>®</sup> AD<sup>™</sup> formula milk powder, which further proves that taking Novalac<sup>®</sup> AD<sup>™</sup> TM formula milk powder is effective in treatment of infantile rotavirus enteritis. Now there is no magic medicine to cure infantile rotavirus enteritis, this milk powder is a safe and effective food therapy.

Because Novalac<sup>®</sup> AD<sup>™</sup> formula milk powder entered into Chinese market for a short period, relevant efficacy problems were not reported yet. Besides, in consideration that illness progression of out patients could not be judged as exactly as that of ward cases and dehydration correction could not be judged from telephone follow-up, moderately and severely ill infants and dehydrated infant were not chosen. This is why the selected 20 cases got very excellent effects.

#### **4 References**

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- [2] Zhu Yu, Wan Zhaomin, Treatment progress of rotavirus enteritis. *Journal of Modern Clinical Medicine*. 2007, 33 (suppl): 62-64.

(Received on Sept. 12, 2009)