



PRECLINICAL TRIALS OF "OROKS" (oral solution, 250ml/500ml)

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ABSTRACT

Acid-base balance disorders complicate the course of many diseases, being the most important component of the most diverse nosological forms of pathology, including such typical pathological processes as inflammation, fever, shock and others. The effect of the drug on acid-base balance was studied on the model of acute normobaric hypoxia with hypercapnia. The study was performed on 18 laboratory rats weighing 109-130 grams. According to the results of the study, after extraction from a sealed vessel, the rats of the control group differed sharply from the intact animals by blood pH values. In animals treated with "Oroks", blood pH was 7.19 ± 0.018 .

INTRODUCTION

Dehydration is the cause of many deaths, especially those due to diarrhea. According to WHO, compared to standard ORS solution, a solution with reduced osmolarity reduces the need for intravenous infusions by 33%. In addition, this solution also reduces the incidence of vomiting by 30% and stool frequency by 20%.

Oral rehydration is currently used in 99% of children with diarrhea worldwide. Timely and appropriate rehydration therapy is the first and most important part of the treatment of dehydration in both children and adults [1,2].

It is not a secret that unreasonable infusion therapy is not uncommon, because the child's legal representatives or medical staff do not want to bother with oral rehydration or do not have effective means for it [3].

"Oroks" solution is a ready-to-use, hypoosmolar oral rehydration solution. It is used for restoration of water-salt balance and correction of electrolyte and fluid loss during diarrhea and dehydration. Sorbitol promotes electrolyte absorption, citrates help correct acid-base balance in metabolic acidosis resulting from diarrhea and dehydration. Reduced sodium concentrations are needed to prevent hypernatremia, and higher potassium



concentrations are needed to restore potassium levels more quickly. "Oroks" solution reduces the volume and duration of diarrhea due to lower osmolarity of the solution and improved absorption of water and electrolytes in the intestine. Due to the presence of citrates in the solution, "Oroks" restores acid-base balance and prevents the development of metabolic acidosis.

The purpose of this study is study of specific activity "Oroks", oral solution 250ml/500ml (ser.0010220 ex.03/2022), produced by "OKS MASSAGET" LLC, Uzbekistan.

MATERIALS AND METHODS

In the course of evolution, the sensitivity of humans and animals to absolute changes in the concentration of carbon dioxide in the inhaled air has developed much higher than to changes in the concentration of oxygen. At the initial stage of oxygen deficiency and carbon dioxide excess, oxygenation of vital organs increases. An 8.0 vol% increase in plasma carbon dioxide concentration leads to a 10.66 mm.Hg increase in CO₂ and a 0.1 left shift in pH. The blood pH limits compatible with life are 7.0 to 7.8. Optimal rat blood values are pH values between 7.36 and 7.44. As the concentration of carbon dioxide in tissues increases, the intratissue fluid becomes acidified, which is manifested by the pH shift to the acidic side.

The effect of the drug on acid-base balance was studied on the model of acute normobaric hypoxia with hypercapnia [4]. Acute progressive normobaric hypoxic hypoxia with hypercapnia was created for rats in a sealed vessel of 1000 ml volume for 40 min. The study was performed on

laboratory rats weighing 109-130 grams, 18 individuals. The animals were kept under standard care conditions. Animals were not fed for 24 hours before the experiment.

For the experiment, the animals were divided into 3 groups of 6 animals each.

After fasting for 24 hours, the experiment was carried out as follows:

1. Intact group - no manipulations were performed;
2. Control group - intragastric purified water in a volume of 1.5 ml;
3. Experimental group - intragastric preparation "Oroks" in dose 100 mg/kg;

Fifteen minutes after drug administration, the rats were placed one by one in an airtight vessel of 1000 ml volume. After 40 minutes, the rats were extracted, decapitated, and blood pH was measured. A longer stay of the rat in the sealed vessel (46 minutes) resulted in lethal outcome.

Statistical calculations were performed by the method of variation statistics with the calculation of Student's test using STATISTICA program [5].

RESULT AND DISCUSSIONS

According to the results of the study, after extraction from the sealed vessel, the rats of the control group differed sharply from the intact animals in terms of blood pH. In intact animals blood pH was 7.2 ± 0.041 . In the control group of rats there was a decrease in blood pH to 6.8 ± 0.08 , which, according to literature data, corresponds to acidosis of a severe degree and leads to a shift of the isoelectric point of red blood cells. In animals treated with "Oroks" blood pH was 7.19 ± 0.018 (Table 1).



Table 3
Influence of "Oroks" on the level of acid-base status of blood under the influence of normobaric hypoxic hypoxia

No animals	Body weight animals, g	Solution "Oroks", mg/kg	Blood pH
Intact group			
M ± m	120 ± 6,5	-	7,2 ± 0,041
Control group (purified water 1.5 ml/120g)			
M ± m	118 ± 8,3	-	6,8 ± 0,08 P ₁ <0,05
«Oroks»			
M ± m	121,3 ± 5,6	100	7,19 ± 0,018 P ₂ <0,05

Note: where P₁<0,05 value compared to intact group, P₂ < 0,05 value compared to control group.

The obtained data show that the drug "Oroks" has a corrective effect in disorders of acid-base balance.

CONCLUSION

Thus, studies have been carried out to study the specific activity, in an experiment on rats. According to the results of the

study, after extraction from a sealed vessel, the rats of the control group differed sharply from the intact animals by blood pH values. In animals treated with "Oroks", blood pH was 7.19 ± 0.018. The "Oroks" solution for oral administration by 250ml/500ml (ser.0010220 ex. 03/2022) has a corrective effect in disorders of acid-base balance.

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