SUMMARY

Diarrhoea is the commonest disorder affecting the Egyptian infants below two years of age and the commonest causes of morbidity and mortality among Egyptian infants and pre-school children. Diarrhoea is defined as excessive losses of fluid and electrolytes from the gastro intestinal tract. The infectious agents that cause diarrhoea are usually spread by the fecal-oral route which include the ingestion of fecally contaminated water or food and also direct contact with infected feces.

Diarrhoeal disease are heterogenous in etiology, they may be due to enteral infection caused by a wide variety of viruses, bacteria, parasites and other non infectious etiological causes.

Dehydration is the commonest and the most serious complication of diarrhoea. Dehydration is classified either according to its severity into mild, moderate and severe or according to serum sodium concentration into hypernatreamic, hyponatraemic and Isonatraemic dehydration. The most important line of treatment of dehydration is the rehydration therapy which consists of oral rehydration solution and nutritional therapy.

Oral rehydration therapy has been described as potentially the most important medical advance of this century. Nevertheless, though the glucose based WHO formula is a historical break through in the management of acute diarrhoea, yet it does not reduce volume, frequency or duration of diarrhoea.

The applied new physiologic knowledge of the role of organic solutes in stimulating water and electrolyte absorption demonstrating intact glucose linked sodium absorption in acute diarrhoeal disease has revolutionized the management of diarrhoeal disease in the last decade or so. Application of the previous physiologic knowledge open the way for the use of enriched oral rehydration solution to overcome the previous drawbacks of the glucose based WHO formula. Various studies have shown that many complex organic molecules can be coupled with sodium thus further enhancing absorption, one of such molecules may be rice powder. Rice starch is unique, it contains a mixture of two different poly glucose, amylose and amylopectin. Intra-luminal digestion of rice powder liberates the monosaccharide glucose slowly without causing an osmolar load, which makes it possible to give a higher quantity of rice powder without lossing its effectiveness or causing an osmolar drag of fluid from the vascular space to the gut lumen.

This study aimed to evaluate the efficacy of an instant rice based oral rehydration solution on the outcome of acute diarrhoea in infants versus glucose based oral rehydration solution. We chosen one handred male infants sixty of them breast fed and forty exclusively formula fed under certain inclusion and exclusion criteria.

The infants were randomized by the random permuted block of length 10 to receive either the rice based oral rehydration solution (50 gm rice/L) or the glucose based oral rehydration solution. Clinical History and physical examination were carried out. While observations were performed 3 hourly until recovery.

The either solutions was offered to the child in the initial stage of rehydration (six hours) in amount calculated as 100 ml/kg. The child received the solution by cup and spoon in ad libitum amount. After initial stage of rehydration the child was offered his solution in amount of 100 ml/kg to match measured stool output. The child ingested it in ad libitum amount which were accurately recorded. In the first six hours nothing was given apart from the rehydration solution. After that breast fed infants were allowed to fed normally on demand but formula fed ones were fed four hourly by isocaloric cow's milk based formula in amounts calculated on the basis of 150 ml/kg/twenty four

hours divided into six feeds. The dilution was half strength in the first twenty four hours and full strength afterward. For both breast and formula fed infants a cereal based diet was offered once/twenty four hours in a dose of twenty five ml/kg.body weight. Regarding its preparation one leveled table spoon i.e 10 gm powder was added to 30 ml of water. The outcome of the study was assessed through the following response variables :-

- Duration of diarrhoea, the end point of diarrhoea would be ascertained by the time of the last watery stool passed out followed either by two consecutive formed stool or 12 hours without defecation.
- Stool output during the initial six hours, twenty four hours, and at the end of diarrhoea as expressed by gm/kg. body weight.
- Purging rate during the initial six hours, twenty four hours and at the end of diarrhoea as expressed by gm/kg. body weight/hour.
- Oral rehydration solution (either glucose or rice based) intake at six hours, twenty four hours and all period of admission.
- Weight gain as percentage of recovery weight.
- Serum sodium and potassium at admission and twenty four hours after admission.

The study came to end for an infant when one of the following was met :-

A) Success, this was verified as the time when the last watery stool was passed accertained by either two consecutive formed stools or 12 hours without defecation.

B- Failure :-

- Persistence of signs of dehydration after the initial six hours of rehydration.
- The child persistently rejects the rehydration formula in presence of signs of dehydration in the first six hours.
- Recurrence of signs of dehydration after initial rehydration.
- Clinical deterioration requiring I.V therapy.
- Persistance of diarrhoea more than 120 hours after beginning the study.

The obtained data and results were statistically analysed and the differences between groups were tested by student test (t test), Z test and X^2 test.

Our study showed that rice based oral rehydration solution like glucose based oral rehydration solution, can be used effectively in the treatment of cases with acute diarrhoea. Rice based oral rehydration solution was however found to be superior to glucose based oral rehydration solution with regard to the decreased amount of stool output, mean duration of diarrhoea as well as the rate of solution consumption especially in breast fed group.