

Formulation & Evaluation of Oral Rehydration salts

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Abstract— Dehydration following non-specific diarrhoea may be prevented by oral administration of a simple glucose/salt mixture. A solution tablet of this mixture would have advantages of stability under environmental exposure and transport if the costs could be held within reasonable limits. The moisture adsorption and compression characteristics of Oral Rehydration Salts (ORS) ingredients have been studied. Combinations of ingredients resulted in a moisture adsorption higher than that of the individual components. This may be explained in terms of critical relative humidity, R_{Ho} , and environmental relative humidity R_{Hi} . Preparation of a stable ORS solution tablet therefore requires protection of moisture adsorbing components from the environment. The present UNICEF ORS mixture compacted easily by direct compression but gave fragile tablets, which were hygroscopic. This can be reduced by film coating the electrolyte component as granules with a resin (Eudragit L), or by simulating direct compression of the glucose as a compression-coating around the precompressed electrolytes. The packaging of compression-coated solution tablets in inexpensive polyethylene bags may lengthen the shelf-life and make the preparation less costly than the currently supplied ORS powders packed in laminated aluminium sachets. The increased dissolution lag time for the compacted tablet is a disadvantage that can be overcome by instructions to crush the product immediately before use.

Keywords- ORS, R_{Ho} , R_{Hi}

I. INTRODUCTION

ORS Powder is a compound powder (containing more than one ingredient) for internal use for diarrhoea & rehydration. ORS is a special combination of dry salts that is mixed with safe water. It can help replace the fluids lost due to diarrhoea.

Oral rehydration solution (ORS) is an oral powder-containing mixture of glucose

sodium chloride, potassium chloride, and sodium citrate.

Oral rehydration salts (ORS) are a mixture of electrolytes (salts) and carbohydrates (in the form of sugar) dissolved in water. They are used to replace salts and water that the body loses when you have dehydration caused by gastroenteritis, diarrhoea or vomiting.

Oral rehydration therapy is a treatment for dehydration. It involves drinking a beverage made of water, sugar, and electrolytes, specifically potassium and sodium.

The beverage is called an oral rehydration solution (ORS). The goal of oral rehydration therapy is to replenish the body's fluid levels. Certain types of salts (sodium, chloride, potassium) are needed by your body for many processes, eg, to regulate water in and around cells, for brain function, to aid digestion and to regulate blood pressure. So it is important to replace them if you have become dehydrated. Oral Rehydration Salts (ORS) is the non-proprietary name for a balanced glucose-electrolyte mixture, first used in 1969 and approved, recommended, and distributed by UNICEF and WHO as a drug for the treatment of clinical dehydration throughout the world. Oral rehydration salts (ORS) are a mixture of electrolytes (salts) and carbohydrates (in the form of sugar) dissolved in water. They are used to replace salts and water that the body loses when you have dehydration caused by gastroenteritis, diarrhoea or vomiting. Unlike other fluids you might drink to replace what you have lost, the proportion of salts and sugar in an ORS matches what your body needs to recover.

Commercially-available ORS products like drinks, ice blocks, sachets or effervescent tablets for making solutions can be bought from pharmacies. They are often available in different flavours.

Home-made salt/sugar mixtures are used in developing countries if rehydration drinks are not available, but they have to be made carefully as too

much salt can be dangerous.

ORS Day is celebrated every year on 29th July to highlight the importance of Oral Rehydration Salts (ORS) as a cost-effective way of fighting against deadly diseases.

II.RELATED WORK

You should not use oral rehydration salts to treat diarrhoea for more than 2–3 days unless your doctor has told you to.

You should only use water to mix with the oral rehydration salts; do not use milk or juice and never add extra sugar or salt. This is because the rehydration salts contain the right mix of sugar and salts to help the body best.

You must be careful to use the right amount of water to make up the medicine, as too much or too little can mean the salts in your child’s body are not properly balanced.

Oral rehydration salts are safe and do not usually have side effects. You can take other medicines at the same time as oral rehydration salts. Avoid fizzy drinks, undiluted juices, tea, coffee and sports drinks because their high sugar content can make you more dehydrated.

III.MATERIALS AND METHODS

Ingredients	Quantity(gm)
Sodium Chloride	2.6g
Potassium Chloride	1.5g
Sodium Citrate	2.9g
Dextrose	13.5g

WHO-ORS	mOsmol/L
Sodium	75
Chloride	65
Glucose,anhydrous	75
Potassium	20
Citrate	10
Total Osmolarity	245

IV.PROPOSED WORK

oral rehydration solution work

ORS works because sodium, and therefore water, absorption in the small intestine is increased by glucose (sugar). The two are carried across the

wall of the small intestine together via a mechanism called “the sodium-glucose cotransport mechanism”. The toxins which cause diarrheal diseases, such as from food poisoning, increase secretion of water into the small intestine, but don’t block water uptake by this sodium-glucose transport mechanism. So ORS doesn’t cure you if you’re using it when you have diarrhea, but it will rehydrate you.

Dosage

Depending upon age and severity of dehydration.

Infants and Children : 1-2 litres (5-10 glasses) over a period of 24 hours.

Adults : 2-4 litres (10-20 glasses) over a period of 24 hours.

Continue treatment until diarrhoea stops / dehydration is corrected.

Caution

Use with caution in impaired renal function or intestinal obstruction.

Solution to be used within 24 hours.

Discard the unused solution.

Storage: Store in a cool and dry place.

Store protected from moisture.

Labelling Directions: Dissolve the contents of the packet in 1litre of freshly boiled and cooled water.

Shelf-Life : Sachet of 21.8g -24 Months

Overdose : In oral electrolyte replacement therapy, toxicity is rare in previously healthy people. In subjects with renal impairment, hypernatraemia and hyperkalaemia might occur.

In the event of significant overdose serum electrolytes should be evaluated by means of full biochemical profile under hospital conditions and the physician should take the appropriate measures. This is particularly important in the very young and in cases of severe hepatic or renal failure.

V BENEFITS

A.Improved Energy Levels

ORS (Oral Rehydration Solutions) has been consistently known and trusted to provide sustainable energy when feeling fatigued. ORS Benefits are countless, as ORS helps to restore valuable electrolytes, carbohydrates, and fluids which are

essential in boosting our energy levels. ORS isn't just useful during dehydration or physical strain; ORS may also be taken as a dietary supplement on a regular basis as a proactive measure to maintain healthy energy levels.

Furthermore, ORS is not only designed for adults but can be fine-tuned for young children who require more micronutrients like zinc and potassium for proper growth and development. ORS nourishes bodies with the essential elements needed to replace lost energy throughout the day and allows them to stay active longer.

B. Good For Dehydration

It is important to stay hydrated, particularly during the summer months. ORS (oral rehydration solution) is a great solution for this! ORS offers many benefits including restoring lost electrolytes, providing necessary glucose and proteins, and maintaining adequate hydration levels. ORS is also very cost effective and can be created easily with salt, clean water, sugar, and a pinch of baking soda. With ORS you can confidently remain properly hydrated all summer long.

A. Fights For Diarrhea

Suffering from diarrhea can be an unpleasant experience, leaving one feeling weak and dehydrated. ORS (oral re-hydration solution) is an effective way to fight it by replenishing the body with essential minerals, salts, and sugars that are lost due to dehydration.

ORS provides a faster source of energy than many other methods, while also preventing electrolyte imbalances in the body. It is also beneficial for those with food poisoning or who have contracted bacterial or viral infections since ORS benefits go beyond being just a simple drink. ORS helps return water and electrolytes lost during acute diarrhea so that you feel restored and energized as soon as possible!

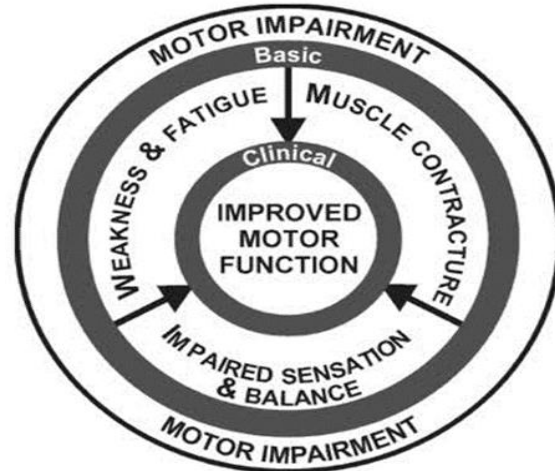


Fig 1: Motor Function

D. Improved Focus and Motor Function

ORS Benefits are well-known for its ability to improve focus and motor function. This is due to ORS being an advanced neuromodulation system that targets specific sets of nerve cells, stimulating them and allowing the body to better communicate with these neurons.

ORS can therefore help with enhancing focus and improving motor function in patients who suffer from neurological problems. ORS makes use of special electrodes that target the neurons responsible for movement, coordination, and cognitive functioning; hence giving ORS the ability to offer such beneficial outcomes with improved focus and motor functioning!

ORS Uses for Weakness

ORS (oral rehydration solution) has a myriad of benefits for people who are feeling weak. ORS can help to quickly restore lost electrolytes and minerals to prevent dehydration, which can often cause fatigue and weakness. Aside from physical strength, ORS is also effective in improving mental clarity as consuming ORS restores both electrolytes and glucose levels which provide energy that help speed up cognitive performance.

In addition, ORS can provide emotional refreshment from feeling tired or weak due to difficult circumstances or challenging situations. Therefore ORS is an effective solution for both physical and mental weakness due to its ability to replace minerals, increase energy levels and recharge tired minds.

ORS, or Oral Rehydration Salts, offers both immediate and long term benefits to the skin. ORS can

help repair minor facial damage due to sun exposure, windburn, and other stressors that cause rashes. ORS works to visibly restore damaged skin cells, reduce inflammation and puffiness, as well as hydrate dry patches of skin. ORS users often report a smoother, softer appearance on their face within a few days of use.

ORS is also known for its ability to lock in moisture and soothe sensitive areas of the body like the hands and feet. ORS has no known side effects or interactions with topical skin care products making it an ideal option for those seeking quick relief from their skin woes without added risk.

ORS is an oral rehydration solution widely used to help prevent and treat dehydration in children, especially those suffering from gastroenteritis or diarrhoea. ORS consists of a mixture of electrolytes, carbohydrates, and other substances that helps to restore fluid balance in the body. ORS has been shown to reduce complications associated with diarrhoea and helps to promote faster recovery.

ORS benefits extend into other areas too - ORS can also help decrease hospital admissions due to dehydration as well as shorten the duration of diarrhoea related illness. It is recommended that ORS be administered along with zinc supplements as well as continued breastfeeding if possible. ORS makes it easier for families to keep their young ones from becoming severely dehydrated, providing essential hydration support during times of illness or stress.

ORS Benefits are available to expecting mothers as part of the ORS program. ORS is an acronym for Old-Age, Survivors, and Disability Insurance, and it provides necessary support during pregnancy. ORS Benefits include aid with healthcare, cover medical expenses, help with long-term care after birth, and can even provide financial security should a mother not be able to work due to her pregnancy. ORS benefits have been designed to ensure expectant mothers have access to essential resources that can help them make the best possible health decisions for themselves and their newborn baby.

Advantages of ORS

Increased efficacy of ORS in non cholera diarrhoea.

Need for unscheduled supplement IV therapy in children fell by 33%.

Stool output decreased by 20%.

Vomiting decreased by 30%.

Safe & effective.

Disadvantages of ORS

Less stable.

Stool output not reduced.

The reduced osmolarity ORS has been criticized by some for not providing enough sodium for adults with cholera. Clinical trials have, however, shown reduced osmolarity ORS to be both safe and effective for adults and children with cholera.

CONCLUSION

In this paper, we proposed the aCurrently, in the management of acute diarrhea, particularly In children, there is still a need to improve the acceptability And adherence to ORS, for example palatability, swallowability, Appearance or parent's attitude towards the treatment

Administration.

Another important critical point in the oral rehydration is The volume administered, which children usually do not accept. In gel formulations the volume is significantly reduced to around 100ml, and can be administered at small portions, thus avoiding Its refusal and facilitating the role of parents or caregivers in Administering it. Recent comparative studies are demonstrating These benefits, together with the demonstration of the electrolytes Release at gastric level.

In our opinion, the development of new ORS formulations Could help to overcome these disadvantages. The main difficulty, The salty taste, can be masked using flavours, reconstituting And administering the product at low temperatures or using Pleasant textures that can resemble desserts or sweets.

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