

Q&amp;A 88.3

## What is St Mark's Electrolyte Mix (solution)?

Prepared by UK Medicines Information (UKMi) pharmacists for NHS healthcare professionals  
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### Background

St Mark's Electrolyte Mix is a glucose-electrolyte solution, also known as an oral rehydration solution (ORS) which is used in the management of Short Bowel Syndrome (1). Short Bowel Syndrome occurs as a result of extensive intestinal resection or functional abnormality and reduces the small bowel's capacity to absorb fluid and nutrients (2,3). This can lead to dehydration, weight loss, malabsorption of fluids, and electrolyte imbalance (3). One of the main aims of management is to increase fluid uptake and improve absorption (2,4,5). Most patients will require fluid, electrolyte and nutrient supplementation, and some patients may require intravenous nutrition (IVN) or intravenous fluids (IVF) to maintain health and growth (4-6). ORS are important in the maintenance of adequate fluid balance as they help decrease the need for IVN or IVF (4-7).

### Answer

Patients with short bowel have a disrupted fluid and nutrient absorption process leading to excessive fluid losses (8). Drinking hypotonic fluid (e.g. tea, coffee, water, carbonated drinks) will lead to sodium and fluid moving from the body into the intestine and being passed out (3,6). This will result in a high output and sodium depletion. Isotonic fluids are glucose-electrolyte solutions which optimise the ratio of sodium to glucose and allow greater fluid and sodium absorption across the jejunum (5,7,9,10). The glucose present in the intestinal mucosa promotes the passive absorption of both salt and water via a solvent drag mechanism (4,5,10). At least 90mmol/L of sodium are necessary to maximise the water and sodium absorption (7,9,11).

The original standard World Health Organisation (WHO) oral rehydration solution contains a sodium concentration of 90mmol/L, but it also contains potassium which can cause hyperkalaemia in some patients (1). Standard "sport drinks" are not suitable as they contain a high sugar content and low sodium content (10). There are many proprietary solutions available, however these are costly and have low sodium content (5). Due to the lack of suitable preparations available, St Mark's Hospital has produced a unique solution called "St Mark's Electrolyte Mix". This is a glucose-electrolyte mix which contains 90mmol/L of sodium and no potassium.

The patient should make the solution up fresh every day using the following measurements:

- 20g (six level 5ml spoonfuls) of glucose
- 2.5g (one heaped 2.5ml spoonful) of sodium bicarbonate
- 3.5g (one level 5ml spoonful) of sodium chloride (salt)

This is then dissolved in 1 Litre of tap water, and the patient should drink up to the prescribed volume throughout the day (1). Two to three litres per day may be necessary to maintain hydration (7).

The powders can be purchased from community pharmacies and supermarkets, and will often be cheaper than a single prescription charge.

Patients should be strongly encouraged to avoid plain water or hypotonic fluid consumption when they are thirsty and to substitute it with ORS (3,5,11). Patients may benefit from separating their ingestion of fluid from the intake of food (7).

The patient may find the solution bitter in taste due to the sodium bicarbonate. This can be minimised by storing the solution in the refrigerator and/or by the addition of a small amount of fruit juice or lemon or lime squash and sipping through a straw. If this continues to be a problem, the sodium bicarbonate can be replaced by the same quantity of sodium citrate (1).

## Summary

St Mark's Electrolyte Mix is a type of oral rehydration solution used in the management of short bowel syndrome. It has to be made daily using the stated formula and if the patient finds the solution unpalatable then advise as above.

## Limitations

There are other similar formulations available which may be referred to as St Marks mix. These are variations of the basic formula and may have a different electrolyte content. Locally prepared formulas should be checked. .

## References

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### Search strategy

- Embase: ORAL REHYDRATE SOLUTION AND (\*SHORT BOWEL SYNDROME/ OR \*INTESTINE FUNCTION DISORDER/)
- Medline: Rehydration solution AND short bowel syndrome
- Clinical specialist: Jackie Eastwood, specialist pharmacist, gastroenterology, St Marks Hospital.