

Improving the Efficiency and Effectiveness of Oral Rehydration Solutions: From Physiology to Clinical Practice

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Abstract

Dehydration secondary to diarrhoea continues to claim the lives of over a million children each year. Although effective in reversing dehydration and preventing death, oral rehydration solution (ORS) utilization in many communities remains low partly because it does not reduce diarrhoea severity or duration. Advances in understanding of colonic ion and water absorption provide an opportunity to harness the considerable capacity of the colon to absorb fluid. Short chain fatty acids (SCFA), produced by bacterial fermentation of unabsorbed carbohydrate in the colon, enhance colonic sodium water absorption and prevent chloride secretion in diarrhoea. SCFA concentration in the colon can be increased by ingesting amylase resistant starch that escapes small bowel digestion. Clinical trials using amylase resistant starch as adjunct to ORS show that diarrhoea duration and severity are reduced in adults with cholera and in children with non-cholera diarrhoea. This provides a new strategy to enhance ORS utilization in developing world communities.

Key Words: oral rehydration, ORS, short chain fatty acids, sodium water absorption.