

Balanced Electrolyte Solutions in Diabetic Ketoacidosis: Where does Sterofundin Stand?

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I read with great interest the recent meta-analysis on the effectiveness of balanced electrolyte solutions (BES) vs normal saline (NS) in the resuscitation of patients with diabetic ketoacidosis (DKA).¹ The authors provide a comprehensive overview of the clinical outcomes associated with BES, particularly Ringer's lactate (RL) and Plasma-Lyte. However, I would like to highlight a notable omission in the analysis—the exclusion of Sterofundin (SF) as a BES. This gap underscores the need for further exploration of SF in DKA management.

The comparative role of SF and NS in DKA has been addressed in only two studies to date, to my knowledge.^{2,3} The first study by Rossman et al. was a pilot randomized controlled trial involving 18 patients.² While the small sample size precluded statistical significance, the study observed trends favoring SF for early pH normalization (median increase: 0.05 vs -0.006 for NS, $p = 0.063$). Sterofundin also demonstrated a reduced rise in chloride levels compared with NS, suggesting its potential to prevent hyperchloremic acidosis.

Recently, Bharti et al. conducted a prospective intervention trial with historical controls involving 150 patients.³ The study demonstrated significant advantages of SF over NS, including shorter DKA resolution time (13.8 vs 18.1 hours, $p < 0.001$), reduced fluid and insulin requirements, and faster normalization of biochemical parameters such as pH and bicarbonate. Notably, SF mitigated hyperchloremia and reduced the need for hypotonic saline without impacting mortality rates.

These findings align with the theoretical benefits of SF, which include a lower chloride content and the presence of acetate and malate as buffer anions.^{2,3} Despite these promising results, SF remains underrepresented in the literature compared with RL and Plasma-Lyte. Furthermore, there is an ongoing clinical trial assessing the effects of SF vs NS on electrolyte balance in DKA, conducted by Universiti Sains Malaysia (ClinicalTrials.gov ID: NCT06399510). This reflects growing recognition of the potential advantages of SF and highlights the need for additional multicenter randomized controlled trials and meta-analyses to enhance our understanding of SF's role.

In conclusion, while the existing evidence base for SF is limited, the available data suggest that it is a promising alternative to NS. Inclusion of SF in future research endeavors is essential to provide a more comprehensive understanding of BES in DKA management.

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The corresponding author is responsible for ensuring that the descriptions are accurate and agreed upon by the author.

AUTHOR CONTRIBUTIONS

AKP: Conceptualization (lead); writing original draft (lead); writing, review, and editing (lead).

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