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Letter to the Editor – not accepted

Appraisal for a better understanding of the potential base excess of infusion solutions containing metabolizable anions  
 Anesthesia & Analgesia 2019

In a recent prospective randomized controlled trial Potura et al.(1) found a lower incidence of hyperkalemia and metabolic acidosis when using an “acetate- buffered” balanced crystalloid solution compared to saline 0.9% in patients receiving renal transplantation. These results are interesting but from our point of view two points need discussion. Firstly, the acetate contained in a balanced crystalloid solution is not a buffer but a metabolizable anion acting as a bicarbonate precursor. After infusion, the acetate is metabolized rapidly in muscles and other tissues leading to an indirect release of equimolar amounts of bicarbonate. Therefore, the labeling “acetate- buffered” is inaccurate for infusion solutions and should be replaced by acetate- containing or physiologically composed balanced isotonic solution. Secondly, the potential base excess (BEpot) of the balanced crystalloid solution (Elomel Isoton®, Fresenius Kabi, Austria) used by Potura et al. was presented inaccurately as 0 mmol/L in the methods section. The BEpot (mmol/L) is a useful parameter to predict the influence of an infusion solution on the acid-base status of the patient, indicates the amount of bicarbonate that can potentially be released in the body after infusion and is recommended for the labeling of infusion solutions by the manufacturers in Europe, especially in Germany and Austria (2). The balanced crystalloid solution used by Potura et al. contained 45 mmol/L acetate leading to a BEpot of +21 mmol/L (=acetate 45 mmol/L-bicarbonate 24 mmol/L) and not 0 mmol/L. As a consequence this infusion solution has a strong alkalizing effect whereas saline 0.9% (BEpot -24 mmol/L) has a strong acidifying effect (3). This is of importance when discussing the results of this study. We agree with Potura et al. that the use of balanced crystalloid solutions is generally helpful for the stabilization of the acid- base status but from our point of view the labeling “acetate- buffered” should be avoided and a correct calculation of the potential base excess is essential for the interpretation of acid- base effects of infusion solutions.

#### References

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