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*Ther Apher Dial.* 2009 Jun;13(3):220-4. doi: 10.1111/j.1744-9987.2009.00659.x.

## **Ionized alkaline water: new strategy for management of metabolic acidosis in experimental animals.**

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### Abstract

Metabolic acidosis can occur as a result of either the accumulation of endogenous acids or loss of bicarbonate from the gastrointestinal tract or the kidney, which represent common causes of metabolic acidosis. The appropriate treatment of acute metabolic acidosis has been very controversial. Ionized alkaline water was not evaluated in such groups of patients in spite of its safety and reported benefits. So, we aimed to assess its efficacy in the management of metabolic acidosis in animal models. Two models of metabolic acidosis were created in dogs and rats. The first model of renal failure was induced by ligation of both ureters; and the second model was induced by urinary diversion to gut (gastrointestinal bicarbonate loss model). Both models were subjected to ionized alkaline water (orally and by hemodialysis). Dogs with renal failure were assigned to two groups according to the type of dialysate utilized during hemodialysis sessions, the first was utilizing alkaline water and the second was utilizing conventional water. Another two groups of animals with urinary diversion were arranged to receive oral alkaline water and tap water. In renal failure animal models, acid-base parameters improved significantly after hemodialysis with ionized alkaline water compared with the conventional water treated with reverse osmosis (RO). Similar results were observed in urinary diversion models as there was significant improvement of both the partial pressure of carbon dioxide and serum bicarbonate ( $P = 0.007$  and  $0.001$  respectively) after utilizing alkaline water orally. Alkaline ionized water can be considered as a major safe strategy in the management of metabolic acidosis secondary to renal failure or dialysis or urinary diversion. Human studies are indicated in the near future to confirm this issue in humans.

PMID: 19527469 [PubMed - indexed for MEDLINE]

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