



UNIVERSITY OF
FLORIDA



ETHYLENE GLYCOL

An Old Model With a New Outlook

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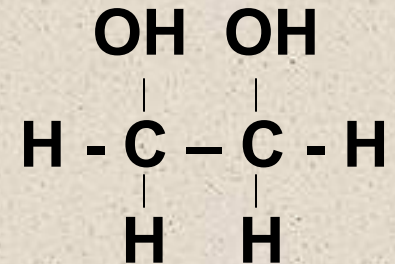
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Background

- **Ethylene glycol as an oxalate precursor**
Hyperoxaluria, injury, crystalluria, deposition
- **Other models of hyperoxaluria**
Dietary oxalate, osmotic pumps, hydroxyproline
- **Recent criticisms**
Clinical observations
- **No comprehensive studies to address this basic question**



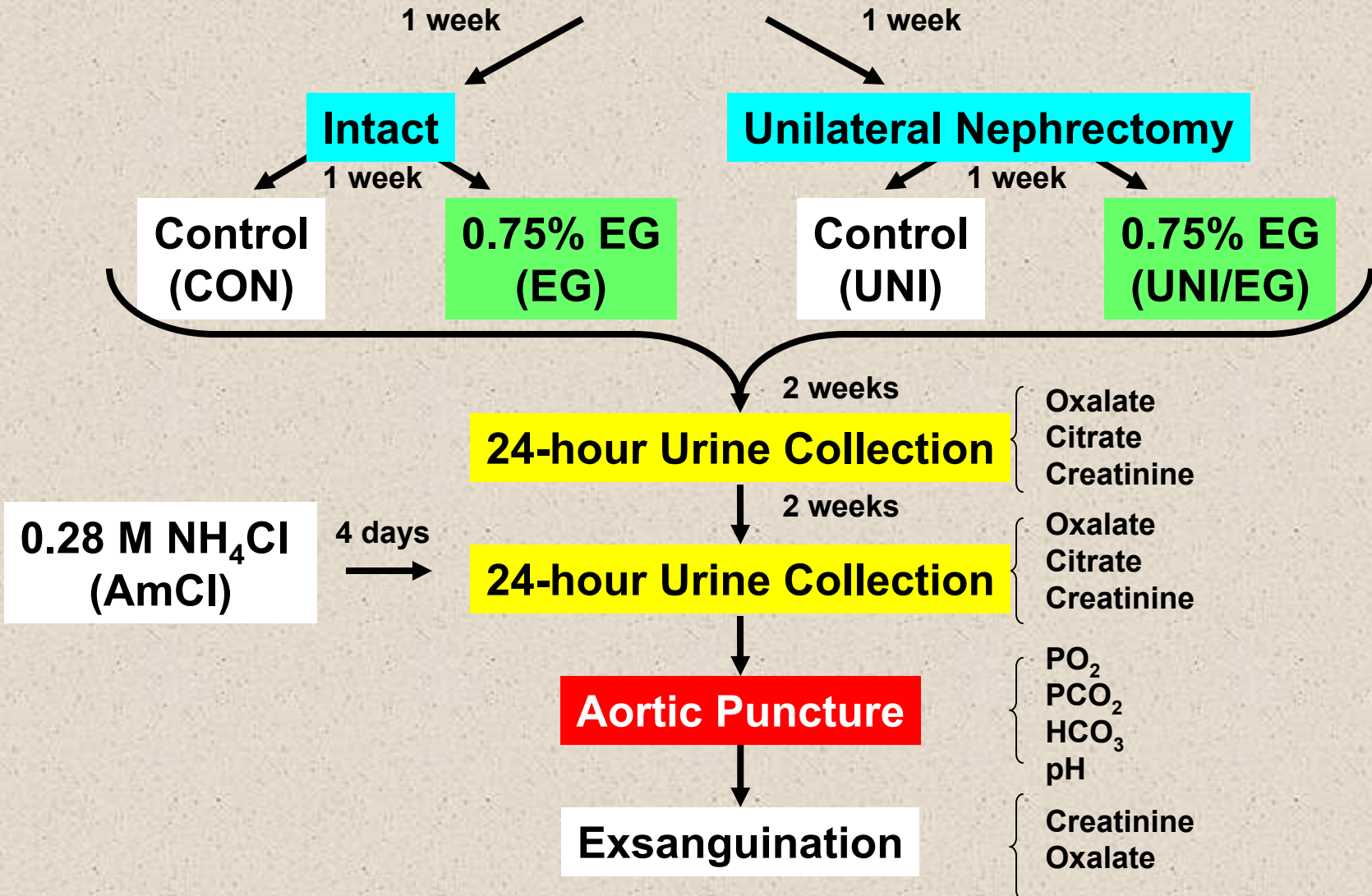
Objective



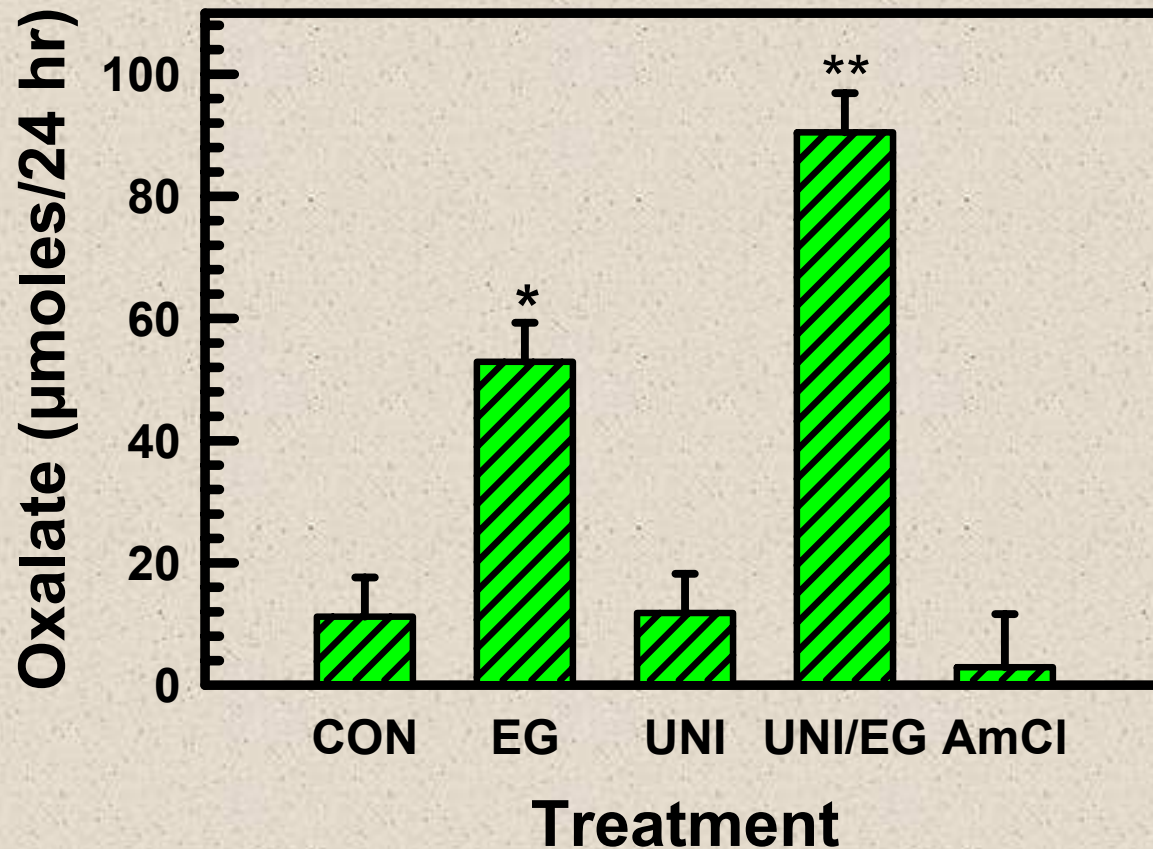
To determine if ethylene glycol induces a metabolic acidosis in a commonly utilized model for hyperoxaluria.

Experimental Design

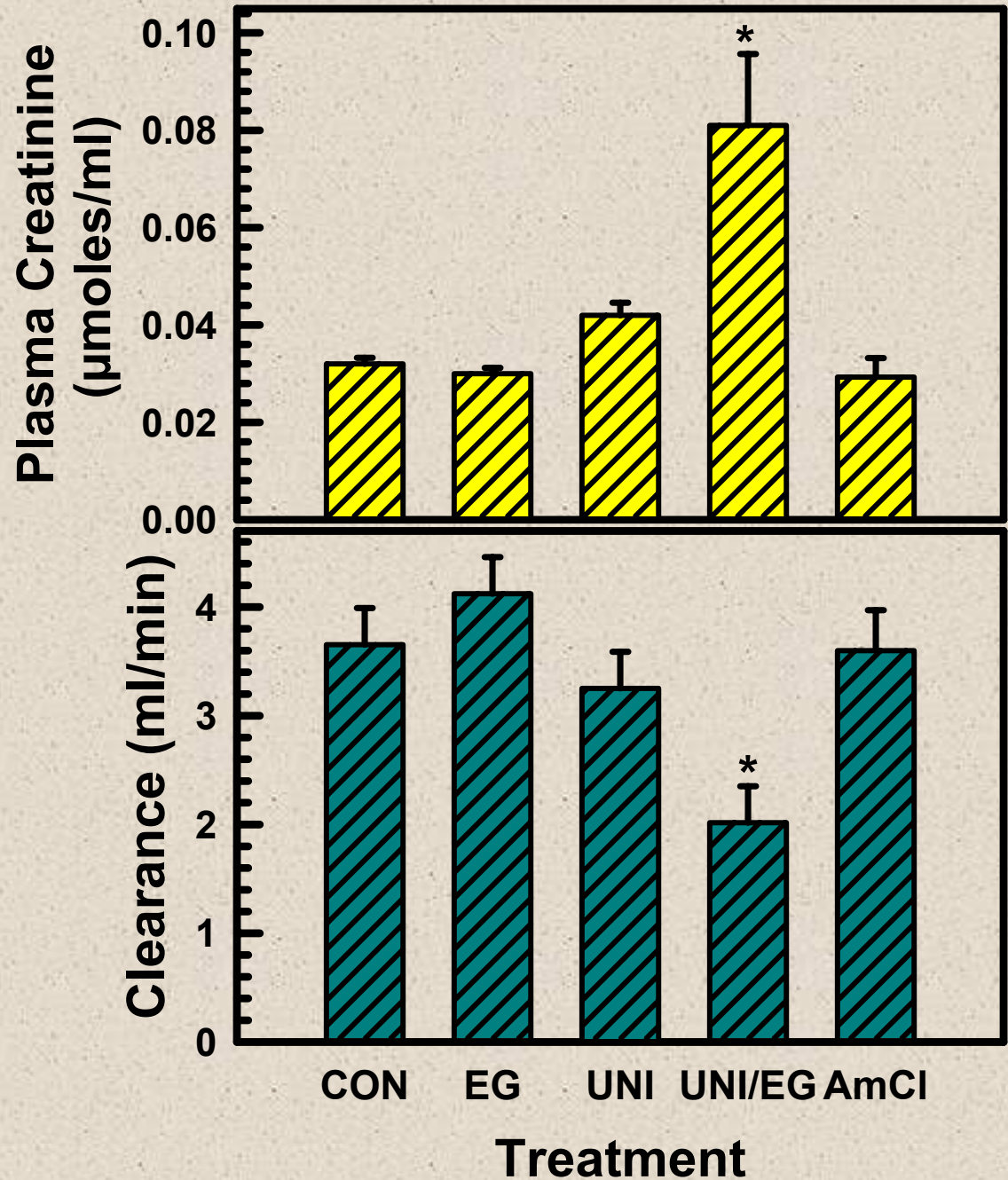
44 Male Sprague Dawley Rats
(275-300 g)



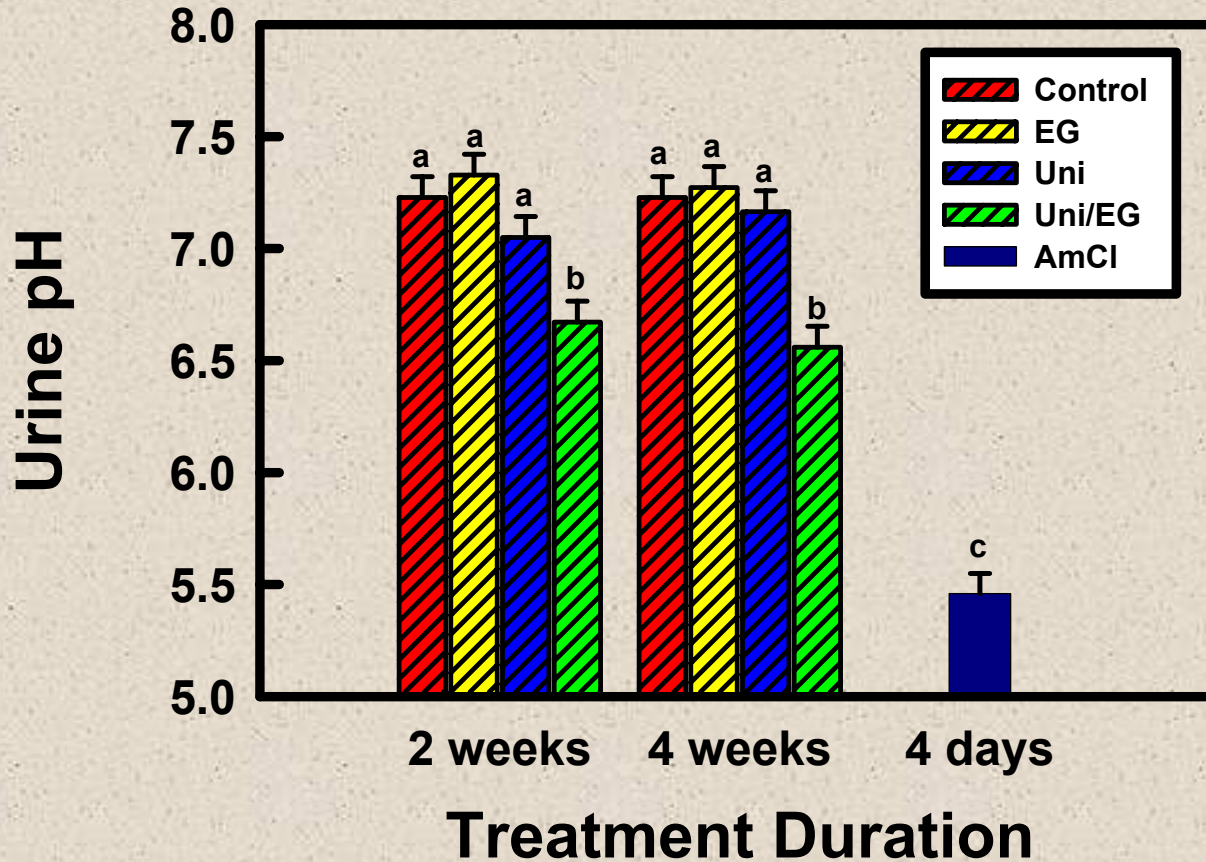
Effect of ethylene glycol (EG), unilateral nephrectomy (UNI) and metabolic acidosis (AmCl) on 24-h urinary oxalate excretion



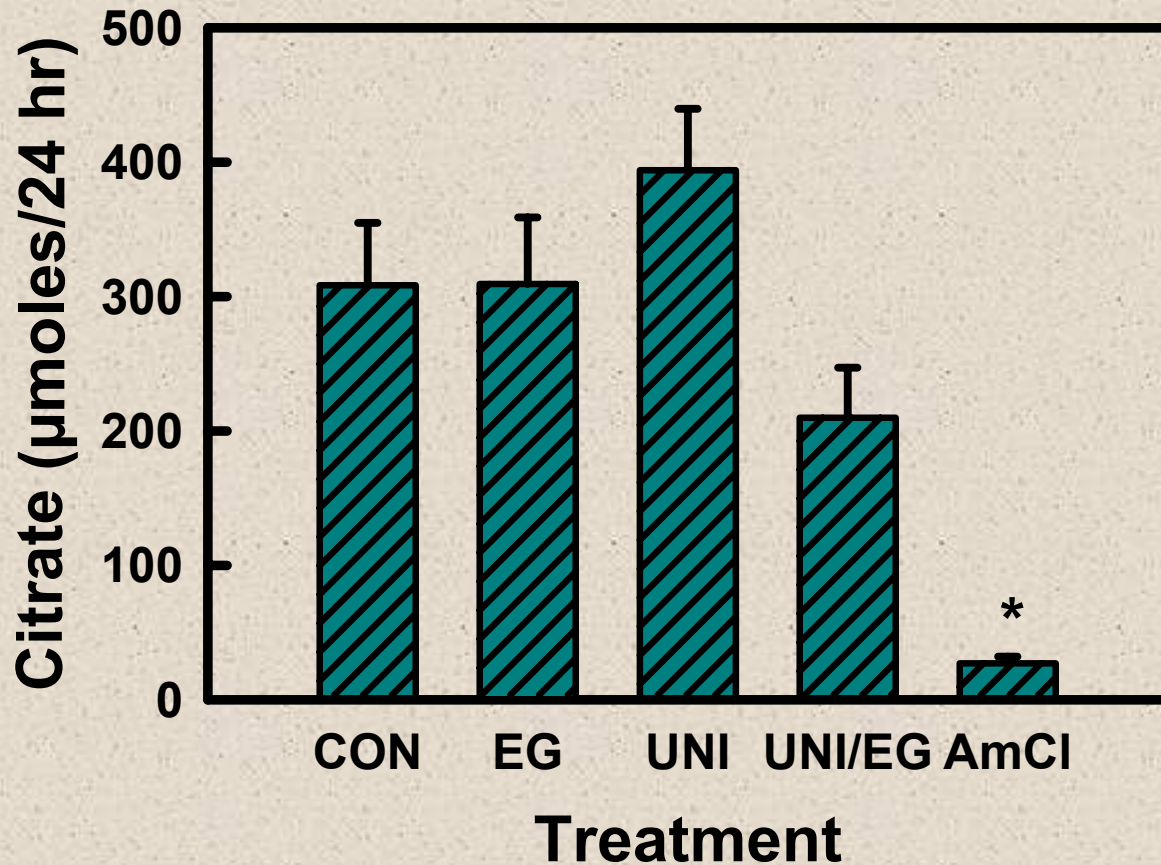
Hyperoxaluria-induced chronic renal failure (CRF) in unilaterally-nephrectomized rats.



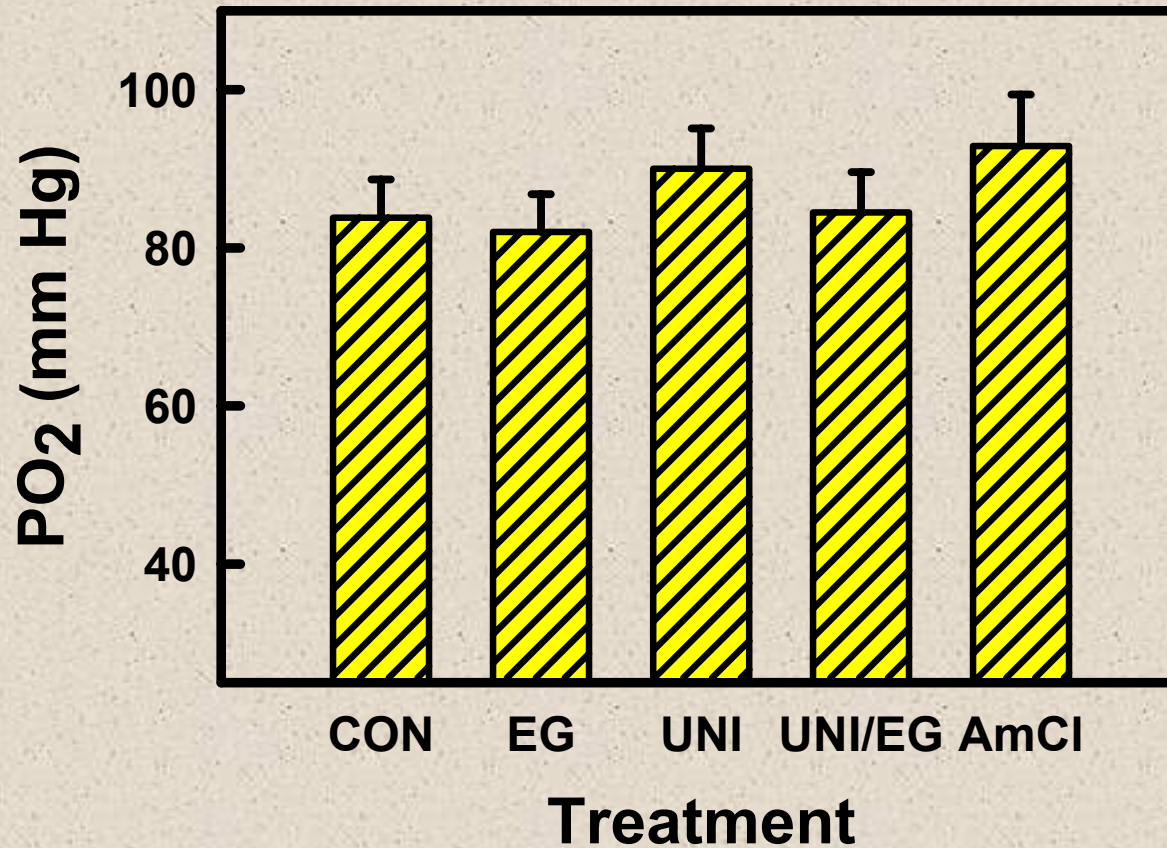
Effect of ethylene glycol (EG), unilateral nephrectomy (UNI) and metabolic acidosis (AmCl) on urine pH



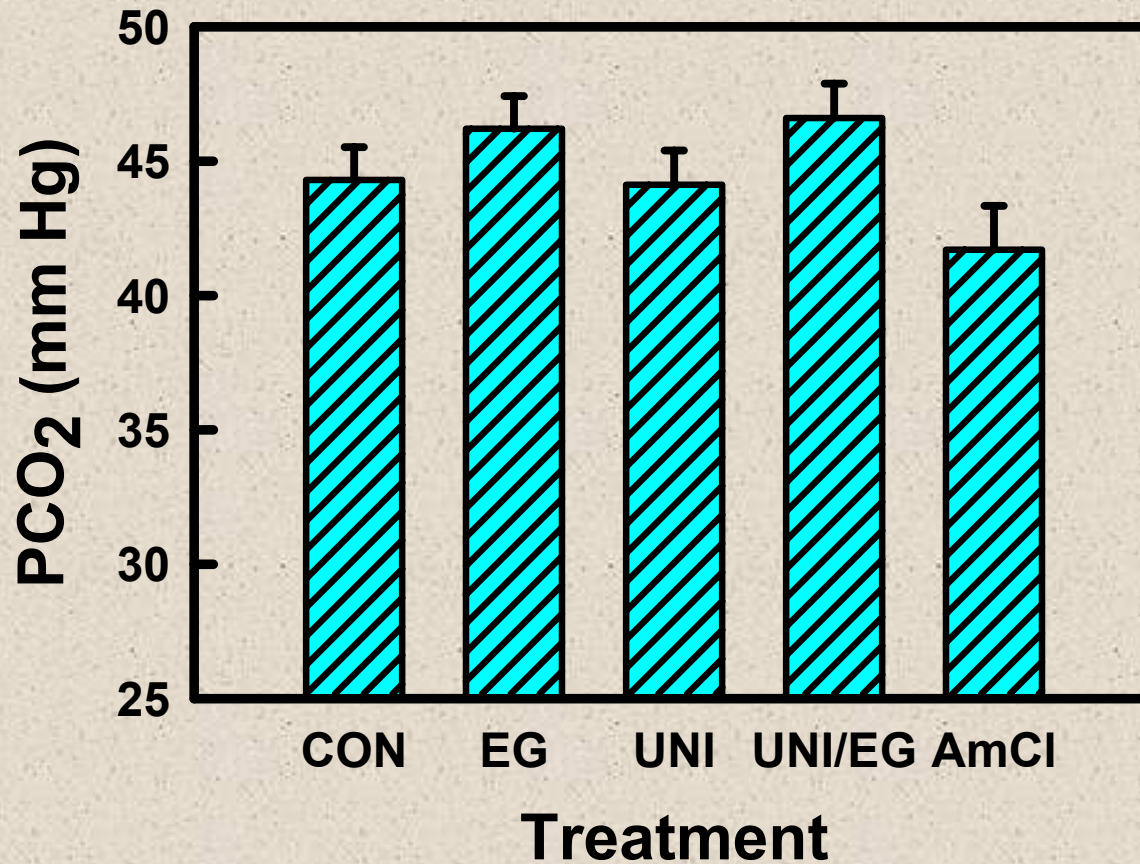
Effect of ethylene glycol (EG), unilateral nephrectomy (UNI) and metabolic acidosis (AmCl) on 24-h urinary citrate excretion



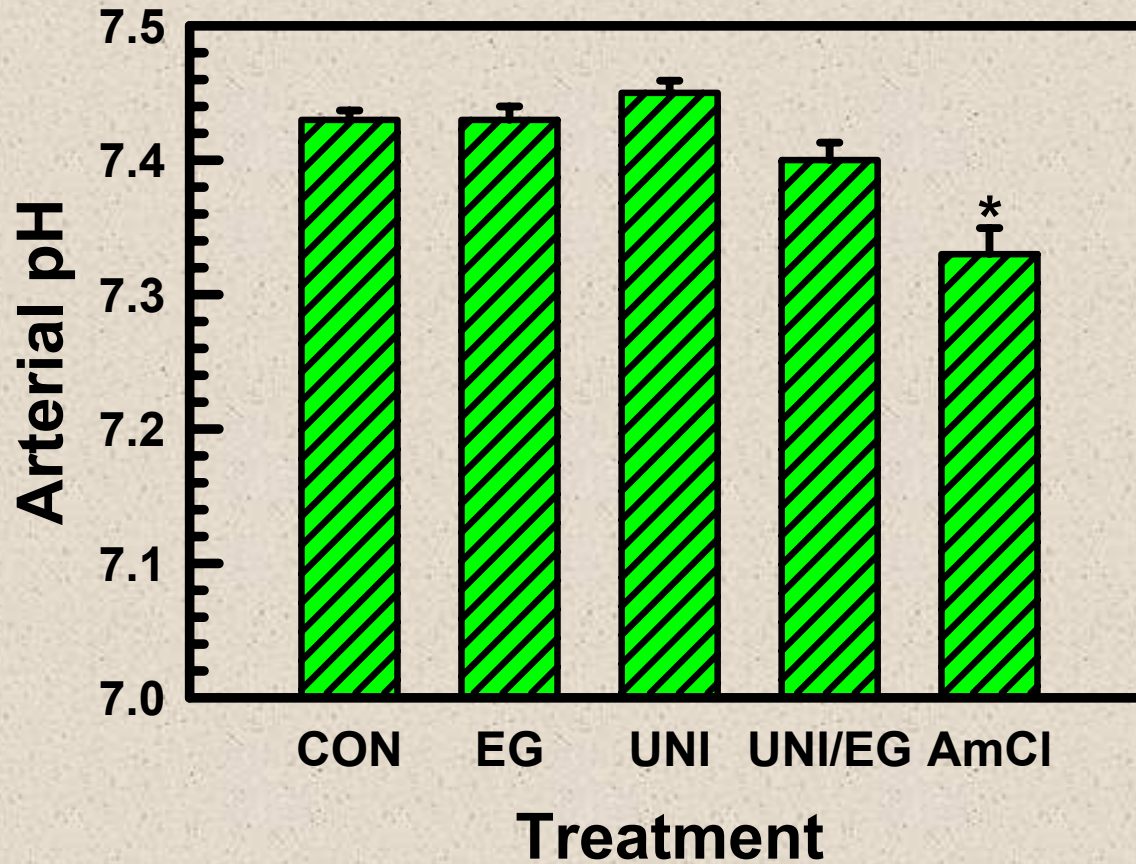
Effect of ethylene glycol (EG), unilateral nephrectomy (UNI) and metabolic acidosis (AmCl) on arterial PO₂



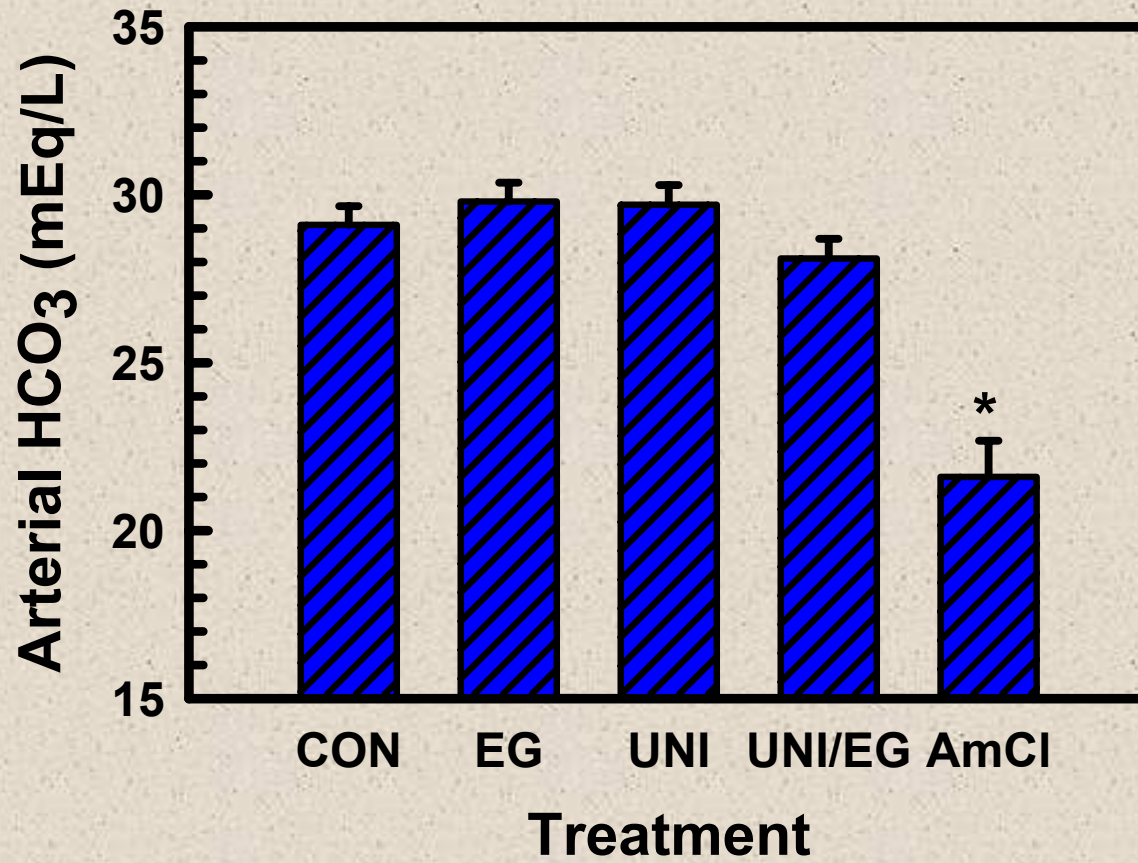
Effect of ethylene glycol (EG), unilateral nephrectomy (UNI) and metabolic acidosis (AmCl) on arterial PCO₂



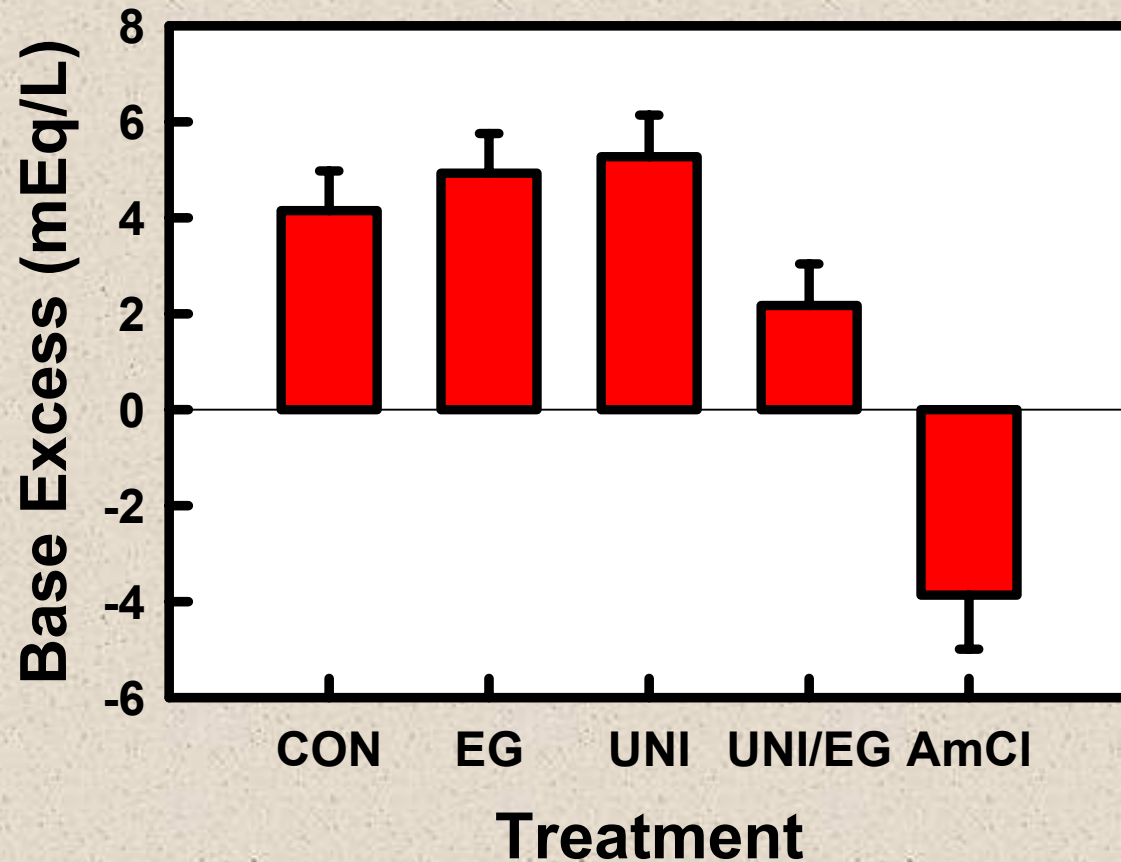
Effect of ethylene glycol (EG), unilateral nephrectomy (UNI) and metabolic acidosis (AmCl) on arterial pH



Effect of ethylene glycol (EG), unilateral nephrectomy (UNI) and metabolic acidosis (AmCl) on arterial bicarbonate



Effect of ethylene glycol (EG), unilateral nephrectomy (UNI) and metabolic acidosis (AmCl) on acid-base status



Conclusion

These data indicate that ethylene glycol does not induce metabolic acidosis in Sprague-Dawley rats. Thus, recently expressed concerns regarding this model of hyperoxaluria/nephrolithiasis based upon it being “acidotic” are not warranted.



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