Appendix H. Table 3. Followup urine biochemical measures for citrate trials

| **Study** | **Treatment Groups, Urine Collection Method** | **Calcium,**  **Oxalate,**  **Ca-Ox Product,**  **Ca-Ox Supersaturation** | **Uric Acid, Uric-A Supersaturation** | **Phosphate, Ca-P Supersaturation** | **Citrate, Sodium, Magnesium** | **Potassium (K), Volume, pH** |
| --- | --- | --- | --- | --- | --- | --- |
| Lojanapiwat, 201116 | A. Sodium- potassium citrate 81 mEq/d (n=13 *stone-free only, 39 total*)  B. No treatment (n=26 *stone-free only, 37 total*)  24 hour collection  Study reported any data on participant compliance/adherence: No | CALCIUM  Baseline  Mean (SD): NR  % hyperCa:  A – 10.3% (4/39)  B – 18.9% (7/37)  F/u Time 1: 12 mo.  Mean (SD): NR  % hyperCa:  A – 20.5% (8/39)  B – 18.9% (7/37)  OXALATE  Baseline  Mean (SD): NR  % hyperOx:  A – 20.5% (8/39)  B – 16.2% (6/37)  F/u Time 1: 12 mo.  Mean (SD): NR  % hyperOx:  A – 20.5% (8/39)  B – 27.0% (10/37) | URIC ACID  Baseline  Mean (SD): NR  % hyperUA:  A – 2.6% (1/39)  B – 0% (0/37)  F/u Time 1: 12 mo.  Mean (SD): NR  % hyperUA:  A – 2.6% (1/39)  B – 8.1% (3/37)  URIC-A SUPERSAT  Baseline  Mean (SD): NR  F/u Time 1: mo.  Mean (SD): NR | PHOSPHATE  Baseline  N  Mean (SD): NR  % hyperP:  F/u Time 1: mo.  N  Mean (SD): NR  % hyperP:  CA-P SUPERSAT  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR | CITRATE  Baseline  Mean (SD): NR  % hypoCit:  A – 51.3% (20/39)  B – 40.5% (15/37)  F/u Time 1: 12 mo.  Mean (SD): NR  % hypoCit:  A – 7.69% (3/39)  B – 37.83% (14/37)  SODIUM  Baseline  N  Mean (SD): NR  % hyperNa: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperNa: NR  MAGNESIUM  Baseline  N  Mean (SD): NR  % hypoMg: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hypoMg: NR | POTASSIUM  Baseline  N  Mean (SD): NR  % hypoK: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hypoK: NR  VOLUME  Baseline  Total volume < 1500 mL/day:  A – 43.6% (17/39)  B – 37.8% (14/37)  F/u Time 1: 12 mo.  Total volume < 1500 mL/day:  A – 38.5% (15/39)  B – 54.1% (20/37)  pH  Baseline  Mean (SD):  A (n=39) 5.8 (0.77)  B (n=37) 5.7 (0.66)  F/u Time 1: 12 mo.  Mean (SD):  A (n=39) 6.6 (0.97)  B (n=37) 5.9 (0.70) |

| Appendix H. Table 3. Followup urine biochemical measures for citrate trials (continued) | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Treatment Groups, Urine Collection Method** | **Calcium,**  **Oxalate,**  **Ca-Ox Product,**  **Ca-Ox Supersaturation** | **Uric Acid, Uric-A Supersaturation** | **Phosphate, Ca-P Supersaturation** | **Citrate, Sodium, Magnesium** | **Potassium (K), Volume, pH** |
|  |  | CA-OX PRODUCT  Baseline  N  Mean (SD): NR  Time 1: mo.  N  Mean (SD): NR  CA-OX SUPERSAT  Baseline  N  Mean (SD): NR  Time 1: mo.  N  Mean (SD): NR |  |  |  |  |
| Fernandez-Rodriguez, 20069 | A. Hydrochlorothiazide 50 mg/d (n=50)  B. Potassium citrate 20 mEq/d + hydrochlorothiazide 50 mg/d + (n=50)  C. No treatment (n= 50)  Urine collection method not specified  Study reported any data on participant compliance/adherence: No | CALCIUM  Baseline  Mean (SD): NR  % hyperCa:  A – 42%  B – 28%  C – 34%  F/u Time 1: 12 mo.  Mean (SD): NR  % hyperCa:  A – 16%  B – 4%  C – 26%  OXALATE  Baseline  Mean (SD): NR  % hyperOx:  A – NR  B – 2%  C – 2%  F/u Time 1:12 mo.  Mean (SD): NR  % hyperOx:  A – NR  B – 2%  C – 4%  CA-OX PRODUCT  Baseline  N  Mean (SD): NR  Time 1: mo.  N  Mean (SD): NR  CA-OX SUPERSAT  Baseline  N  Mean (SD): NR  Time 1: mo.  N  Mean (SD): NR | URIC ACID  Baseline  Mean (SD): NR  % hyperUA:  A – 2%  B – 6%  C – 4%  F/u Time 1: 12 mo.  Mean (SD): NR  % hyperUA:  A – NR  B – 16%  C – 2%  URIC-A SUPERSAT  Baseline  Mean (SD): NR  F/u Time 1: mo.  Mean (SD): NR | PHOSPHATE  Baseline  N  Mean (SD): NR  % hyperP:  F/u Time 1: mo.  N  Mean (SD): NR  % hyperP:  CA-P SUPERSAT  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR | CITRATE  Baseline  Mean (SD): NR  % hypoCit:  A – 14%  B – 16%  C – 14%  F/u Time 1: 12 mo.  Mean (SD): NR  % hypoCit:  A – 22%  B – 16%  C – 14%  SODIUM  Baseline  N  Mean (SD): NR  % hyperNa: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperNa: NR  MAGNESIUM  Baseline  N  Mean (SD): NR  % hypoMg: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hypoMg: NR | POTASSIUM  Baseline  N  Mean (SD): NR  % hypoK: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hypoK: NR  VOLUME  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR  pH  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N Mean (SD): NR |
| Ettinger, 199719 | A. Potassium (42 mEq/d)-magnesium (21 mEq/d) citrate (63 mEq/d) (n=31)  B. Placebo (n=33)  24 hour collection  Study reported any data on participant compliance/adherence: Yes (counting tablets) | CALCIUM  Baseline  Mean mg (SD):  A (n=31) 237 (120)  B (n=33) 275 (131)  % hyperCa: NR  F/u Time 1: 36 mo.  Mean mg (SD):  A (n=16) 225 (92)  B (n=25) 261 (123)  % hyperCa: NR  OXALATE  Baseline  Mean mg (SD):  A (n=31) 37 (13)  B (n=33) 36 (12)  % hyperOx: NR  F/u Time 1: 36 mo.  A (n=16) 44 (21) [p<0.05]  B (n=25) 39 (10)  % hyperOx: NR  CA-OX PRODUCT  Baseline  Mean m2 X 10-8 (SD):  A (n=31) 1.40 (0.76)  B (n=33) 1.77 (0.87)  Time 1: 36 mo.  Mean m2 X 10-8 (SD):  A (n=16) 1.48 (0.75)  B (n=25) 1.72 (0.53)  CA-OX SUPERSAT  Baseline  N  Mean (SD): NR  Time 1: mo.  N  Mean (SD): NR | URIC ACID  Baseline  Mean mg (SD):  A (n=31) 722 (239)  B (n=33) 695 (227)  % hyperUA: NR  F/u Time 1: 36 mo.  Mean mg (SD):  A (n=16) 726 (210)  B (n=25) 694 (194)  % hyperUA: NR  URIC-A SUPERSAT  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR | PHOSPHATE  Baseline  N  Mean (SD): NR  % hyperP: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperP: NR  CA-P SUPERSAT  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR | CITRATE  Baseline  Mean mg (SD):  A (n=31) 587 (37.4)  B (n=33) 549 (280)  % hypoCit: NR  F/u Time 1: 36 mo.  Mean mg (SD):  A (n=16) 769 (289) [p<0.05]  B (n=25) 548 (265)  % hypoCit: NR  SODIUM  Baseline  N  Mean (SD): NR  % hyperNa: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperNa: NR  MAGNESIUM  Baseline  Mean mg (SD):  A (n=31) 116 (44)  B (n=33) 121 (47)  % hypoMg: NR  F/u Time 1: 36 mo.  Mean mg (SD):  A (n=16) 142 (42) [p<0.05]  B (n=25) 105 (32)  % hypoMg: NR | POTASSIUM  Baseline  Mean mEq (SD):  A (n=31) 56 (25)  B (n=33) 58 (20)  % hypoK: NR  F/u Time 1: 36 mo.  Mean mEq (SD):  A (n=16) 89 (27) [p<0.001]  B (n=25) 58 (17)  % hypoK: NR  VOLUME  Baseline  Mean L (SD):  A (n=31) 1.98 (1.15)  B (n=33) 1.74 (0.70)  F/u Time 1: 36 mo.  Mean L (SD):  A (n=16) 2.01 (1.00)  B (n=25) 1.79 (0.84)  pH  Baseline  Mean (SD):  A (n=31) 6.01 (0.46)  B (n=33) 5.96 (0.41)  F/u Time 1: 36 mo.  Mean (SD):  A (n=16) 6.29 (0.58)  B (n=25) 6.02 (0.32) |
| Hofbauer, 199420 | A. Sodium-potassium citrate 30 gm/d initially, then adjusted to keep urine pH 7.0-7.2 (n=25)  B. Control (n=25)  24 hour collection  Study reported any data on participant compliance/adherence: No | CALCIUM  Baseline  N  Mean (SD): NR  % hyperCa:  A (n=25) 48%  B (n=25) 40%  F/u Time 1: 36 mo.  N  Mean (SD): NR  % hyperCa:  A (n=16) 25%  B (n=22) 45%  OXALATE  Baseline  N  Mean (SD): NR  % hyperOx: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperOx: NR  CA-OX PRODUCT  Baseline  N  Mean (SD): NR  Time 1: mo.  N  Mean (SD): NR  CA-OX SUPERSAT  Baseline  N  Mean (SD): NR  Time 1: mo.  N  Mean (SD): NR | URIC ACID  Baseline  N  Mean (SD): NR  % hyperUA: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperUA: NR  URIC-A SUPERSAT  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR | PHOSPHATE  Baseline  N  Mean (SD): NR  % hyperP: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperP: NR  CA-P SUPERSAT  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR | CITRATE  Baseline  Mean mmol/L (SD):  A (n=25) 1.3 (0.8)  B (n=25) 1.27 (0.9)  % hypoCit:  A (n=25) 72%  B (n=25) 65%  F/u Time 1: 36 mo.  Mean mmol/L (SD):  A (n=16) 2.28 (0.8)  B (n=22) 1.47 (0.9)  % hypoCit:  A (n=16) 25%  B (n=22) 55%  SODIUM  Baseline  N  Mean (SD): NR  % hyperNa: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperNa: NR  MAGNESIUM  Baseline  N  Mean (SD): NR  % hypoMg: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hypoMg: NR | POTASSIUM  Baseline  N  Mean (SD): NR  % hypoK: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hypoK: NR  VOLUME  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR  pH  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N Mean (SD): NR |
| Barcelo, 199321 | A. Potassium citrate 30-60 mEq/d (n=28)  B. Placebo (n=29)  24 hour collection  Study reported any data on participant compliance/adherence: Yes (interview and pill count) | CALCIUM  Baseline  N  Mean (SD): NR  % hyperCa: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperCa: NR  OXALATE  Baseline  N  Mean (SD): NR  % hyperOx: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperOx: NR  CA-OX PRODUCT  Baseline  N  Mean (SD): NR  Time 1: mo.  N  Mean (SD): NR  CA-OX SUPERSAT  Baseline  N  Mean (SD): NR  Time 1: mo.  N  Mean (SD): NR | URIC ACID  Baseline  N  Mean (SD): NR  % hyperUA: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperUA: NR  URIC-A SUPERSAT  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR | PHOSPHATE  Baseline  N  Mean (SD): NR  % hyperP: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperP: NR  CA-P SUPERSAT  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR | CITRATE  Baseline  Mean nmol/day(SD):  A (n=28) 1.9 (0.5)  B (n=29) NR  % hypoCit: NR  F/u Time 1: 36 mo.  Mean nmol/day(SD):  A (n=18) 3.3 (0.5) [p<0.01]  B (n=20) NR  % hypoCit: NR  SODIUM  Baseline  N  Mean (SD): NR  % hyperNa: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hyperNa: NR  MAGNESIUM  Baseline  N  Mean (SD): NR  % hypoMg: NR  F/u Time 1: mo.  N  Mean (SD): NR  % hypoMg: NR | POTASSIUM  Baseline  Mean mEq/day(SD):  A (n=28) 61 (17)  B (n=29) NR  % hypoK: NR  F/u Time 1: 36 mo.  Mean mEq/day(SD):  A (n=18) 105 (41) [p<0.01]  B (n=20) NR  % hypoK: NR  VOLUME  Baseline  N  Mean (SD): NR  F/u Time 1: mo.  N  Mean (SD): NR  pH  Baseline  Mean (SD):  A (n=28) 5.4 (0.5)  B (n=29) NR  F/u Time 1: 36 mo. Mean (SD):  A (n=18) 6.4 (0.3) [p<0.01]  B (n=20) NR |

**Abbreviation:** NR = not reported