Supplemental Material

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Table S1. ProNutra mineral analysis compared to ICP-OES mineral analysis

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Day | Phosphorus (mg/day) | | Calcium (mg/day) | | Sodium (mg/day) | | Magnesium (mg/day) | | Potassium (mg/day) | |
|  | ProNutra | ICP | ProNutra | ICP | ProNutra | ICP | ProNutra | ICP | ProNutra | ICP |
| Cycle Day 1 | 1543 | 1807.17 | 1125 | 869.05 | 2306 | 2359.40 | 346 | 302.09 | 3016 | 2716.91 |
| Cycle Day 2 | 1524 | 1937.57 | 1121 | 870.81 | 2307 | 2412.57 | 398 | 366.60 | 3049 | 3441.11 |
| Cycle Day 3 | 1513 | 1739.13 | 1969 | 910.68 | 2713 | 2690.45 | 350 | 328.49 | 3511 | 3206.02 |
| Average | 1526.67 | 1827.95 | 1405 | 883.51 | 2442 | 2487.47 | 365 | 332.40 | 3192 | 3121.35 |
| Standard Deviation | 15.18 | 100.84 | 448.44 | 23.54 | 234.69 | 177.78 | 28.94 | 32.43 | 276.75 | 369.45 |

**Table S2. Three-Day cycle menu**

|  |  |  |
| --- | --- | --- |
| tHREE-DAY cYCLE mENU |  |  |
| dAY 1 | | |
| Breakfast | Lunch | Dinner |
| English muffin, whole wheat | Baked Lays | Minute maid punch |
| Lowfat cottage cheese | Chicken breast | Brown rice |
| Jelly | Kraft swiss cheese | Olive oil |
| Butter | Kraft ranch dressing | Lentils |
| Blueberries | Hamburger bun | Soy sauce |
| Milk, 1% | Tangerines | Beef, tenderloin |
| Apple juice, fortified | Milk, 1 % | Mixed vegetables |
|  |  | Cookies, chocolate chip |
|  |  | Pineapple |
| DAY 2 | | |
| Breakfast | Lunch | Dinner |
| Wheat bread | Flour tortilla, whole wheat | Beef tenderloin |
| Peanut butter | Turkey breast | Potato, baked |
| Flax seeds | Swiss cheese | Butter |
| Jelly | Mayo, kraft light | Green beans |
| Cantaloupe | Baked Lays | Pears |
| Milk, 1 % | Sprite | Cookies, Lorna Doone |
|  | Grapes | Sprite |
| DAY 3 | | |
| Breakfast | Lunch | Dinner |
| Egg beaters | sub bun | spaghetti noodles |
| Eggs, whites only | beef | tomato sauce, spaghetti no salt added |
| Day 3 CONT. | | |
| Breakfast | Lunch | Dinner |
| Flax seeds | Barbeque sauce | Ground beef, 90/10 |
| Bacon, turkey | Trail Mix (chocolate frosted mini wheat, Crackin' Oat Bran cereal, pretzels, craisins, raisins) | Romaine |
| Green pepper | Milk, 1% | Chickpeas |
| Red pepper |  | Carrots, raw |
| Hash brown potatoes |  | Dressing, Marzetti honey french |
| Strawberries, fresh |  | Cookies, Oreos |
| Greek Yogurt Vanilla, Dannon |  | Milk, 1 % |
| Grape juice |  |  |

Upper GI

Gut

Extravascular

ECF

Soft Tissue and Bone

Feces

PO33P\*

IV33P\*

Urine

4

3

Diet P

5

2

1

Figure S1. Compartmental model of phosphorus metabolism.This schematic represents the compartmental model developed using the WINSAAM modeling software. This model represents different physiological pools (“compartments”) of phosphorus in the body (large circles). Compartments are labeled as follows: 1) Upper gastrointestinal (GI) tract; 2) Gut; 3) Extracellular fluid (ECF); 4) Extravascular spaces; and 5) Urine. Absorption was calculated as the ratio of transfer from compartment 2 to compartment 3 over the sum of transfers from compartment 2 to compartment 3 and from compartment 2 into the feces. Compartment 1 represents a pre-absorptive compartment. IV33P\* indicates IV 33P dose and PO33P\* indicates the oral 33P dose. Solid arrows indicate transfer rates that were calculated by the model. The dotted arrow indicates a physiological pathway that was not calculated due to the short duration of data sampling. The block arrow into compartment 1 represents dietary phosphorus intake.