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Changes in whole blood and clinical safety markers over 50 days of concomitant arachidonic acid supplementation and resistance training.

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ABSTRACT

Prostaglandins are derived from dietary arachidonic acid (AA) and up-regulate recovery mechanisms including inflammation and protein synthesis within skeletal muscle in response to resistance training. The purpose of this study was to determine if 50 days of concomitant resistance training and AA supplementation elicited changes in immune and serum clinical safety markers in resistance-trained males. Thirty-one subjects (22.1 ± 5.0 yrs, 86.1 ±1 3.0 kg, 178.9 ± 3.4 cm, 18.1 ± 6.4 % body fat) were randomly assigned to a placebo (P: n = 16; 1 g capsulated corn oil/day) or AA group (AA: n = 15; 1 g capsulated AA/day) and were given supplemental protein powder to ingest in order attain an adequate protein intake of 2 g/kg/day while participating in a 4 day/wk resistance training regimen (2 upper/ 2 lower). Fasting blood was taken on days 0, 25 and 50. Immune markers were measured from whole blood using flow cytometric analysis (Abbott Cell Dyne 3500) while serum markers were measured from separated serum using nephelometric analysis (Dade Dimension XRL). Data was analyzed by ANOVA with repeated measures and significant changes (p=0.05) are expressed as means ± SD changes from baseline after 50-days of supplementation for the AA and P groups, respectively. There were no significant group x time interactions in immune markers including white blood cell count (p=0.12), neutrophil count (p=0.17), lymphocyte count (p=0.20) or neutrophil: lymphocyte ratio (p=0.49). There were also no significant group x time interactions with red blood cell count (p=0.49), hemoglobin concentration (p=0.65) or hematocrit % (p=0.79). No significant group x time interactions were evident for liver enzyme levels including alanine aminotransferase (p=0.53) or gamma-glutamyl transferase (p=0.40) nor was there significant a group x time interaction for serum albumin (p=0.43). There was a statistical trend for the decrement in the liver enzyme aspartate aminotransferase in the P group (AA: 4.0 ± 11.2 U/L; P: -10.5 ± 27.7 U/L, p=0.07) but values remained well-within normal limits. No significant group x time interactions were evident for kidney function and/or catabolic indicators including blood urea nitrogen (BUN; p=0.21), creatinine (p=0.41) or BUN:creatinine ratio (p=0.41). None of the thirty-one subjects reported any adverse side effects over the 50-day trial. These results suggest that AA supplementation during an extended period of resistance training is physiologically well-tolerated and does not alter whole blood, liver or kidney clinical safety markers.

Arachidonic acid: Safety: Resistance training: