Effect of Astaxanthin Supplementation on Cardiorespiratory Function in Runners: 3299 Board #204 June 2 3: 30 PM - 5: 00 PM : Medicine & Science in Sports & Exercise

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Effect of Astaxanthin Supplementation on Cardiorespiratory Function in Runners

3299 Board #204 June 2 3

30 PM - 5

00 PM

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PURPOSE: Astaxanthin (AX) is a naturally occurring carotenoid, synthesized primarily by marine microalgae, with powerful antioxidant and anti-inflammatory properties. Rodent studies suggest that AX supplementation improves fat utilization and exercise endurance (Ikeuchi 2003). In athletes, AX supplementation (4mg/day for 4 wks) resulted in significant improvements in power output and cycling performance (Earnest 2011), however, a higher dose of AX (20mg/day for 4 wks) in well-trained cyclists and triathletes, yielded no significant changes in total antioxidant capacity, oxidative damage, rate of fat oxidation, or time trial performance (Res 2013). The purpose of this study was to assess the effects of 8 wks of AX supplementation (12mg/day) on cardiorespiratory function during higher and lower intensity exercise in recreational runners.

METHODS: Using a double-blind parallel design, 28 recreational runners (male = 14, female = 14, age = 42) were supplemented for 8 wks w/12mg/day of AX (*Haematococcus pluvialis* algal extract) or a placebo. Before and after the supplementation period, subjects performed a maximal running test (VO2max on treadmill) and a maximal cycling test (watts on cycle ergometer).

RESULTS: There was no improvement in maximal oxygen uptake (running VO2max) or maximal power output (cycling watts) with AX supplementation. Interestingly, subjects in the AX group showed a significant ~10% lower average heart rate at submaximal running intensities (aerobic threshold, AeT; AX 130+17 v. PL 145+14; and anaerobic threshold, AT; AX 139+20 v. PL 154+11, $p<0.05$) compared to placebo.

CONCLUSIONS: Supplementation with 12mg/day of AX for 8 wks reduced running heart rate at submaximal endurance intensities (AeT & AT), but not at higher “peak” intensities. These results suggest that AX may be a beneficial ergogenic aid for long/ultra-distance endurance athletes, but not necessarily for athletes competing in shorter higher intensity efforts. In addition, these data are also suggestive of a general “cardiotonic” effect of AX, that should be investigated in non-athletic populations including elderly subjects and those with cardiac complications including post-myocardial infarction, heart failure, statin usage, mitochondrial dysfunction, chronic fatigue, and related conditions.

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