

## NSA Poster Presentations: Friday 13 August 2004

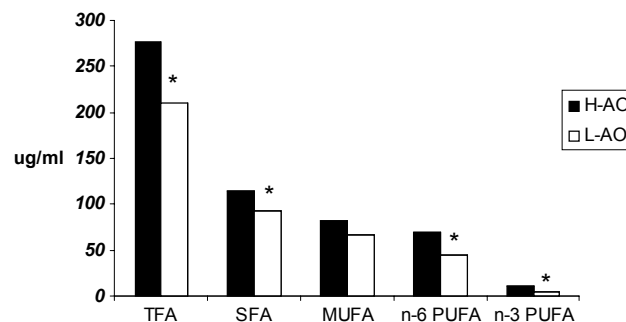
**Antioxidant restricted diet reduces plasma non-esterified fatty acids in trained athletes**TA Watson<sup>1</sup>, RJ Blake<sup>1</sup>, R Callister<sup>2</sup>, LK MacDonald-Wicks<sup>1</sup>, ML Garg<sup>1</sup><sup>1</sup>Nutrition & Dietetics, <sup>2</sup>Human Physiology, University of Newcastle, Callaghan, NSW 2308

**Background** - Non-esterified fatty acids (NEFA) are a major fuel source for humans at rest and during exercise have been previously shown to increase during exercise.<sup>1</sup> A reduction in the availability of NEFA as an energy substrate may impair exercise performance.

**Objective** - To determine the role of dietary antioxidants on plasma NEFA and exercise performance in athletes.

**Design** - Seventeen trained athletes underwent two separate exercise tests. Prior to the initial exercise test participants followed their habitual (high) antioxidant (H-AO) diets. Then they followed a two-week restricted-antioxidant (R-AO) diet before the second exercise test. Blood was taken at rest, following sub-maximal and incremental exhaustive exercise, and after one hour of recovery.

**Outcomes** - The R-AO diet induced a 3 fold reduction in antioxidant intake when compared to the H-AO diet, which resulted in a significant reduction in total, saturated, n-6 polyunsaturated and n-3 polyunsaturated fatty acids of plasma NEFA fractions at all time points even though the amount or types of fat consumed were not difference between the R-AO and H-AO diet. Time to exhaustion was not affected by the R-AO diet.



**Conclusion** - Despite lacking an effect on time to exhaustion, the interactions between antioxidants and plasma NEFA may impact on endurance exercise capacity and is worthy of further investigation.

1. Jensen, MD. Fate of fatty acids at rest and during exercise: regulatory mechanisms. *Acta Physiol Scand* 2003; 178: 385-390

**Bovine colostrum and whey protein supplementation during running training increase intestinal permeability**JD Buckley<sup>1</sup>, GD Brinkworth<sup>1</sup>, E Southcott<sup>2</sup>, RN Butler<sup>2</sup><sup>1</sup> Nutritional Physiology Research Group, University of South Australia, SA, 5032. <sup>2</sup> Department of Gastroenterology, Adelaide Women's and Children's Hospital, SA, 5000

**Background** - Bovine colostrum (BC) is a rich source of bioactive components. BC has been shown to improve athletic performance, reduce the incidence of upper respiratory tract infections, and reduce intestinal damage and permeability caused by the administration of non-steroidal anti-inflammatory drugs.

**Objective** - To determine whether BC supplementation could reduce the increases in intestinal permeability associated with endurance exercise training.

**Design** - Thirty-one healthy adult males (18 – 35 yr) completed eight weeks of running training, consisting of running at their lactate threshold for 45 min, three times per week. Subjects were randomly allocated (double-blind) to the consumption of 60 g·day<sup>-1</sup> of BC (n = 9) or whey protein (WP, n = 9), or took no supplement (CON, n = 13). Intestinal permeability was estimated at baseline and at the end of the study period from the urinary excretion of two orally administered non-metabolised sugars (lactulose / rhamnose).

**Outcomes** - By the end of the study period intestinal permeability had increased more in the BC and WP groups compared with the control group (BC 251 ± 140%, WP 192 ± 173%, CON -7 ± 13%; P<0.05).

**Conclusions** - Supplementation with BC and WP during running training increases intestinal permeability. The transport pathway affected could not be determined, but if some component(s) of BC (and WP) stimulate transcellular macromolecular transport then this might stimulate the absorption of some of the bioactive components contained in BC, thereby accounting for the previously described effects of BC on athletic performance and immunity.