Introduction

- Anti-inflammatory nutritional approaches may attenuate obesity-induced insulin resistance
- However, results from clinical studies are not consistent, warranting increased focus on determinants of inter-subject variability, particularly within young cohorts at high-risk
- Personalised nutrition approaches suggest that pre-intervention metabolotype may discriminate responders from non-responders

Materials & Methods

- 58 adolescents (13-18 yrs) were recruited onto a double blinded, placebo-controlled, cross over intervention, and randomized to receive either the active anti-inflammatory or placebo supplement for a period of 8 weeks
- Nutritional supplementation contained: EPA and DHA (2000mg), vitamin C (567mg), α-tocopherol (390mg), green tea extract (416mg) and lycopene (16.5mg)
- Anthropometric and biochemical parameters were assessed pre and post intervention

Conclusions

- Anti-inflammatory nutrient supplementation improved HMW adiponectin biology – adiponectin is an abundantly expressed adipokine with potent insulin sensitising effects and is an important biomarker of future risk of metabolic sequelae
- Evidence for selective improvement in insulin resistance
- Despite similar BMI, those with an adverse phenotype - 'metabolically unhealthy obesity' - responded more favourably to anti-inflammatory supplementation
- Baseline phenotype as well as delta sCD163 and delta total adiponectin significantly predicted HOMA-IR response

Aim

To investigate the effect of an anti-inflammatory dietary supplement on the metabolic phenotype of overweight and obese adolescents

Objective 1: To examine the effect of supplementation on plasma adiponectin, an early biochemical marker of type 2 diabetes risk

To assess the predictors of responsiveness to dietary intervention

Methods

- 58 adolescents (13-18 yrs) were recruited onto a double blinded, placebo-controlled, cross over intervention, and randomized to receive either the active anti-inflammatory or placebo supplement for a period of 8 weeks.
- Nutritional supplementation contained: EPA and DHA (2000mg), vitamin C (567mg), α-tocopherol (390mg), green tea extract (416mg) and lycopene (16.5mg).
- Anthropometric and biochemical parameters were assessed pre and post intervention.

Results

1. Anti-inflammatory supplementation increased HMW adiponectin despite no change in BMI or fat mass

2. HOMA-IR significantly improved in response to anti-inflammatory supplement in a sub cohort

3. mRNA expression of adiponectin receptors was modulated post supplementation

Conclusions

- Anti-inflammatory nutrient supplementation improved HMW adiponectin biology – adiponectin is an abundantly expressed adipokine with potent insulin sensitising effects and is an important biomarker of future risk of metabolic sequelae.
- Evidence for selective improvement in insulin resistance.
- Despite similar BMI, those with an adverse phenotype - 'metabolically unhealthy obesity' - responded more favourably to anti-inflammatory supplementation.
- Baseline phenotype as well as delta sCD163 and delta total adiponectin significantly predicted HOMA-IR response.

Materials & Methods

- 58 adolescents (13-18 yrs) were recruited onto a double blinded, placebo-controlled, cross over intervention, and randomized to receive either the active anti-inflammatory or placebo supplement for a period of 8 weeks.
- Nutritional supplementation contained: EPA and DHA (2000mg), vitamin C (567mg), α-tocopherol (390mg), green tea extract (416mg) and lycopene (16.5mg).
- Anthropometric and biochemical parameters were assessed pre and post intervention.

Conclusions

- Anti-inflammatory nutrient supplementation improved HMW adiponectin biology – adiponectin is an abundantly expressed adipokine with potent insulin sensitising effects and is an important biomarker of future risk of metabolic sequelae.
- Evidence for selective improvement in insulin resistance.
- Despite similar BMI, those with an adverse phenotype - 'metabolically unhealthy obesity' - responded more favourably to anti-inflammatory supplementation.
- Baseline phenotype as well as delta sCD163 and delta total adiponectin significantly predicted HOMA-IR response.

Materials & Methods

- 58 adolescents (13-18 yrs) were recruited onto a double blinded, placebo-controlled, cross over intervention, and randomized to receive either the active anti-inflammatory or placebo supplement for a period of 8 weeks.
- Nutritional supplementation contained: EPA and DHA (2000mg), vitamin C (567mg), α-tocopherol (390mg), green tea extract (416mg) and lycopene (16.5mg).
- Anthropometric and biochemical parameters were assessed pre and post intervention.