

food insecure women was 1.2 times ( $P < 0.001$ ) more than their food secure counterparts. In preschool children ( $n=3470$ ), severe and mild food insecurity increased the risk of overweight 2.03 and 1.58 times, respectively ( $P < 0.05$ ). In school children ( $n=1987$ ), severe and moderate food insecurity increased the risk of overweight 4.91 ( $P < 0.001$ ) and 1.85 ( $P < 0.05$ ) times, respectively. In adolescents ( $n=9436$ ), severe and moderate food insecurity increased the risk of overweight 1.30 and 1.25 times, respectively ( $P < 0.05$ ).

**CONCLUSION:** Food insecurity is associated with overweight in Iranian women, children, and adolescent members of Iranian households. This association is not clear in men.

#### OR16-8 SEVERE OBESITY IS ASSOCIATED WITH NOVEL SNPs OF ESR1 AND PPAR $\gamma$ LOCUS IN HAN CHINESE

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**BACKGROUND:** A large number of potential obesity loci have been reported. At least 18 genes have been replicated in a minimum of 5 studies on obesity-related phenotypes. Thirteen additional genes and the newly discovered FTO gene have been associated with obesity in Asians.

**OBJECTIVE:** Our objective was to examine how many common variants of these candidate genes are associated with severe obesity in Han Chinese and how they are combined to exert their effects.

**DESIGN:** A total of 304 severely obese patients ( $BMI > 39$ ) and 304 controls ( $BMI < 24$ ) were used in a two-staged association study. Subsequently, 220 additional severely obese patients ( $BMI > 35$ ) and 338 controls ( $BMI < 24$ ) were recruited to replicate the results. The all of controls were age-, sex-, education- and residence-matched. Finally, a pooled analysis was carried out based on all 524 cases and 642 controls.

**RESULTS:** The 1st stage association analysis in 94 cases and 94 controls found 18 potentially associated SNPs ( $p=0.01-0.1$ ). The significance of 3 novel common SNPs (single nucleotide polymorphisms) flanking ESR1 and PPAR $\gamma$  were confirmed in the 2nd stage, and replicated further with odds ratios ranging from 1.89 to 2.24. The combined effect of these three genes was stronger ( $OR=3.66$ , 95%  $CI=1.07-12.56$ ) than that from any individual gene.

**CONCLUSION:** Severe obesity in Han Chinese was associated with three novel common SNPs flanking ESR1 and PPAR $\gamma$  genes. These two genes collectively imposed a near 4 fold risk for severe obesity. This information may contribute to the risk prediction for severe obesity.

#### OR17: Metabolism and Chronic Diseases

#### OR17-1 THE ANTI-ADIPOGENIC EFFECT OF CIS-9, TRANS-11, TRANS-13 CONJUGATED LINOLENIC ACID IN BITTER MELON

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**OBJECTIVES:** Bitter melon (*Mormordica charantia*) had been shown to reduce adiposity in Wistar rats. We hypothesized that the anti-adiposity effect is associated with a special fatty acid, cis-9, trans-11, trans-13 conjugated linolenic acid (c-9, t-11, t-13 CLN), which is abundant in bitter melon seed.

**METHODS:** 3T3-L1 was used to test the effects of saponifiables from bitter melon and a pure compound, c-9, t-11, t-13 CLN, on adipocyte differentiation. Differentiation was assessed by oil Red O staining, cellular TG content, glycerol-3-phosphate dehydrogenase activity and PPAR protein level. Effect of c-9, t-11, t-13 CLN on pre- and post-confluent preadipocyte proliferation was also examined. Finally, the physiological relevance of c-9, t-11, t-13 CLN mediated anti-adipogenesis was verified by diet-induced obesity (DIO) mice subjected to bitter melon seed oil (BMSO).

**RESULTS:** A saponifiable fraction obtained from bitter melon with high c-9, t-11, t-13 CLN content, as well as a pure compound of c-9, t-11, t-13 CLN, suppressed 3T3-L1 differentiation as compared with their fatty acid controls. A persistent ERK activation at the early differentiation was observed for 100  $\mu M$  c-9, t-11, t-13 CLN treatment. c-9, t-11, t-13 CLN caused a dose-dependent reduction in viability of pre- and post-confluent preadipocytes, which can be

attributed to apoptosis. Animal study showed BMSO, in contrast to soybean oil, successfully reduced adiposity in DIO mice.

**CONCLUSION:** c-9, t-11, t-13 CLN contributes to the anti-adiposity effect of bitter melon by inducing apoptosis and suppressing differentiation of preadipocytes.

#### OR17-2

#### EFFECT OF CONJUGATED LINOLEIC ACIDS, VITAMIN E AND THEIR COMBINATION ON THE CLINICAL OUTCOME OF IRANIAN ADULTS WITH ACTIVE RHEUMATOID ARTHRITIS

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**OBJECTIVES:** To investigate the effects of CLAs as an adjuvant therapy on the clinical manifestations of Rheumatoid arthritis (RA) in adults with an active disease.

**METHODS:** In a randomized, double-blind placebo controlled trial, 87 patients with active RA were divided into 4 groups receiving one of the following daily supplements for 3 months: Group C: CLAs 2.5 g. equivalent to 2 g. mixture of cis 9-trans 11 and trans 10-cis 12 CLAs in a rate of 50/50; Group E: Vitamin E: 400 mg; Group CE: CLAs and vitamin E at above doses; Group P: placebo.

**RESULTS:** A 3-month supplementation resulted significant reduction in DAS 28, pain and morning stiffness in the groups C and CE compared with group P ( $p < 0.05$ ). Comparing with the baseline, ESR levels decreased significantly in the groups C ( $p \leq 0.05$ ), E ( $p \leq 0.05$ ) and CE ( $p \leq 0.001$ ). Group CE had significantly lower ESR levels than group P ( $p \leq 0.05$ ). CRP dropped non-significantly in all four groups ( $p > 0.1$ ). The reduction of WBC count was significant in group CE compared with other groups ( $p < 0.05$ ). Decrease in platelet count was non-significant in groups CE, C, and E. Changes in RF, BMI, RBC and Hb were not significant in four groups, while RF decreased non significantly in groups CE and E. In comparison with the baseline,  $\alpha$ -tocopherol increased significantly in groups C ( $p \leq 0.05$ ), E ( $p \leq 0.01$ ) and CE ( $p \leq 0.001$ ) and in groups E and CE compared with group P.

**CONCLUSION:** CLAs supplementation resulted significant improvement in clinical manifestation of RA patients and may be useful in their treatments.

#### OR17-3

#### EFFECTIVENESS OF ENTERAL NUTRITION WITH EICOSAPENTAENOIC ACID AND GAMMA-LINOLENIC ACID IN PATIENTS WITH ARDS AND MODS: A PROSPECTIVE MULTI-CENTER RANDOMIZED CONTROLLED TRIAL

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**OBJECTIVES:** To determine if early continuous enteral feeding of a diet containing eicosapentaenoic acid (EPA), gamma-linolenic acid (GLA), docosahexaenoic acid, and antioxidants in patients with ARDS improves mortality, Lung Injury Score (LIS), gas exchange, Multiple Organ Dysfunction (MOD) Score, ICU length of stay, and mortality.

**METHODS:** Prospective randomized multi-center double-blind controlled trial of ARDS patients continuously tube-fed the experimental diet or an isonitrogenous, isocaloric standard diet at a minimum caloric delivery of 90% of basal energy expenditure.

**RESULTS:** In the experimental group, there was a decrease in lung injury score ( $p < 0.003$ ) and lower ventilation variables ( $p < 0.001$ ). Patients in the experimental group had lower APACHE II scores by day 4, and there was statistically significant decrease in 28-day MOD score ( $p < 0.05$ ). The length of ICU stay was significantly decreased in the experimental group (12.8 vs. 17.5 days;  $p = 0.01$ ). Survival rates for the experimental group were significantly higher than controls ( $0.9375 \pm 0.0605$ ; 95%  $CI$  0.8189, 1.000;  $OR -0.8473 \pm 0.4082$ ;  $RR 0.4286 \pm 0.1750$ ) vs.  $0.5571 \pm 0.1497$  (95%  $CI$  0.2637, 0.8505;  $OR -2.7726 \pm 0.0625$ ;  $RR 0.0625 \pm 0.0625$ ).

**CONCLUSIONS:** An EPA and GLA supplemented diet contributes to improved gas exchange, decreased LIS and MOD scores, decreased length of ICU stay,