In this study, we studied about relationships between abdominal adiposity and three-dimensional breast density using digital mammography in Korean women.

Methods: Cross-sectional study was performed about 64 women who underwent health checkups in a university hospital. A questionnaire was conducted on past history, medication history, social history, menstrual history, fertility, and hormone replacement therapy. We used weight, body mass index, waist circumference, visceral fat area and subcutaneous fat area as indicators of obesity and measured breast density (dense volume, percentage dense volume) using a digital mammography. We examined associations between breast density and obesity.

Results: Multiple linear regressions were used to analyze associations between body mass index, waist circumference, visceral fat area, subcutaneous fat area and outcomes: dense volume and percentage dense volume. In postmenopausal women, waist circumference was statistically significantly associated with dense volume (b=0.012, P<0.001) and visceral fat area was negatively associated with percentage dense volume (b=-0.002, P<0.001). In premenopausal women, visceral fat was associated with dense volume (b=0.003, P=0.046) but nothing was statistically significantly associated with percentage dense volume.

Conclusion: we studied associations between three-dimensional breast density using digital mammography and abdominal adiposity in Korean women. And abdominal adiposity affected breast density in both premenopausal and postmenopausal women.

T1:P.154
Novel, human-specific adaptations drive the obesogenic environment, metabolic syndrome and malnubesity

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Clinical central obesity and its consequent degenerative metabolic syndrome (MetS) is still inadequately explained.

Human encephalisation during evolution required a significant increase in energy for the brain, and human-specific energy-balancing co-adaptations have arisen. It is hypothesised that two mechanisms afford extra energy provision for the brain but can, together, predispose humans to MetS.

Firstly, the mesolimbic/mesocortical neural pathway is greatly expanded to provide dopamine based 1) reward, 2) motivation and 3) motor coordination for repeatedly recognising, planning, acquiring and consuming energy dense food, often as perseverating, addictive behaviour.

Secondly, once humans became nomadic foragers, sophisticated NRF systems evolved newly efficient food oxidation and detoxification amplification mechanisms, by co-opting some of the large variety of plant chemicals, phytonutrients, especially defence chemicals, phytoalexins, consumed as moderators and modulators.

High micronutrient:macronutrient ratio diets allow NRF-based ultracytoprotection, enabling 1) non-renewable cells (cardiomyocytes, neurons) to function well for many decades, 2) cells which undergo frequent replication (endocrine, gut epithelium, skin) to be well controlled, preventing dysplasia, 3) the immune system to mount vigorous and varied responses 4) efficient 'adaptive repair' systems for tissues subject to physical shear, wear and tear, and metabolic stress (endothelium, myocytes).

The mesolimbic/mesocortical system drove the newly technology-able humans to develop processes towards producing and marketing energy dense addictive food, neglecting less palatable, nutrient dense whole foods, culminating in pandemic malnutritive obesity (malubesity) and MetS.

Appropriate controlled residential 'proof of concept' and community studies using whole foods and antiaddiciton medication to assess effects on oxidant markers, in addition to mathematical modelling of energy oxidation in the presence of plant micronutrients, will be discussed.

T1:P.155
Serum gamma glutamyl transferase level is positively associated with pre-diabetes and diabetes in Chinese-especially among non-obese subjects

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Introduction: To investigate the associations between serum gamma glutamyl transferase (GGT) levels and prevalence of pre-diabetes and diabetes.

Methods: A total of 6091 adult participants were recruited in a health examination center in Taiwan from 2006 to 2008. Among these, 6073 subjects with serum gamma glutamyl transferase data were selected. Anthropometric index and laboratory data were collected. Serum GGT levels were divided into two groups with cut-off value of 50 mg/dL. Pre-diabetes was defined as fasting plasma glucose between 100-125 mg/dL or glycated hemoglobin (HbA1C) between 5.7%-6.4% without anti-diabetes agents use. Diabetes was defined as fasting plasma glucose $\geq$ 126 mg/dL or HbA1C $\geq$ 6.5% or under-anti-diabetes agents use. Obesity was defined as body mass index $\geq$ 27 kg/m^2. The relationships between GGT and pre-diabetes and diabetes were studied by multiple linear and logistic regression analyses.

Results: After adjustment for potential confounder, serum GGT levels were positively correlated with fasting plasma glucose and HbA1C using linear regression analyses. After adjustment for age, sex, cigarette smoking, alcohol consumption, and physical activity, body mass index, serum glutamic pyruvic transaminase, estimated glomerular filtration rate, hypertension, hyperlipidemia, the adjusted odds ratios (95% confidence interval) of having pre-diabetes and diabetes were 2.01 (1.49–2.71) and 2.09 (1.36–3.19), respectively, among subjects with high serum GGT levels compared to subjects with low serum GGT levels. Stratified by obesity status, the significantly association was only seen among non-obese group.

Conclusion: Elevated serum GGT level was independent associated with pre-diabetes or diabetes. The association, however, was not significant among obese group. It merits further study.

T1:P.156
The oligofructose supplementation (10%) did not change the inflammatory effect of trans fatty acid ingestion during pregnancy and lactation, on 21 days old offspring

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Background: We evaluated the effect of oligofructose 10% supplementation during pregnancy and lactation, in dams fed or not with diet enriched with hydrogenated vegetable fat on pro-inflammatory status of pups with 21 days.

Methods: On the first day of pregnancy, rats were divided into: control diet (C), control diet supplemented with 10% oligofructose (CF), diet enriched with hydrogenated vegetable fat, trans fatty acids (T) or diet enriched with hydrogenated vegetable fat, trans fatty acids, supplemented with 10% oligofructose (TF). The pups were weighed at 21 days of life, right before decapitation. Serum adiponectin concentration was analyzed. White adipose tissue (WAT) and liver were used for IL-6, IL-10 and TNF-α content determination by ELISA. Results are presented as means $\pm$ standard error of the mean. Statistical significances were assessed using two-way ANOVA, $p < 0.05$.

Results: At 21 days, body weight of CF and TF were significant lower than C and T groups. Serum levels of adiponectin in CF, T and TF were