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ABSTRACT BOOK

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Cholesterol (Ch) absorption and insulin resistance may play a pivotal role in gallstone development.

Aim: To investigate the role of dietary *Ch* and insulin resistance on lithogenic state and gene expression profile in the gut-liver axis.

Methods: 7 *Ch*GD and 9 healthy women received a high and low *Ch* diet for 14 days. Blood samples, duodenal biopsy and bile were obtained after each diet. Gallbladder epithelial cells (GBEC) were harvested from patients who underwent cholecystectomy. Liver biopsies were obtained in *Ch*GD patients. cDNAs were used for qRT-PCR.

Results: *Ch*GD and control patients were non-obese and normoglycemic. $HOMA_{IR}$ index, insulin and triglycerides were higher in *Ch*GD ($p \leq 0.05$). Campesterol to lathosterol ratio was 30% lower in *Ch*GD ($p < 0.05$). Bile from *Ch*GD showed higher cholesterol saturation (CSI >100%) under both diets. In the gut, transcripts for LXRα, β and SREBP2 were 3 to 4-fold higher in *Ch*GD. Genes controlling *Ch* synthesis (HMGCoA-r/-s) and lipid traffic (ABCG5, ABCG8, NPC1L1, ABCA1, SR-BI, ACAT, FAT/CD36) were 1.5- to 4-fold higher in *Ch*GD ($p \leq 0.01$), and were down-regulated by *Ch* feeding. Genes regulated by insulin (Foxo1, PEPCK, IRS-1) were down regulated in the gut of *Ch*GD under high Ch diet. Similar differential expression profile of genes was observed in GBEC. A positive correlation of transcripts was observed between gut and liver ($r=0.5$, $p < 0.005$).

Conclusions: Dietary *Ch* did not influence lithogenicity indexes. Gene expression of NR and genes controlling lipid metabolism and insulin signaling varied widely in *Ch*GD and controls. (Supported by grant FONDECYT 1080325).

DIFFERENT CAPACITY OF CARDIOVASCULAR RISK SCORES, FRAMINGHAM, SCORE AND PROCAM, TO REVEAL EARLY ATHEROSCLEROSIS, IN PATIENTS WITH METABOLIC SYNDROME FROM TRANSYLVANIA

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The carotid intima-media thickness(IMT) is an accepted parameter for the assessment of early systemic atherosclerosis. The presence of metabolic syndrome(MetS) represent a risk for the development of both type 2 diabetes and cardiovascular diseases. The purpose of study was to determine how cardiovascular risk, assessed by FRAMINGHAM, SCORE and PROCAM scores, reflects carotid atherosclerosis in a specific group: patients with MetS from Transylvania.

We included 152 patients who fulfill the IDF 2005 criteria for the diagnosis of MetS, men and postmenopausal women. Cardiovascular risk was calculated using specific diagrams(SCORE,FRAMINGHAM,PROCAM). IMT was determined by high resolution ultrasonography, at the level of common carotid arteries (including bifurcation), bilaterally. We used overall single maximum IMT. For each risk scores we split patients in groups using the median value.

Increased FRAMINGHAM score is associated with significant increase in carotid IMT (1.12±0.24mm vs.0.98±0.18mm,p=0.005, for men with scores≥20% vs.< 20%; 1.02±0.13mm vs.0.9±0.12mm,p< 0.001, for women with scores≥6% vs.< 6%). In men, IMT was significant higher at PROCAM score≥8% comparing with score< 8%(1.13±0.17mm vs.0.88±0.19mm,p< 0.001). Same results were obtained for women with PROCAM score≥2%vs.< 2%(0.98±0.15mm vs.0.88±0.14mm,p=0.003). There isn't significant variability of IMT with SCORE system.

At these patients with MetS, high cardiovascular risk assessed by FRAMINGHAM and PROCAM scores is associated with significant increase in carotid IMT. Increase of IMT with rise of cardiovascular risk assessed by SCORE system was not significant. These results could be explained by different number of common cardiovascular risk factors found both in cardiovascular risk scores and IDF 2005 definition of MetS.

EFFECTS OF 'ORUJO' OLIVE OIL ON HYPERLIPIDEMIA

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Hyperlipidemia is the presence of raised or abnormal levels of lipid in the blood. Lipid abnormalities are regarded as an important risk factor for cardiovascular disease due to the influence of cholesterol, one of the most clinically relevant lipid substances, on atherosclerosis. The clinical complications of atherosclerosis could be improved when plasma lipid level was lowered by hypocholesterolemic agents, but many of promising agents have serious side effects. In the present study, we have examined the hypocholesterolemic effect of 'orujo' olive oil, which is an olive sub-product and possesses potential beneficial components (e.g. pentacyclic triterpenes: oleanolic and maslinic acids). Identification and quantitation of pentacyclic triterpenes in 'orujo' olive oil were carried out by applying HPLC methods. The content of maslinic acid and oleanolic acid in pomace oil was 81.23mg·g^{-1} and 30.31 mg·g^{-1}, respectively. Hyperlipidemia was induced in male Sprague-Dawley rats by feeding them with a high cholesterol diet (HCD) for 30 days. 'Orujo' olive oil was supplemented (200 mg / kg body wt / day) during the last 15 days. The levels of serum total cholesterol (TC), triglyceride (TG), high density lipoprotein - cholesterol (HDL - C), low density lipoprotein-cholesterol (LDL - C) increased in hyperlipidimia rats. Treatment with 'orujo' olive oil significantly modulated the abnormalities induced by hyperlipidimia. Lipid accumulation was decreased in histological findings. The pentacyclic triterpenes in 'orujo' olive oil may hold great promise as a natural and almost non-toxic therapeutic agent for treatment hyperlipidemia.

DIAMEL INTERVENTION TRIAL ON METABOLIC SYNDROME: BASELINE DATA

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Aim: To set up a clinical trial to assess whether Diamel (Food supplement made of lettuce and oligoelements) could diminish any of the clinical and metabolic parameters of metabolic syndrome according to the definition given by the Word Health Organization (WHO).

Subjects and methods: The Diamel intervention trial is a randomized, doubled-blind, placebo-controlled intervention trial undertaken in Cuba. Entry criteria were the clinical definition of the Metabolic Syndrome (MS) according to WHO. Subjects the study group was further studied for the presence of acanthosis nigricans, as well as for free cholesterol, creatinine and uric acid concentrations.

Results: SM screening was carried out in 179 overweight or obese subjects. A total of 78 individuals fulfilled MS criteria for eligibility and all of them were randomized to treatment. Of these, 41 were aged less than 45 years (75,6% female) and 37 were 45 years of age or more (70,3% female). Free cholesterol (p=0,036) and Uric acid concentrations (p=0,043), were higher in subjects with MS and ages over 45 years.

Conclusions: Diamel intervention trial has shown that the use of natural products together with indications for lifestyle improvement aiming at

diminishing risk factors for future development of type 2 diabetes or cardiovascular disease is feasible and has high acceptance levels on obese or overweight subjects informed to be "labeled" as persons with MS. Uric acid but not cholesterol appears to be associated with age only on MS individuals indicating that this marker could be useful for the screening of MS.

HIGH PROCESSED MEAT CONSUMPTION IS A RISK FACTOR OF TYPE 2 DIABETES IN THE ATBC COHORT

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Relatively small lifestyle modifications related to weight reduction, physical activity and healthier diet has been shown to decrease the risk of type 2 diabetes. Connected with diet, low consumption of meat has been suggested as a protective factor of type 2 diabetes.

The aim was to examine the association between the consumption of total meat or the types of meat and the risk of type 2 diabetes.

This cohort study included middle aged male smokers from the ATBC Study, a joint project between US and Finland. During up to 12 years of follow-up (1985-1997), 660 incident cases of diabetes were diagnosed from 25,505 participants through the nationwide register. Food consumption was assessed by a validated food frequency questionnaire.

In the age-adjusted model, high total meat consumption was a risk factor of type 2 diabetes (relative risk (RR) 1.59, 95% confidence interval (CI): 1.20, 2.13, highest vs. lowest quintile), but the risk attenuated slightly and was no longer statistically significant in the multivariate model adjusted for environmental and dietary factors. The RR of type 2 diabetes was 1.57 for processed meat (95% CI: 1.19,2.07) in the multivariate model. No association was found between red meat (beef and pork), poultry and the risk of type 2 diabetes. In general, the results were not explained individually by intakes of fat, protein, heme iron, nitrates or nitrites, and were not modified by obesity.

In summary, it may help to prevent the global epidemic of type 2 diabetes by reducing the consumption of processed meat.

SWITCHING HIGH-FAT DIET TO HIGH-CARBOHYDRATE DIET SIGNIFICANTLY DECREASED BODY FATS AS WELL AS SERUM ADIPOKINE LEVELS IN MICE

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Aims: The purpose of this study was to investigate the effects of dietary changes from high-fat diet (45% of total calories from fat) to high carbohydrate diet (70% of total calories from carbohydrate) on the body weight, and serum levels of lipids and adipokines.

Methods: Five weeks-old male C57BL/6 mice were fed high-fat diet for 9 weeks (baseline) then switched to a high-carbohydrate diet or continued the high-fat diet for 3 weeks. Body weight, adipose tissue, serum and hepatic lipid levels were measured. Levels of adipokines (leptin, adiponectin and resistin) were also analyzed.

Results: The results showed that after the high-fat diets were switched to high-carbohydrate diets, body weight, epididymal and retroperitoneal fats were significantly reduced compared with those of high-fat diet group($p< 0.05$). The levels of serum total cholesterol and HDL-cholesterol were not different between the two groups however, TG concentration of high-carbohydrate group was significantly lower than that of high-fat diet group. The levels of adiponectin were not different between the two groups however, leptin and resistin levels of high-carbohydrate group were significantly lower ($p< 0.05$). The levels of resistin were negatively correlated to body weight ($p< 0.05$).

Conclusions: High-carbohydrate diet after switched from high-fat diet significantly decreased body weight, epididymal and retroperitoneal fat and the serum levels of TG as well as leptin and resistin.

DOES COFFEE MODIFY POSTPRANDIAL GLYCEMIC AND INSULINEMIC RESPONSES?

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Background: Epidemiological studies have shown inverse association between coffee consumption and risk of type 2 diabetes. On the other hand, in postprandial studies caffeine has impaired glucose tolerance.

Objective: To study the effect of coffee on glycemic and insulinemic responses.

Methods: Twelve healthy volunteers (age 34.8±10.4 yrs, BMI 21.9±2.5 kg/m^2) were served each test food once (small coffee containing 150 mg caffeine with glucose solution; large coffee containing 300 mg caffeine with glucose solution; large coffee with sucrose and milk; and large coffee with bun) and the reference food (glucose solution) twice, each containing 50 g available carbohydrate, after an overnight fast at one-week intervals in random order. Capillary blood samples were drawn at intervals for 2 h after each food for analysis of blood glucose and insulin. The incremental area under the curve (IAUC) and glycemic index (GI) were calculated to estimate glycemic and insulinemic responses.

Results: Coffee portion produced slightly smaller average IAUC than the reference glucose solution. The caffeine content of the coffee portions had no effect on the GI value, 92 for both portions. Both portions yielded a similar insulin IAUC that was about 89% of that of glucose solution. When sucrose and milk or bun were used together with the large coffee portion, lower GI values and insulin responses were found reflecting the carbohydrate quality and protein content of the accompaniments.

Conclusions: Coffee has only modest effect on glycemic and insulinemic responses.

CHANGES IN CARDIOVASCULAR DISEASE RISK FACTORS FOLLOWING A 3 MONTH DIETARY INTERVENTION PROGRAMME COMBINED WITH A PHYTOSTEROL ENRICHED MILK

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Aim: Many studies have shown that adherence to the dietary guidelines or the use of plant-sterol enriched products can induce favorable changes on the lipid profile. Still whether the use of phytosterol-enriched products provide additional benefits to subjects complying to the dietary guidelines has not been thoroughly examined.

Methods: A sample of 108 modestly hypercholesterolemic subjects (40-60 years old) were randomized to a phytosterol enriched milk intervention group (IG :n=40),a placebo milk group (PG: n=37) and a control group (CG: n=31). Subjects consumed 450ml/d of placebo or plant sterol milk (2.25gr plant sterols/d) for 3 months. IG and PG subjects attended 7 nutritional sessions during the interventional period.

The aim of this study was to assess the impact of CLAs, Vitamin E, and combination of these nutrients on serum lipid profiles and BP in patients with active RA. 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-cis12 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. After supplementation, SBP levels decreased significantly in the group C in compare with groups E and P and MAP reduced significantly in groups C and CE. There weren't significant differences in the levels of PGE2, TG, CHO, LDL-c, HDL-c, LDL/HDL, CHO/HDL, FBS, CRP, AEA , PLT count and BMI between groups. CRP dropped non significantly in groups P, C, E and CE (19%, 24%, 55% and 39% respectively). ESR levels decreased in groups C, E and CE ($P \leq 0.05$, $P \leq 0.05$, $P \leq 0.001$, respectively). It is concluded that supplementation of CLAs decreased BP and Vitamin E decreased CRP. So co-supplementation of CLAs and Vitamin E might be profitable for Heart diseases prevention in RA patients.

Abbreviation: CLAs ,Conjugated Linoleic Acids; RA ,Rheumatoid Arthritis; BP, SBP and DBP ,systolic and diastolic blood pressure ; MAP, Mean arterial pressure ; PGE2,Prostaglandin E2;AEA, Arylestrase activity; PLT, Platelet ;BMI, Body Mass Index

THE EFFECT OF GREEN TEA EXTRACT ON SERUM VISFATIN CONSENTRATION IN PATIENTS WITH T2DM

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Background: Visfatin is a novel adipocytocine that highly expressed in visceral fat. Many studies showed insulin-mimetic activities of this cytocine. Its pathophysiologic role in obesity, diabetes and other metabolic complication remains largely unknown. Previous studies showed protective effect of green tea consumption in control of metabolic disease specially diabetes. In this study we examine the effects of green tea extract on circulating visfatin levels in patients with type 2 diabetes.

Methods: Totally 92 patients with type 2 diabetes were randomized in two groups green tea extract or placebo and received these capsules for 8week. Laboratory and anthropometric measurements include FBG, OGTT, HbA1C and lipid Profile, fasting serum Visfatin, Insulin and HOMA-IR, Weight, Hight, BMI and WHR were performed before and after intervention. All of the statistical data were analyzed using the SPSS13 software.

Results: There was no significant difference between Anthropometric measurement, HbA1C levels and lipid profile in two groups of study.We found a significant reduction in fasting plasma glucose and circulating visfatin in green tea extract group (p Values 0.05 and .012 respectively). Insulin levels increased significant in green tea extract group(p Value= 026) and but not significant negative correlation was bound between circulating Visfatin and Insulin levels changes (p Value= .06, r= .290).

Conclusions: This study showed the effects of green tea extract on FPG and serum visfatin and fasting insulin levels. This foundings suggest green tea extract can help to control of T2DM.

Keywords: Visfatin, Green tea extract, T2DM, Insulin Resistanse.

INFLUENCE OF THE NUTRICIONAL SUPPLEMENT DIAMEL ON THE HOMA-B AND HOMA-IR INDEX IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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The food supplement, Diamel contains aminoacids, vitamins, trace elements and lettuce and blueberry extracts, activated by a process of molecular magnetization, and acts in the beta pancreatic cells.

Objective: To evaluate, over a six-month period, insulin sensitivity and function of beta cells with f HOMA-B and HOMA-IR, in patients with type 2 diabetes receiving glibenclamide plus Diamel.

Research design and methods: A 60 type 2 diabetic were randomized to Diamel plus glibenclamide(group A, n=30) or to glibenclamide alone(group B, n=30). Two Diamel capsules were administered 30 minutes before breakfast, lunch and dinner. The patients were between 40 and 65 years old. Those patients with glycohemoglobin(HbA1c) greater 10% or severe chronic complications were excluded. Were followed for 6 months with clinical and laboratory evaluation. Fasting plasma insulin, fasting plasma glucose, 2-hour post-prandial blood glucose, HbA1c, HOMA-IR and HOMA-B, at 0,3, and 6 months.

Results: The group A and the group B presented character clinical similars and received identical recommendations. Fasting blood glucose, post-prandial blood glucose and HbA1c presented a significant diminution in the group A. The correlation between fasting blood glucose with the HOMA-B was positive in both groups at the beginning of the study but it was more positive in the group A at the 6 months. The correlations of HOMA-IR with the BMI and the waist circumference stayed positive in both groups, but were more significative statistical in group A.

Conclusions: The suplement, Diamel seem useful in increase function of cells beta in type 2 diabetes at least during the 6 months of follow-up.

EFFECTS OF CLINICAL NUTRITION EDUCATION ON GLYCEMIC CONTROL OUTCOMES IN TYPE 2 DIABETES

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Aims: The aim of this study was to assess the effectiveness of dietary education in reducing plasma glucose levels in patients with type 2 diabetes.

Methods: We randomly assigned 135 adult patients with type 2 diabetes (mean age 58 years) to the intervention group or the control group. All participants received basic diabetes education. The subjects in the intervention group participated in 11 weekly nutrition classes (90 min each). Glycosylated hemoglobin, fasting plasma glucose, total cholesterol, triglyceride, HDL and LDL cholesterol, height, weight, BMI and blood pressure were measured at baseline and at the end of the study. Two-sided homoscedastic t tests were used to analyze the differences between the intervention and control groups.

Results: The intervention group lost 1.5 ± 2.2 kg as against a weight gain in the control group of 0.5 ± 2.3 kg ($P = 0.01$). Fasting plasma glucose decreased 21 ± 55 mg/dl in the intervention group and increased 19 ± 78 mg/dl in the control group ($P = 0.028$). Glycosylated hemoglobin decreased 1.9 ± 2.1% in the intervention group and 0.2 ± 2.2% in the control group ($P = 0.022$).

Conclusions: Glycemic control of type 2 diabetes patients can be improved with public health intervention addressing nutrition.