evidence on the potential of native currants to be developed as functional foods.

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P-017

Changes in expression of NLRP3 inflammasome components and oxidative parameters of mice subjected to high-fat diet and rosa mosqueta oil supplementation

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Keywords: Rosa mosqueta oil; NLRP3 inflammasome; oxidative stress; insulin resistance

Introduction: Rosa mosqueta oil (RM) is high in alpha-linolenic acid (ALA) and tocopherols (α-, γ-), which have anti-inflammatory, antioxidant and insulin sensitizing properties, thus preventing the high-fat diet (HFD)-induced damage in mice.
Objective: To evaluate changes in NLRP3 inflammasome components expression and oxidative parameters in HFD-fed mice supplemented with RM.
Methods: C57BJ/6 J mice (n = 9/group) were fed for 12 weeks and divided into: (i) control diet (CD, 20% proteins, 70% carbohydrates, 10% lipids); (ii) CD+RM (0.01 mL/g bodyweight/day); (iii) HFD (20% protein, 20% carbohydrate, 60% lipids); (iv) HFD+RM. Oxidative stress (carbonylated proteins, MDA content and Nrf2 levels) and NLRP3 inflammasome components (NLRP3, ASC, Caspase-1, IL-1beta) expression in liver and visceral adipose tissue were determined. Results: HFD+RM group showed significantly decreased (two-way ANOVA, bonferroni test, $P < 0.05$) liver and adipose tissue NLRP3 inflammasome expression, along with decreased oxidative stress compared to the HFD group.
Conclusion: Dietary RM supplementation decreases NLRP3 inflammasome expression and oxidative stress. This data could be associated with the prevention of metabolic syndrome. FONDECYT 1140547.

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P-018

Free radical pathway of 2-hexadecenal formation in cells and its biological role

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Keywords: 2-hexadecenal; astroglial cells; reactive chlorine and oxygen species

In our earlier studies it has been established that the action of gamma-, UV-irradiation and HOCl on aqueous deaerated sphingolipids dispersions causes destruction of studied biomolecules with the formation of 2-hexadecenal. HOCl has powerful cytotoxic properties because it is a strong oxidizer and a source of reactive chlorine species.

We investigated the effect of HOCl on human erythrocytes, HEK293 and astroglial cells. For the sensitive quantitative analysis of 2-hexadecenal in cells we used extraction procedure and applied the method based on HPLC with fluorescence detector. We found that the HOCl-treatment of cells at concentrations from 10 μM to 1 mM provokes 2-hexadecenal formation.

It has been found that 2-hexadecenal at micromolar concentrations regulates reactive oxygen species generation in human peripheral blood neutrophils stimulated by adhesion and fMLP, through reallocation of myeloperoxidase, phospholipase A2, cyclooxygenase and 5-lipoxygenase contributions to this process. 2-Hexadecenal modifies the functions of astroglial cells in culture by changing their morphological characteristics. This is associated with the redistribution of F-actin and the subsequent cytoskeleton reorganization. It results in cells' mitotic and proliferative activity reduction through the initiation of apoptosis involving JNK and p38 mitogen-activated protein kinase pathways.

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P-019

Alterations of cultured myotubes and fasting plasma metabolite profiles related to mitochondrial dysfunction in Type 2 diabetes subjects

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Keywords: Mitochondrial dysfunction; blood plasma; skeletal muscle; metabolomics; biomarkers

The current study sought to determine whether circulating metabolite signatures in cultured myotubes and fasting plasma of T2D (Type 2 diabetes) subjects are associated with mitochondrial dysfunction. A cellular disease model of human myotubes with mitochondrial dysfunction was first established. The intracellular-defined metabolites was analyzed. Further, a targeted metabolic profiling of fasting blood plasma from normal (n = 83) and T2D (n = 92) subjects in a cross sectional study was validated. Multivariable-adjusted conditional logical regression analysis was computed to verify differentiating metabolites correlated with T2D. Several metabolites were considerably altered in cultured myotubes. We further tested whether these cellular metabolites are linked to the plasma metabolites of T2D subjects. Targeted analysis of plasma metabolites adjusted for several confounders revealed 20 significant robust metabolites ($P < 0.05$) comprised primarily of branched chain amino acids (leucine, isoleucine and valine), medium-chain acylcarnitine (C6, C8, C10:2, C10:1 and C1^{2}1), free fatty acids (C16:0, C18:0, C18:2, C20:5) and sphingomyelin (d18:2/16:0). In summary, our finding yields a valuable insight on the identification of circulating selective metabolite signals