Sightseeing part of the conference

Sightseeing activities were an integral part of the conference, and coffee break conversations were as likely to revolve around which attraction one had seen or had yet to see as the presentations. Almost all delegates took time to visit the Falls, which is actually 272 different waterfalls spanning a three-kilometer distance on the border of Brazil and Argentina. Visitors could hike to lookout points as well as take raft rides or helicopter rides to experience the Falls from a different perspective.

Other area attractions drawing delegates were the Bird Park, featuring exotic birds in open aviaries, and the Three Landmarks, where the Iguassu and the Paraná rivers converge, forming the borders between Brazil, Argentina, and Paraguay. Each of these countries has built a stone and cement obelisk on its territory, painted with the colors of their respective flags, that can be seen along with the panoramic view of each of the countries. Conference organizers arranged a special evening tour of the Itaipú Dam, the world’s largest hydroelectric power plant; nearly all the delegates attended, and many weren’t sure which was more spectacular—the dam or the caravan of 22 tour buses.

Future conferences

ISPUC is held every four years; the next conference was set for November 15–20, 2008, in New Delhi, India. WSRC has been held every five years, but the Continuing Committee may explore switching to a four-year cycle. Dates and location of the next WSRC should be announced later this year.

Fatty acid analysis of potato chips


A reversed-phase high-performance liquid chromatography (RP-HPLC) method was compared with a gas chromatography-flame ionization detection (GC-FID) method for the fatty acid analysis of variously extracted samples of potato crisps (chips). Quantification was made by linear regression. The methods gave comparable precision and recovery with slightly greater precision being obtained by GC-FID. For most purposes the use of RP-HPLC would be preferred, but GC-FID would allow the identification of a greater number of fatty acid components.

Stabilization of oxidative stability of fish oil-enriched food


Oxidative deterioration of fish oil-enriched milk emulsions during cold storage was studied. Addition of rapeseed oil to fish oil (1:1) prior to emulsification into milk significantly protected the emulsions against oxidative deterioration. Protection of fish oil-enriched milk was also obtained by the incorporation of antioxidants such as propyl gallate prior to emulsification. Rapeseed/fish oil emulsions were oxidatively stable over 11 days at 2°C, apparently due to the presence of rapeseed tocopherols. A parallel factor analysis model provided an overview of the derived data with markedly enhanced interpretability.

Antioxidant protection against cooking oil mutagenic compounds

Wu, S., and G. Yen, Preventive Effect of Adding Antioxidants on Mutagenic

The mutagenicity of degummed peanut oil (DPO) fumes was significantly reduced by the addition of antioxidants before heating of the oil. Particular attention was paid to the formation of trans,trans-2,4-decadienal. Addition of antioxidants increased the smoke point and oxidative stability of DPO and decreased the yield of oil fumes and the amount of mutagens. Synthetic antioxidants, e.g., butylated hydroxyanisole, were more effective than natural antioxidants in reducing mutagenic compound formation. It was suggested that edible cooking oil with a high smoke point, less fumes, and lower mutagenicity might be developed with an appropriate antioxidant.

Conversion of fat-storage to fat-burning cells

Adenovirus-induced hyperleptinemia (increased blood leptin levels) rapidly produces depletion of body fat in rats, apparently owing to its oxidation by fat-storing adipocytes. These cells, following a period of hyperleptinemia, have been found by electron microscopy to have become shrunken and fatless, and to be crowded with mitochondria. Their gene expression profile showed marked up-regulation of peroxisome proliferator-activated receptor γ coactivator 1α (an up-regulator of mitochondrial biogenesis not normally expressed in white fat), as well as down-regulation of enzymes of lipid biosynthesis. Evidence for increased fatty oxidation was obtained. This ability to transform adipocytes into unique fat-burning cells may suggest novel therapeutic strategies for obesity.

Genetics of obesity-related lipid traits

A genome-wide scanning in over 2,000 individuals was performed to localize quantitative trait loci (QTL) that affect variation of plasma lipids. Pedigree-based analysis using a quantitative trait variance component linkage method localized a QTL on chromosome 7q35-q36 that linked to variation in levels of plasma triglyceride (TG) and suggested a linkage to low-density lipoprotein (LDL) cholesterol. Covariates of the TG linkage included waist circumference, fasting insulin, and insulin/glucose, but not body mass index. Six other QTL were identified for plasma levels of LDL-cholesterol, high-density lipoprotein-cholesterol, and total cholesterol. These newly identified loci may harbor genetic elements that influence traits underlying lipid disturbances associated with obesity.

Glycerophosphoinositol determination on cell extracts
Dietary fish oil increases blood lipid levels


Bio F1B hamsters (susceptible to diet-induced hyperlipidaemia) were fed a diet supplemented with fish oil, controlled with respect to levels of saturated, monounsaturated, and polyunsaturated fatty acids. The plasma from the animals fed high levels of fish oil had plasma total cholesterol, very low density lipoprotein-, and low-density lipoprotein (LDL)-cholesterol and triglyceride levels that were significantly higher, and a high-density lipoprotein-cholesterol level lower than controls. Total plasma lipids increased with increasing levels of fish oil in the diet to an extent greater than controls. Although hepatic lipid levels were not markedly altered, the hepatic LDL-receptor mRNA levels and expression decreased significantly on the fish oil diet. The effects of high levels of dietary fish oil on blood lipid levels that were found are partially attributable to inhibition of hepatic LDL-receptor mRNA expression.

Disease-related oxidized PUFA/protein interaction


A potent cytotoxic aldehyde 4-hydroxy-2-hexenal (HHE) arises from peroxidation of n-3 polyunsaturated fatty acids in vivo. Covalent binding of HHE to protein is described and associated with oxidatively modified low-density lipoprotein (LDL) and with human atherosclerotic lesions. Protein-bound HHE is considered to be a potential marker of oxidatively modified proteins produced under oxidative stress. Immunological studies with copper-oxidized LDL suggested that HHE is produced during the oxidative modification of LDL, and that HHE-modified protein is associated with atherosclerotic lesions. The suggestion is made that reaction between oxidized n-3 PUFA and protein may represent a process common to the formation of degenerative proteins during aging and its related diseases.

Dietary fat regulation of milk fat composition


Mammary and liver stearoyl CoA desaturase (SCD) mRNA levels and mammary SCD activities were found to be depressed in lactating mice fed diets supplemented at 25% w/w with safflower or olive oils. There was a direct relationship between mammary SCD mRNA level and SCD activity. The fatty acid composition of milk was influenced by that of the diet. The findings indicated that there is regulation of SCD at the transcriptional level, associated with changes in enzyme activity and in milk fat composition.

Reduced fatty acid formation associated with solvent tolerance in bacteria


Solvent extrusion by constitutive and inducible efflux pumps, and rigidification of its membranes, involving phospholipid alterations, are associated with the unique tolerance of Pseudomonas putida DOT-T1E to toluene. The solvent mutant cells were determined to be less efficient in solvent extrusion than wild type cells despite the fact that the efflux pumps were overexpressed as a result of increased expression of efflux pump operons. The mutant strain was found to show limited efflux of the solvent from cell membranes and negligible fatty acid biosynthesis in the presence of sublethal concentrations of toluene.