



## POSTER NO 2

### **Honey Protects against the Hypertriglyceridemic effect of Fructose**

Busserolles, Jérôme; Gueux, Elyett; Rock, Edmond; Mazur, Andrzej and Rayssiguier, Yves; "Substituting Honey for Refined Carbohydrates Protects Rats from Hypertriglyceridemic and Prooxidative Effects of Fructose", **American Society of Nutritional Sciences Journal of Nutrition**, 132:3370-3382 Nov 2002.

Recent findings indicate that a high fructose diet has a pro-oxidant effect in rats compared with a starch diet. Because honey is rich in fructose, the aim of this study was to assess the effect of substituting honey for refined carbohydrates on lipid metabolism and oxidative stress. Rats were fed for 2 weeks purified diets containing 65 g/100 g carbohydrates as wheat starch or a combination of fructose and glucose or a honey-based diet prepared by substituting honey for refined carbohydrates (n = 9/group). The same amount of fructose was provided by the honey and fructose diets. The hypertriglyceridemic effect of fructose was not observed when fructose was provided by honey. Compared with those fed starch, fructose-fed rats had a lower plasma -tocopherol level, higher plasma nitrite and nitrate (NOx) levels and were less protected from lipid peroxidation as indicated by heart homogenate TBARS concentration. Compared with those fed fructose, honey-fed rats had a higher plasma -tocopherol level, a higher -ocopherol/triacylglycerol ratio, lower plasma NOx concentrations and a lower susceptibility of heart to lipid peroxidation. Further studies are required to identify the mechanism underlying the antioxidant effect of honey but the data suggest a potential nutritional benefit of substituting honey for fructose in the diet.

#### **COMMENT**

**This animal study above demolishes the notion that because honey contains fructose, it must therefore express the pro-oxidative effect and result in elevated circulating triglyceride levels as known to occur with a diet high in fructose (as in high fructose corn syrup or HFCS). Honey-fed rats showed lower levels of triglycerides and lowered pro-oxidant effects than those fed starch or HFCS. Additional human studies are required to identify mechanisms responsible for this effect.**

**Another study to be presented at this Symposium will confirm these results and further indicate that honey diets are preferable to refined sugar or HFCS diets with regard to weight gain, HA1c and triglyceride levels.**

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#### **Additional References:**

1. Busseroles J, Rock E, Gueux E, Mazur A, Rayssiguier Y. "Short-term consumption of a high-sucrose diet has a pro-oxidant effect in rats".
2. Elliott, Sharon S; Keim, Nancy L; Stern, Judith S; Teff, Karen; and Peter J; "Fructose, weight gain and the insulin resistance syndrome". **Journal of Nutrition**, Apr,87 (4): 337-4