The development of metabolic abnormalities induced by a fructose-enriched diet in rats is similar to what is observed in humans following an increased consumption of high-fructose corn sweetener (HFCS). Indeed, these HCFS is likely a decisive contributing factor to the development of obesity and the accompanying metabolic abnormalities observed in the insulin resistance syndrome.

Pathophysiological features

Metabolic features

- Hypertriglyceridemia
- Hypercholesterolemia
- Hyperinsulinemia
- Insulin resistance and exaggerated hyperglycaemic response to glucose overload
- Elevated urinary 8-isoprostanes (lipid peroxidation)

Cardiovascular features

- Vascular endothelial dysfunction (aorta and superior mesenteric artery): reduced NO bioavailability, compensated by an increase in COX derived vasodilators (figure 1A) associated with the enhancement in endothelium-independent relaxation pathway (figure 1B).

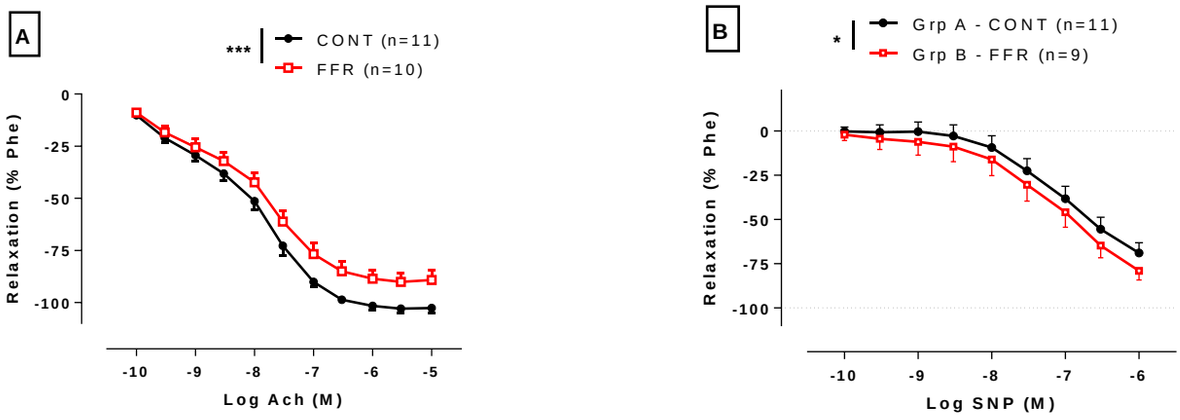

*Figure 1: Endothelium-dependent relaxant responses to acetylcholine (Ach) in presence of indomethacin [A] and endothelium-independent relaxant responses to sodium nitroprusside (SNP) [B] on phenylephrine-pre-contracted aortic rings from control and fructose-fed rats. (*p<0.05 and ***p<0.001, two-way ANOVA). (From Oudot et. al., 2008).*

- Exaggerated pressor response to norepinephrine in conscious unrestrained fructose-fed rats (figure 2)

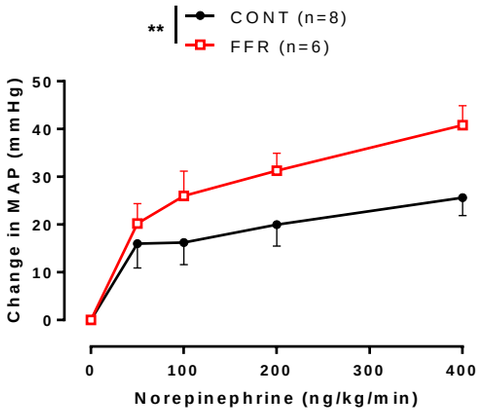

Figure 2: Comparison of endothelium-dependent and EFS-induced relaxations in control and streptozotocin induced diabetic rats obtained from in vitro experiments performed in cavernosal strips. §p<0.05, §§p<0.01 two-way ANOVA (Pelvipharm internal data)

Summarized methodology

- Wistar rats are placed on a control or an isocaloric fructose-enriched diet containing 60% fructose and 5.2% lard for the following 9 weeks to allow the metabolic abnormalities to develop.

Related Pelvipharm bibliography:

Oudot *A et al.* **J Sex Med** (2010):7(1)p1:79-88
Oudot A *et al.* **Physiol Res** (2009):58(4):499-509
Behr-Roussel D *et al.* **Eur Urol** (2008):53(6):1272-1281
Behr-Roussel D *et al.* **Am J Hypertens** (2008):21(11):1258-1263

NB: Pelvipham will gladly study the feasibility of modifying diet composition (fructose and lipid contents), way of administration and length of experimental period to its client's needs.