

## ZINC 100 PPM DOES NOT IMPROVE INSULIN SENSITIVITY OF HIGH FRUCTOSE FED RATS LEADING TO INSULIN RESISTANCE

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We have previously observed that high amount of vitamin E leads to an improvement of insulin sensitivity in high fructose fed rats (1). The aim of this work was to evaluate the effect of zinc as we previously observed that zinc depletion leads to an insulin resistance. The rats (post weaning, 50g) were divided into 3 groups: the control group (C, n = 16) which received a purified diet containing 60g/100g carbohydrates, the high-fructose-fed group (FT, n = 16) fed a diet in which 56.8% of the carbohydrates were fructose, and a high-fructose and zinc supplemented group (FZn, n = 16) fed the FT diet supplemented with Zinc 100ppm (vs 10ppm in C and FT groups). The duration of the treatment was 6wk. Insulin sensitivity was determined in half of the rats in each group using the euglycemic hyperinsulinic glucose clamp technique. The remaining rats were investigated for metabolic and free radical parameters, and for plasma, liver and muscle (soleus muscle) copper and zinc concentrations. The group FT had a significantly lower insulin sensitivity than the C group. The group FZn exhibited a higher insulin resistance than the FT group, parallel to a significant weight increase (more than 20% in comparison with C and FT groups). In comparison with group FT, Cu Zn SOD and Se GSH-Px activities were also improved in FZn group. Therefore the question arises to know if the deleterious effect of zinc on insulin sensitivity is linked to its effect on the animal weight. More studies are running using lower zinc supplementations (40ppm) associated with the pair feeding technique as the zinc supplementation leads to a significant increase of food intake.

### REFERENCE

P. Faure., E. Rossini., J.L. Lafond, M.J. Richard, A. Favier, and S. Halimi. *J Nutr* **123**:103–107, 1997.