**Introduction** : If sympathetic hyperactivity seems to be associated to several components of the metabolic syndrome, its involvement in the development of metabolic syndrome has not been clearly defined.

**Aim** : It was to determine if a chronic increase of the sympathetic nervous activity is a sufficient condition for the development of metabolic disorders. For that purpose, we used a transgenic mouse model, in which the gene coding for the reuptake norepinephrine transporter (NET) has been deleted; these animals display increased plasma catecholamine rates, associated to slight increases in blood pressure and heart rate. We focused on the consequences of this sympathetic hyperactivity on glucose and lipid metabolism in this mouse model.

**Methods** : Heterozygous NET knockout mice (+/-) or wild-type mice (+/+) were fed either with a normal chow or a 30% w/v fructose in drinking water during a period of 15 weeks to induce metabolic disorders. Metabolic parameters (plasma triglycerides and total cholesterol, intraperitoneal glucose tolerance test, IPGTT) were measured after a 4h fasting period before treatment and then repeated every 5 weeks.

**Results** : No significant difference on triglycerides or cholesterol rates could be detected after the 15 weeks period. Heterozygous mice displayed clear glucose intolerance already before starting the fructose diet (area under the curve (%)=25434 vs 20822, p=0.013 for +/- and +/+ mice respectively). These animals were also much more sensitive to high fructose, since a 50% increase in the area under the curve of the IPGTT was obtained at the end of the high fructose diet, compared to the 11% increase in +/- mice.

**Conclusion** : Our data suggest that constitutive chronic sympathetic hyperactivity can induce the early development of carbohydrate metabolism disorders. Moreover, it seems to represent a major factor of susceptibility to dietinduced metabolic dysfunction.