

7<sup>th</sup> International Conference and Expo on

# Metabolomics

November 14-16, 2016 Orlando, Florida, USA

## Metabolomic profile of low copy-number carriers at the salivary $\alpha$ -amylase gene suggests a metabolic shift towards lipid-based energy production

Abdelilah Arredouani  
Hamad Ben Khalifa University, Qatar

Low serum salivary amylase levels have been associated with a range of metabolic abnormalities, including obesity and insulin resistance. We recently suggested that low copy-number at the *AMY1* gene, associated with lower enzyme levels, also increases susceptibility to obesity. To advance our understanding of the effect of *AMY1* copy-number variation on metabolism, we compared the metabolomics signatures of high and low copy-number carriers. We analyzed, using mass spectrometry and NMR, the sera of healthy normal-weight women carrying either low (LA:  $\leq 4$  copies;  $n=50$ ) or high (HA:  $\geq 8$  copies;  $n=50$ ) *AMY1* copies. Best fitting multivariate models (empirical  $P < 1 \times 10^{-3}$ ) of MS and NMR data were concordant in showing differences in lipid metabolism between the two groups. In particular, LA carriers showed lower levels of long- and medium-chain fatty acids, and higher levels of di-carboxylic fatty acids and 2-hydroxybutyrate (known marker of glucose mal-absorption). Taken together, these observations suggest increased metabolic reliance on fatty acids in LA carriers through  $\beta$ - and  $\omega$ -oxidation and reduced cellular glucose uptake with consequent diversion of acetyl-CoA into ketogenesis. Our observations are in line with previously-reported delayed glucose uptake in LA carriers after starch consumption. Further functional studies are needed to extrapolate from our findings to implications for biochemical pathways.

### Biography

Abdelilah Arredouani has joined QBRI in March 2012 as a Scientist. He comes from Weill Cornell Medical College in Qatar where he served since March 2010 as a Senior Postdoctoral Research Associate in the Department of Physiology and Biophysics, where he studied the trafficking of Orai1, the calcium channel that mediates the store-operated calcium influx in non-excitable cells. He holds a special Master's in Molecular Biology and Biotechnology Management and a PhD in Cell Physiology from Belgium. During his PhD, he studied the role of the endoplasmic reticulum calcium stores in glucose-induced insulin secretion from the pancreatic beta cell in the context of type-2 diabetes.

aarredouani@qf.org.qa

### Notes: