Metabolic adaptation of podocytes to lipid exposure

Aurore Hecq[1,2], Antoine Nortier[1], Marine Thirion[1], Emmanuel Esteve[1], Thierry Arnould[2], Anne-Emilie Declèves[1].

[1] Laboratory of Metabolic and Molecular Biochemistry, Faculty of Medicine and Pharmacy, Research Institute for Health Sciences and Technology, University of Mons (UMONS), Mons, Belgium.

[2] Laboratory of Biochemistry and Cell Biology (URBC), Faculty of Sciences, Namur Research Institute for Life Sciences (NARILIS), University of Namur (UNAMUR), Namur, Belgium.

A key feature of obesity-related chronic kidney disease (CKD) is the alteration of the glomerulus, known as obesity-related glomerulopathy (ORG). In this condition, podocytes, highly specialized glomerular epithelial cells, are the main target. Obesity-driven lipid accumulation may disrupt podocyte homeostasis by affecting its bioenergetics. We developed an in vitro model of podocyte lipid overload and found that fatty acids (FAs) partitioning varies according to the nature of the FA (saturated or not). This study provides a better insight into podocyte metabolism and how this cell adapts to lipid exposure.

Keywords: Chronic Kidney Disease (CKD), Obesity Related Glomerulopathy (ORG), obesity, podocyte, lipid overload, metabolism.