

CB1 receptor expression in pancreatic islet of the obese and diabetes Zucker rats

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The endocannabinoid system plays a key role in energy homeostasis, with agonists and antagonists of CB1 receptors acting centrally to stimulate and inhibit food intake, respectively. The currently available literature, about islets cannabinoid receptors expression and function, is confusing and often contradictory. Aim of our study is compare the expression of CB1 receptors in normal and obese Zucker (ZDF) rats. 12 Male ZDF (6 lean and 6 fa/fa) aged 8 weeks were obtained from Harlan Italy S.r.l. Each rat was fed with standard diet and unlimited water. Specimens were taken at the age of 8-12-16 weeks after birth. Pancreas samples were fixed in formaline and embedded in paraffin. Section were processed immunohistochemically using Dako-Cytomation EnVision kit for anti CB1 antibody (Biosource Europe S.A.). Leica microscope, with a DSL2 Nikon was used to observe in double blind. Images were submitted at the image analysis tools of the Photoshop CS5Ex. At the same time pancreas specimens were frozen in liquid nitrogen and stored at -80°C until use. A mRNA was extracted for all samples and a RT PCR was performed. The pancreatic islets cells in fa/fa show deep apoptotic alterations. Our observations show a CB1 expression extended to most of the cell population (eighth week), up to a structural disorganization in the sixteenth week; the expression of CB1 receptor is upregulated in fa/fa compared to lean. These results according to the involvement of endocannabinoid system in the dysregulation of the food intake mechanism and a prevalence of this system in the obesity.

Keywords: CB1 receptors, pancreas, Zucker rats, obesity, immunohistochemistry