

The Effects of Steroid Hormones on Adipogenic Markers in 3T3-L1 Adipocytes

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Abstract: Obesity is a crucial health issue, being a risk factor for the development of chronic metabolic diseases such as type 2 diabetes, hypertension, hyperlipidemia, cardiovascular diseases, and some types of cancer. Traditional methods to control obesity by decreasing food intake, increasing exercise, and medical interventions have not been successful and more fundamental knowledge at the level of genes is required. In men, low levels of testosterone have emerged as an important medical concern since testosterone deficiency is related to the development central obesity. White fat cells were grown in DMEM supplemented with 10% FBS. Lipid accumulation in 3T3-L1 adipocytes was assessed by staining for 1hr in a freshly diluted Oil Red O. RNA was extracted, cDNA synthesised and mRNA quantified by using standard qRT-PCR. 3T3-L1 treated with sex steroids (5, 15, 30 nM) for 13 days exhibited a non-significant decreased in adipogenic markers (Resistin and FABP 4) without clear change in Adipo Q expression. In the conclusion we found Adipogenic markers were not affected by steroid hormones, and these data demonstrate the need to conduct more results to investigate the effect of sex steroid at different doses and time courses especially during early stage of differentiation on transcription factors such as PPAR gamma 2, CEBP alpha, and CEBP beta.

Key words: Steroid hormones, obesity, chronic diseases.

1. Introduction

Currently, there are around 1.7 billion people worldwide suffering from obesity and there has been a marked increase in the prevalence of obesity and overweight individuals around the world during the last two decades [1]-[3]. Obesity is a crucial health issue since it is an important risk factor for chronic metabolic diseases, including metabolic syndrome, type 2 diabetes, hypertension, hyperlipidaemia, and ... f"† < ~ f • ... — Ž f" † < • † f • † • ä — Š †" ... Š" • < ... gallstones, kidney stones, obstructive Š † < • †" sleep apnea, and some types of cancer, have been also linked to obesity [5]. According to WHO reports, The National Institutes of Health (NIH) and World Health Organization (WHO) have predicted that by 2015, more than 2.3 billion adults in the world will be diagnosed as obese or overweight and more than 700 million people will be obese. As a result, efforts to decrease and control the obesity rate are urgently needed [6]. In addition to its impact on health, obesity also has significant economic consequences. It can lead to a † † ... " † f • † ' † ' Ž † i • ' ' † — ... — < ~ < - > † — term-work disability and also has major impact on the cost of healthcare services [7], [8].

