UNIVERSITI TEKNOLOGI MARA

Establishing Protocol for Developing Gestational Diabetic Model - A Preliminary study in rat

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Table of Contents

CHAPTER 1

Introduction

1.1 Background of Study

Gestational diabetes mellitus (GDM) is any degree of impaired glucose intolerance recognized during pregnancy. Most women with GDM will become normal glucose levels after delivering the babies; however there is a high risk of developing type 2 diabetes later in life as are their offspring (Ryu et al.,2014). It has been reported that even mild increase in glucose levels during pregnancy affects both mother and fetus (Flores Le-Roux et al. 2013) It increases the macrosomial incidence and large for gestational age (LGA) babies these cases increases the risk for birth trauma, shoulder dystocia, and caesarean section (Metzger et al.,2008). GDM is a condition where the energy from food can't be use due to chronic hormonal condition (Leslie, Lansang, Coppack, & Kennedy, 2012). Gestational diabetes mellitus may occur due to either pancreas cannot produce enough insulin (insulin deficiency) to compensate high blood sugar level or the insulin itself is inactive (insulin resistance). Glucose is the main source of energy and its ability to enter the cells is due to the presence of insulin, in GDM level of glucose in blood may increase if it can't enter the cells and resulting a condition called hyperglyce (Leslie et al., 2012).

There are three main types of diabetes in pregnancy namely Type1 diabetes, Type2 diabetes and Gestational diabetes. Type 1 diabetes occur mainly due to beta cell destruction, immune response that eventually lead to insulin production (Eisenbarth, 2004). This is why this type of diabetes also called dependent diabetes since pancreas can't produce insulin at all. This type of diabetes oftenly diagnosed in children Leslie et al., 2012). Injectable insulin is needed by patients with this kind of diabetes to control their sugar level in blood. Type 2 diabetes is when some of the insulin is not fully taken up by the tissues(Leslie et al., 2012). This type diabetes is also called independent diabetes since ones does not only depend on insulin to treat this kind of diabetes. It can also be controlled with diet, medication and having a healthy lifestyle. In gestational diabetes various degrees of glucose intolerence that is first detected during pregnancy and disappears after child birth(Buchanan & Xiang, 2005). There are many proposed reasons for gestational diabetes, it can be caused by the hormonal changes that occur during pregnancy. This hormonal change actually cause the blood sugar to be high, but still not high enough to cause diabetes at the early stage of pregnancy. However in third trimester, this hormone may be high and put the pregnant woman at risk for gestational diabetes. Mother's body will also try to compensate by producing more insulin so that more glucose can be uptake by the tissues. Supposedly insulin can be produce by mother's pancrease three times the normal amount to overcome this problem. But since this can't be achieved, this results in gestational diabetes Buchanan & Xiang, 2005).