ACUPUNCTURE POTENTIAL AS AN ALTERNATIVE TREATMENT OF PREVENTING DIABETES HYPERGLYCEMIA THROUGH THE REDUCTION OF INFLAMATION AND APOPTOSIS PROCESS IN BETA PANCREAS CELLS

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ABSTRACT

Introduction: Acupuncture helps the cell regeneration process in the langerhans island of the pancreas. This process is through inhibition of TNF-α pro-inflammatory cytokine secretion and also decreases the apoptosis process. This study aims to determine the potential for acupuncture in ST36 acupuncture points on TNF-α expression and apoptosis in diabetic wistar rat pancreas. **Method:** Forty-two Wistar rats, 3 months old, were divided into 5 groups, negative controls (decapitated 7th and 30th days), positive controls (decapitated 7th and 30th days), treatment (decapitated 7th and 30th days). Rat were made with a diabetic condition by injected streptozotocin at a dose of 60 mg / kg bodyweight in intraperitoneal. The positive group and treatment were made in diabetes conditions, the treatment group was stabbed in ST36 acupuncture points. After decapitating each group on the 7th and 30th days, pancreas tissue was fixed and made preparations and given immunohistochemical staining and TUNNEL. The number of cells expressing TNF-α and experiencing apoptosis were calculated per 10 visual fields using 400 x magnification light microscopy, then the data were analyzed. **Results:** Acupuncture at the ST36 point decreased the inflammatory process in the pancreas with diabetic rat, the effect of the acupuncture at the ST36 point showed no direct correlation with the number of apoptotic beta cells. **Conclusion:** Acupuncture needle puncture in the ST36 acupuncture point decreases inflammation and apoptotic process in the rat pancreas with diabetes condition.

Keywords: *Acupuncture, ST 36, diabetes, expression of TNF-α, apoptosis*

Introduction

In the era of the national health insurance system implemented in Indonesia, the preventive medicine system is a top priority. Many chronic diseases are difficult to cure and cause many complications, where prevention of disease is expected to reduce morbidity and mortality in chronic diseases. Acupuncture has been an alternative and complementary medicine in China since 4000 - 5000 years ago. The development of acupuncture in Indonesia began in 1963, when it was instructed by the minister of health at that time (Prof. Dr. Satrio) a traditional East Medicine research team was formed and since then many studies on acupuncture. Some studies show acupuncture can trigger an increase in the body's defense system. Acupuncture is expected to be a modality for medicine for the prevention of primary and secondary prevention of chronic diseases such as diabetes. Diabetes occurs where there are abnormalities in pancreatic cells. An inflammatory process occurs in cells in the pancreatic head, if this inflammatory process continues to occur because the condition of hyperglycemia triggers apoptosis (Murphy, 2017).