

100年度中區各大院校暨 台中榮民總醫院合作研究計畫 聯合成果發表會



主辦單位 台中榮民總醫院

協辦單位 大葉大學、中臺科技大學、中興大學、
弘光科技大學、東海大學、逢甲大學、
國立臺中科技大學、暨南國際大學、
靜宜大學 (依單位筆劃序)

時 間 一〇一一年六月十六日

地 點 台中榮民總醫院研究大樓

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運用DNA 微陣列探討電針糖尿病大鼠降血糖之機轉

(The investigation of electroacupuncture on the hypoglycemic mechanisms of diabetic rats by DNA microarray)

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背景:隨著糖尿病的盛行率與發生率逐年增加，已成為全球主要的公共議題。胰島素抵抗及胰島素分泌不足是造成糖尿病的主要原因，根據過去電針對糖尿病治療的基礎動物實驗研究中，發現電針可藉由內生性嗎啡與受體結合促進胰島素分泌而調降血糖並改善胰島素敏感度，在糖耐量的試驗顯現電針可促進胰島素之利用。而且在第一型糖尿病發現電針可激發副交感神經的活性因而調降血糖。

目的:本研究欲運用 DNA 微陣列分析方式，來分析探討電針對 STZ 糖尿病鼠其降血糖作用及影響途徑，並以 Atropine 阻斷，藉以探討副交感神經所扮演的角色。

方法:使用 STZ 誘導之糖尿病大白鼠，隨機分為實驗組(EA)及對照組(non-EA)。實驗開始後於 0、30、60 分鐘，抽血供檢測血糖。再將骨骼肌收集起來後，進行 DNA 微陣列分析。進一步以 Atropine 阻斷，重複先前步驟，比較實驗組(EA)及對照組(non-EA)的差異。

結果:15 Hz 電針 STZ 糖尿病大鼠足三里穴，電針前後血糖值有顯著差異，其降糖機轉與副交感神經調控有關。運用轉錄體學方法工具-DNA 微陣列技術分析其降血糖作用及影響途徑，由這些基因群發現到和糖尿病相關聯的疾病，而其中 insulin signal pathway 與 MAPK, PPAR 及 Wnt signal pathway 調控密切相關。進一步尋找 insulin signal proteins 的表現量發現，其 IRS-1, AKT-2 及 Glut4 蛋白表現增加。而 Atropine 亦可阻斷此胰島素訊息路徑。

Background: Following the increasing prevalence rate of diabetes mellitus (DM) year by year, DM is an important public health issue worldwide. Insulin resistance and insufficient secretion are the main reasons of DM. According to the past basic animal studies in the treatment of DM by electroacupuncture (EA), the endogenous opioid binds their receptor for encourage the secretion of insulin to lower the plasma sugar. In the glucose tolerance test, the EA can promote the utility of plasma glucose; also the EA can activate the parasympathetic nerve of type I DM for lower the plasma glucose.

Aim: The assay of DNA microarray is applied to explore the hypoglycemic effect of STZ

diabetic rats and the influencing internal pathway. The atropine is used to block the cholinergic nerve for study the role in the hypoglycemic effect.

Methods: The STZ is used to induce diabetic rats and divided into experimental (EA) group and control (non-EA) group randomly. The blood sample is taken at 0, 30, 60 min after the start of experiment for determinate the plasma glucose concentration, then the skeletal muscle is corrected for taking the assay of DNA microarray. Furthermore, the blocking agent, atropine is used for comparing the difference between EA and non-EA group.

Results: The STZ diabetic rats were stimulated by 15 Hz EA on Zusanli acupoint with significant differences in blood glucose levels between before and after EA, and its hypoglycemic mechanism is via activating the cholinergic nerve. The assay of DNA microarray is applied to explore the hypoglycemic effect of STZ diabetic rats and influencing internal pathway. By the groups of gene found that are associated to the diabetic relative diseases and insulin signal pathway, also they are closely related to the regulation of MAPK, PPAR and the Wnt signal pathway. Furthermore, the expression of insulin signal proteins, IRS-1, AKT-2 and Glut4 proteins are increased, and the atropine also blocked the insulin signaling pathway.



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優良論文

特頒此狀以資鼓勵

台中榮民總醫院 院長雷永耀

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