

A Chinese herbal health formula, "Gan-Lu-Yin", attenuates balloon injury-induced neointima formation and suppresses vascular smooth muscle cell migration via inhibition of matrix metalloproteinase-2/9

## **Abstract**

### **BACKGROUND:**

Vascular smooth muscle cell (VSMC) migration contributes to neointimal hyperplasia and restenosis after vascular injury. Gan-Lu-Yin (GLY), which is a traditional Chinese herbal medicine frequently prescribed to those patients with cancer, allergy, inflammation and also used as an immunoregulatory agent. To determine whether GLY possesses antimigratory properties, we stimulated rat VSMCs with 10% fetal bovine serum, and determined their molecular mechanisms related with migration properties. Also, animal experiments were conducted to determine if GLY could attenuate the neointima formation after balloon injury.

### **METHODS:**

VSMC were treated with different concentrations of GLY, and then analyzed with Flow cytometric analysis, zymography, transwell, and western blotting. SD rats subjected to balloon injury were stained with H&E.

### **RESULTS:**

Based on the results, we found that thickness of neointima was significantly attenuated by GLY. Non-cytotoxic doses of GLY inhibited VSMCs migration was through its negative regulatory effects on phosphorylated ERK1/2, PI3K/AKT, and FAK. The data showed GLY has sufficient effects to inhibit the migration of VSMCs cells. In addition, GLY might block injury-induced vascular neointima formation via the inhibition of VSMCs migration, without apoptosis.

### **CONCLUSIONS:**

This study provides a better understanding of how GLY affects VSMC migration and its role in balloon injury-induced neointima formation.

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