Huangqi Increased β-globin Gene Expression via Promote Gsα Long Isoform Splicing in Human Leukemia K562 Cells

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ABSTRACT

Human leukemia K562 cells have long been used to study the infant globin, γ-globin, gene expression. However, huangqi was reported to induce β-globin, an adult form globin, expression. The expression of Gsα mRNA was RT-PCR checked and the expression level did not alter after huangqi treatment, yet the isoform of Gsα-L was increased while the Gsα-S was decreased. The two isoforms of Gsα were transient transfected into K562 cells and cells were divided into three portion and each treated with ethanol, hemin and huangqi, respectively. The β-globin gene were up-regulated by the Gsα-L transfectant in the presence of huangqi but not the presence of hemin. The Gsα-S transfectant did not increase the β-globin gene expression, even the presence of huangqi. To identify the compound that corresponds to this isoform splicing, K562 cells were treated with astragaloside IV, astragalus polysaccharide, calycosin and formononentin. The calycosin and formononetin increased but astragaloside IV decreased Gsα-L splicing and astragalus polysaccharide makes indifferently. The authors conclude that huangqi promotes β-globin gene expression by the function of Gsα-L and two components of huangqi, formononentin and calycosin, correspond to the Gsα isoform splicing.

Keywords: Gs alpha, K562, gamma-globin, beta-globin

REFERENCES
