Combination effects of Gumiganghwal-tang water extract and montelukast on airway inflammation in human bronchial epithelial cells

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Purpose: Gumiganghwal-tang (known as Kumi-Kyokatsu-to in Japanese) is well known traditional herbal prescription, which consists of 12 different herbs; Osterici Radix, Saposhnikoviae Radix, Cnidii Rhizoma, Angelicae Dahuicae Radix, Atractylodis Rhizoma, Scutellariae Radix, Rehmanniae Radix, Asari Radix et Rhizoma, Glycyrrhizae Radix et Rhizoma, Zingiberis Rhizoma Recens, Zizyphi Fructus, and Allii Fistulosi Bulbus. Gumiganghwal-tang has been commonly used in various disease including common cold, pain, and inflammatory diseases in Korea. Montelukast has been used as an effective therapeutic agent for prevention and treatment of allergic rhinitis or asthma. The objective of this study is to find out the combination effect on interaction of Gumiganghwal-tang water extract (GGTW) and montelukast using human bronchial epithelial, BEAS-2B cells.

Methods: Anti-inflammation effects were selected to study the effects on IL-4/TNF-α-induced inflammatory response in BEAS-2B cells. Cell supernatants and mRNA were collected for cellular inflammatory mediators determined via enzyme-linked immunosorbent assay, gelatin zymography, and polymerase chain reaction.

Results: After treatment of IL-4/TNF-α, the production of eotaxin, regulated on activation of normal T-cell-expressed and-secreted (RANTES), matrix metalloproteinases-9 (MMP-9), and vascular cell adhesion molecule (VCAM)-1 expression were increased. However, each of GGTW and montelukast was simultaneously inhibit the production of eotaxin, RANTES, MMP-9, and VCAM-1 expression. Moreover, drug combinations (co-treatment of GGTW with montelukast) were more effective than each treatment, although the difference was not significant.

Conclusion: Taken together, these findings suggest that GGTW combined with montelukast may be useful to reduce airway inflammation, which may explain its beneficial effect for the regulation of inflammatory disease.

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Alteration of Locomotor Function and NT-3 and Trk C Expression in the 14th day post-Spinal Cord Injury Rat and Effect of Different Electro-acupuncture

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Purpose: To investigate the influence on the expression of Neurotrophin 3 (NT-3) and Tyrosine Kinase Receptor C (Trk C) in the 14th day post-Spinal Cord Injury (SCI) rats which had different electro-acupuncture (EA) treatment, to elucidate the possible role of NT-3 and Trk C in the development of experimental SCI and the effect of different EA for them.

Methods: Adult male Sprague-Dawley (SD) rats were randomly divided into normal control group (n=12), sham operation group (no operation, without SCI nor treatment, n=12), SCI model group (SCI-induction without treatment, n=12), pulsed EA group (SCI-induction with pulse-EA treatment, n=12), and music EA group (SCI-induction with music-EA treatment, n=12). SCI model was established by using the modified Allen’s method. Basso-Beattie-Bresnahan (BBB) scale was performed to assess the locomotor function of rats. The expression of NT-3 and Trk C was detected by using Western blot.

Results: The BBB score of SCI model group are significantly lower than normal control group and sham operation group, while pulsed-EA group and music-EA group could reverse it in the 14th day post-SCI (P<0.01), while there was no statistical differences between the two treatment group (P>0.05). The expression of NT-3 and Trk C in SCI model group decreased significantly in the 14th day post-SCI (P<0.01), the two kinds of treatment could improve this pathological change, but there was no statistical differences between the two treatment group (P>0.05).

Conclusion: The levels of NT-3 and Trk C in SCI rats were lower than normal. The pulse- and music-EA treatments may effectively induce the levels of NT-3 and Trk C in spinal cord, then promote the recovery of hindlimb function of SCI rats; and the effectiveness of music-EA offered a good trend in recovery than that of pulse-EA treatment, but there was no statistical differences between the two treatment group in locomotor function and the expression of NT-3 and Trk C in the 14th day post-SCI.

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