Effect of Chinese herbal compound Tengmei decoction on IL-17/NF-κB signal pathway in synovium tissue of rat arthritis models induced by type II collage

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Purpose: To investigate the biological effect of IL-17/NF-κB immune inflammatory pathway on pathological damage in synovium tissue of Rheumatoid arthritis (RA) and study in regulation mechanism of Chinese herbal compound Tengmei decoction for IL-17/NF-κB signal pathway.

Methods: To establish collagen II-induced rats arthritis (CIA) models. The successful models of SD rats were randomly divided into model group, positive group, and high-, medium-, and low-dose Chinese medicine groups. The normal control group were given distilled water (10ml kg-1 d) by gavage. The positive drug group was given leflunomide (1.87g kg-1 d) by gavage. The high and medium dose Chinese medicine groups were given crude medicine of Tengmei decotion for IL-17/NF-κB signal pathway.

Results: (1) Compared to the normal control group, levels of mRNA transcription and protein expression of IL-17 and NF-κB P65 were significantly up-regulated (P<0.01) in the model group. Compared to the model group, levels of mRNA transcription and protein expression of IL-17 and NF-κB P65 were significantly down-regulated in the positive and Chinese medicine groups (P<0.01). (2) Histopathological analysis displayed that mild hyperplasia of epithelial cells covering the articular cartilage synovium, joint cavity narrowing, and mild inflammatory lymphocytes infiltration in model group, with joint lesions improved in treatment groups.

Conclusion: The molecular mechanisms of Chinese herbal Tengmei decoction in inhibiting immune inflammatory pathological damage in synovium of CIA rats models related to its effects on IL-17/NF-κB pathway.

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Chemoprotective activity of KIOM-CRC#50, an ethanol extract of a medicinal plant, in cisplatin-induced cachectic mouse model

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Purpose: Cachexia is one of the dose-limiting side effects of chemotherapy that seriously threatens the survival and quality of life of cancer patients. More than 80% of cancer patients of later stages suffers from cachexia, commonly defined as an involuntary weight loss over 5% of normal body weight. In this study, we investigated KIOM-CRC#50, the ethanol extract of a medicinal plant traditionally used in many countries, as a potential chemoprotective agent against chemotherapy-induced cachexia as well as other side effects including nephrotoxicity and hematotoxicity.

Methods: Dried plant materials were finely pulverized and immersed in 70% (v/v) ethanol (100 g/L). Anti-cancer potential and anti-cancer cachectic activity of KIOM-CRC#50 were determined in an orthotopic lung xenograft model using Balb/c nude mice. Male C57BL6 mice at the age of 6~8 weeks were utilized to evaluate the chemoprotective activity of KIOM-CRC#50 in cisplatin-induced cachexia model. Body weight change, blood cell count, and biochemical analysis of sera were measured and analyzed for determining its effectiveness.

Results: Mice with orthotopic lung tumors experienced progressive weight loss as tumor progression. Oral administration of KIOM-CRC#50 effectively ameliorated cancer progression-induced weight loss in these mice. Daily administration of KIOM-CRC#50 also alleviated both nadir and maximum weight loss induced by high dose cisplatin treatment in C57BL6 mice. Cisplatin treatment resulted in elevated blood levels of BUN (blood urea nitrogen) and AST (aspartate aminotransferase) levels, however, oral administration of KIOM-CRC#50 in these mice reduced the levels of BUN and AST elevated by cisplatin treatment. Additionally, KIOM-CRC#50 treatment also markedly increased the number of WBC in cisplatin-treated mice.

Conclusion: In summary, our data demonstrated the effectiveness of KIOM-CRC#50 in alleviating chemotherapy-induced cachexia and other side effects, as well as cancer-progression induced weight loss, suggesting that it could be an important source for the development of novel chemoprotective agent.

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http://dx.doi.org/10.1016/j.imr.2015.04.288