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Shikonin Reduces Endometriosis by Inhibiting RANTES Secretion and Mononuclear Macrophage Chemotaxis

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Abstract : Endometriosis is a common disease in women of reproductive age, whose classic characteristic is mononuclear cell infiltration into lesions. Shikonin is an anti-inflammatory phytocompound from Lithospermum erythrorhizon, whose potential therapeutic effects for the endometriosis remain unclear. The working hypothesis was that shikonin can inhibit the development of endometriosis by the inhibition of chemotactic effect. Shikonin significantly inhibited the growth of human endometrial tissue implanted into mice ($P<0.05$). No observable adverse effects were found. The mouse regulated upon activation normal T-cell expressed and secreted (mRANTES) level in peritoneal fluid of animal endometriosis model was higher than that in normal SCID mice ($P<0.05$), and decreased dramatically after shikonin treatment in a dose-dependent manner ($P<0.05$). Peritoneal fluid from NOD/SCID mice treated with shikonin inhibited monocytes chemotaxis, which could be abolished by mRANTES antibody. In vitro, shikonin significantly inhibited RANTES expression of U937 cells cultured alone or co-cultured with human methothelail cells and endometrial stromal cells, and inhibited RANTES-induced chemotaxis of U937 cells ($P<0.05$). The present results suggest that shikonin can inhibit the development of endometriosis by mechanisms that at least include the inhibition of RANTES expression and decreased migration of mononuclear cells to lesions. Shikonin may be a useful and safe new approach for treating endometriosis.

Keywords : endometriosis, shikonin, RANTES chemotaxis
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