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Dryopteris crassirhizoma attenuates airway inflammation *via* modulation of cytokines and mast cell activation in OVA-induced allergic rhinitis

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Dryopteris crassirhizoma (DC) is used as a traditional herbal remedy to treat various diseases, the tapeworm infection, common cold, and cancer in Korea, Japan, and China. DC also has the antioxidant anti-inflammatory and antibacterial activities. However, anti-allergic inflammatory effect of DC and some of its mechanisms in allergic rhinitis model is unknown well. The purpose of this study is to investigate the anti-allergic inflammatory effect of DC on the allergic rhinitis model, mast cell activation and histamine release. Allergic rhinitis was induced in BALB/c mice by sensitization and challenge with OVA. Each various concentration of DC and Dexamethasone was administrated by oral administration on 1 hour before OVA challenge. Mice of control group were treated with saline only. Then mice were evaluated for the presence of nasal mucosa inflammation, the production of allergen-specific cytokine response and the histology of nasal mucosa. DC significantly ameliorated the nasal symptoms and the inflammation of nasal mucosa. DC also reduced the infiltration of eosinophils and mast cells in these tissues and the release of histamine in blood. Meanwhile, DC evidently inhibited the overproduction of Th2 cytokine, and increased reduction of Th1 and Treg cytokines in nasal lavage fluid by OVA. DC also reduced the levels of OVA specific IgE, IgG1 and IgG2a in blood. This study suggests that DC has a significant anti-allergic inflammatory effect in nasal cavity. DC may have the therapeutic effect for allergic rhinitis.

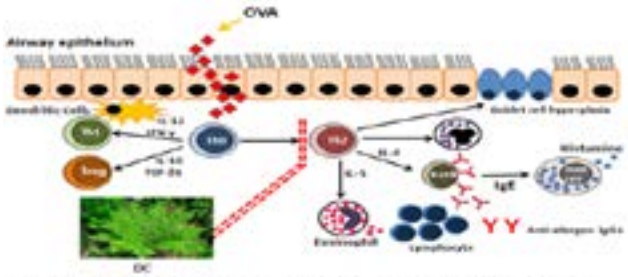

Figure 1: Effect of DC on allergic inflammation in OVA-induced allergic rhinitis model

Recent Publications

1. Lohia S et al. (2013) Impact of intranasal corticosteroids on asthma outcomes in allergic rhinitis: a meta-analysis. Allergy. 68(5): 569-579.
2. Liu Y et al. (2010) The expression of osteopontin and its association with Clara cell 10 kDa protein in allergic rhinitis. Clinical and Experimental Allergy. 40(11): 1632-1641.
3. Wang S B, Deng Y Q et al. (2014) Exogenous interleukin-10 alleviates allergic inflammation but inhibits local interleukin-10 expression in a mouse allergic rhinitis model. BMC Immunology. 15:9.
4. Kim S R, Choi H S, Seo H S (2012) Topical application of herbal mixture extract inhibits ovalbumin-or 2,4-dinitrochlorobenzene-induced atopic dermatitis. Evidence-Based Complementary and Alternative Medicine. 2012: 1-9.
5. Hwang Y H, Ha H, Ma J Y (2013) Acute oral toxicity and genotoxicity of *Dryopteris crassirhizoma*. Journal of Ethnopharmacology. 149(1): 133-139.

Biography

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