

2003] [AB0158] EFFECTS OF GANODERMA LUCIDIUM (LINGZHI) ON PROLIFERATION AND CYTOKINE PRODUCTION OF SYNOVIAL FIBROBLASTS FROM RHEUMATOID ARTHRITIS PATIENTS

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Background: Ganoderma Lucidium (Lingzhi, LZ), a medicinal mushroom, has been suggested to have immunomodulatory functions. The major chemicals associated with these effects appear to be polysaccharides and triterpenes. Rheumatoid arthritis (RA) is a chronic inflammatory disease characterized by the proliferation of synovial fibroblasts that produce inflammatory cytokines and chemokines. It has been suggested LZ may alleviate the underlying pathology of RA.

Objectives: To investigate the effects of Lingzhi (LZ) on unstimulated or IL-1 β or LPS stimulated human RA synovial fibroblast proliferation and the production of IL-6, IL-8, IL-10, tumor necrosis factor-alpha (TNF- α) and monocyte chemoattractant protein-1 (MCP-1).

Methods: Tissue samples were collected from patients with RA. The primary culture of synovial fibroblasts were incubated with LZ polysaccharides (hot water extract) for 24 hours at various concentrations. Proliferation of synovial fibroblasts was measured by thymidine incorporation. Toxicity of LZ on synovial fibroblasts was measured by MTT viability test. Cytokine levels in the culture supernatant were measured by enzyme-linked immunosorbent assay (ELISA).

Results: LZ had a slight dose-dependent positive effect on unstimulated RA synovial fibroblasts on IL-6 and MCP-1 production. LZ also inhibited the production of IL-8 in a dose-dependent manner but it had no effect on IL-1 β , IL-10 and TNF- α production.

Following stimulation with IL-1 β or LPS, LZ had moderate inhibitory effects on RA synovial fibroblast proliferation and IL-8 and MCP-1 production. No significant effects on IL-6 production was observed.

Percentage inhibition of IL-8 and MCP-1 by LZ

Concentration of LZ (μ g/ml)	Inhibition of IL-8		Inhibition of MCP-1	
	IL-1 stimulated	LPS stimulated	IL-1 stimulated	LPS stimulated
50	7.9 \pm 3.7	1.4 \pm 8.9	8.2 \pm 0.1*	16.7 \pm 7.8
125	17 \pm 15.2	11.3 \pm 7.5	9.6 \pm 5.3	19.0 \pm 1.1 *
250	28.1 \pm 13.5	28.2 \pm 2.5 *	16.3 \pm 14.9 #	30.3 \pm 6.2 #

Vs baseline *p<0.05, #p<0.1

baseline *p<0.05, #p<0.1

Conclusion: Lingzhi has slight to moderate positive effects on un-stimulated RA synovial fibroblasts in the production of IL-6 and MCP-1 but inhibits IL-8 production.

Lingzhi inhibited LPS or IL-1 β stimulated synovial fibroblast proliferation and IL-8 and MCP-1 production.

Rheumatoid arthritis Treatment