



<b>Title</b>	<b>Effects of Ganoderma lucidum (Lingzhi) on cell proliferation and cytokine production of synovial fibroblasts from rheumatoid arthritis</b>
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## **NRI-09 Use of health status measurement scales among arthritis patients with low educational level**

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**Purpose:** Many researchers had advocated the use of self-administered health status measures such as Arthritis Impact Measurement Scales 2 for clinical evaluations in rheumatology. Frequently, illiteracy and patients' age are factors limiting the use of this form of assessment. The aim of this study was to evaluate the validity and reliability of using Chinese Arthritis Impact Measurement Scales 2 (CAIMS2) as a health assessment tool for patients with low educational level.

**Methods:** CAIMS2 was administered to 71 subjects [RA=14, OA=57] with arthritis using a standardized interviewing format. Reliability of scales, test-retest reliability and construct validity was evaluated and compared to statistical results of a previous study on validity and reliability of CAIMS2 among literate clients.

**Results:** Inter-item reliability of the CAIMS2 interviewed version [ICC: 0.6512 to 0.9825] was comparable to that of the self-administered version [ICC: 0.8552 to 0.9594]. Test-retest reliability of the CAIMS2 interview version [ $r = 0.526$  to  $0.922$ ] was, however, lower than the self-administered version [ $r = 0.77$  to  $0.95$ ].

**Conclusion:** Cautions have to be taken in administering CAIMS2 in an interviewed version. Further studies on health status measurement among illiterate patients is necessary to improve the feasibility of using such scales in clinical settings.

## **NRI-10 Effects of *Ganoderma lucidium* (Lingzhi) on cell proliferation and cytokine production of synovial fibroblasts from rheumatoid arthritis**

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**Introduction:** *Ganoderma lucidium* (Lingzhi), a medicinal mushroom, has been suggested to have immunomodulatory functions. The major chemicals with these effects appear to be polysaccharides and triterpenes. The purpose of this study was to investigate the effects of Lingzhi on RA synovial fibroblast proliferation and cytokine production including interleukin-1beta (IL-1beta), IL-6, IL-8, IL-10, tumor necrosis factor alpha (TNF-alpha) and monocyte chemotactic protein-1 (MCP-1).

**Method:** Tissue samples were collected from patients with RA. The primary culture of synovial fibroblasts was incubated with hot water extract of fresh Lingzhi polysaccharides for 24hr, 48hr 72hr and 96 hr at various concentrations. Proliferation of synovial fibroblasts was measured by thymidine incorporation and cytokine levels were measured by enzyme-linked immunosorbent assay (ELISA).

**Results:** Lingzhi had no effects on synovial fibroblast proliferation. RA synovial fibroblasts spontaneously produced IL-6, IL-8 and MCP-1 but not IL-1 beta, IL-10 and TNF-alpha. Lingzhi had a slight dose and time dependent stimulatory effect on RA synovial fibroblast in IL-6 and MCP-1 production. Lingzhi also inhibited the production of IL-8 in a dose and time dependent manner but it exerted no effects on IL-1 beta, IL-10 and TNF-alpha production.

**Conclusion:** *Ganoderma lucidium* has slight to moderate stimulating effects on un-stimulated RA synovial fibroblast in the production of IL-6 and MCP-1 and inhibitory effects on IL-8 production without stimulating synovial fibroblast proliferation. The effects of Lingzhi on cytokine synthesis by stimulated synovial fibroblasts, which mimic active disease, are currently being studied.