PROLYLHYDROXYLASE (PH) PRODUCTION BY FIBROBLASTS FROM PATIENTS WITH PROGRESSIVE SYSTEMIC SCLEROSIS (PSS)


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PSS is a chronic disease of unknown cause, characterized by diffuse fibrosis. Recently, different mechanisms of collagen production by fibroblasts in patient with PSS and normal controls have been reported. Since prolylhydroxylase (PH) is known to be the key enzyme in the production of collagen, we investigated the production of the enzyme by using fibroblasts from patients with PSS and normal controls.

MATERIALS AND METHODS

Three patients with early, advancing PSS were studied. Fibroblasts were obtained from 5mm-punch biopsy specimens by Bashey's method. The fibroblasts were grown in Dulbecco's Modification of Eagle's Medium, supplemented with penicillin and streptomycin, and 10% fetal calf serum. Confluent fibroblast monolayers were incubated in the presence or absence of recombinant IL-1α or IFN-γ for 72 hours to collect the supernatants. PH was measured by an enzyme-linked immunosorbent assay with two monoclonal antibodies which recognized epitopes of PH.

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RESULTS AND DISCUSSION

Spontaneous PH production by fibroblasts from patients with PSS was significantly higher than that from normal controls. (Fig. 1) IL-1α (Fig. 2) or IFN-γ (Fig. 3) suppressed the production of fibroblasts from patients with PSS. The effect of IFN-γ on PH production by fibroblasts coincides with the inhibitory effect of this cytokine on collagen synthesis of fibroblasts. Those results indicate
Kawaguchi Y. et al: Prolylhydroxylase in PSS indicate the significance of spontaneous and cytokine-regulated PH production by fibroblasts in PSS.

Figure 1  Spontaneous PH Production by Fibroblast

Figure 2  PH Production with IL-1α by Fibroblast

Figure 3  PH Production with IFN-γ by Fibroblast