

## **Cytokine production and modulation: Comparison of patients with chronic fatigue syndrome and normal controls**

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### **Abstract**

We studied cytokine production in 15 patients with chronic fatigue syndrome (CFS) and 23 controls. CFS patients' peripheral blood mononuclear cells were cultured with lipopolysaccharide or phytohemagglutinin. Enzymatic immunoassay indicated cytokine concentration in culture supernatants. CFS patients showed significantly lower mRNA levels and transforming growth factor-beta1 (TGF- $\beta$ 1) production. Cytokine dysregulation affects CFS pathogenesis. TGF- $\beta$ 1 may aid treatment because it affects CFS inflammatory characteristics.

**Keywords:** Chronic fatigue syndrome (CFS); Cytokines; Transforming growth factor-beta1 (TGF- $\beta$ 1); Peripheral blood mononuclear cells (PBMC)