# Cytokine and chemokine profiles in fibromyalgia, rheumatoid arthritis and systemic lupus erythematosus: a potentially useful tool in differential diagnosis.

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## Abstract

Making a correct diagnosis is pivotal in the practice of clinical rheumatology.

Occasionally, the consultation fails to provide desired clarity in making labeling an individual as having fibromyalgia (FM), systemic lupus erythematosus (SLE) or rheumatoid arthritis (RA).

A chemokine and cytokine multiplex assay was developed and tested with the goal of improving and achieving an accurate differential diagnosis.

160 patients with FM, 98 with RA and 100 with SLE fulfilling accepted criteria were recruited and compared to 119 controls.

Supernatant cytokine concentrations for IL-6, IL-8, MIP-1 alpha and MIP-1 beta were determined using the Luminex multiplex immunoassay bead array technology after mitogenic stimulation of cultured peripheral blood mononuclear cells.

Each patient's profile was scored using a logistical regression model to achieve statistically determined weighting for each chemokine and cytokine.

Among the 477 patients evaluated, the mean scores for FM (1.7 ± 1.2; 1.52-1.89), controls (-3.56 ± 5.7; -4.59 to -2.54), RA (-0.68 ± 2.26; -1.12 to -0.23) and SLE (-1.45 ± 3.34, -2.1 to -0.79).

Ninety-three percent with FM scored positive compared to only 11 % of healthy controls, 69 % RA or 71 % SLE patients had negative scores.

The sensitivity, specificity, positive predictive and negative predictive value for having FM compared to controls was 93, 89, 92 and 91 %, respectively ($p < 2.2 \times 10^{-16}$).

Evaluating cytokine and chemokine profiles in stimulated cells reveals patterns that are uniquely present in patients with FM.

This assay can be a useful tool in assisting clinicians in differentiating systemic inflammatory autoimmune processes from FM and its related syndromes and healthy individuals.