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# Expression of sarcolectin in sera of HIV-1-infected patients during progression of the disease

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Sarcolectin was originally described as an interferon antagonist, first detected in normal human muscles and in osteosarcomas. On the basis of a functional analysis of the protein, we postulated that the interferon antagonist is in fact an animal lectin [1,2]. When cloned and expressed, the recombinant protein was found to be of 55 000 $M_r$. Fragments of sarcolectin molecules, when bound to albumin, react together in immune assays and create a 65 000-55 000 $M_r$ complex [3] and cannot be removed by heat denaturing or standard sodium dodecylsulphate gel-electrophoresis techniques. The biological functions of these sarcolectin proteins (from apparently various cellular origins) can be summarized as follows: (i) they promote agglutination of normal or malignant cells, because of their affinity for cell membrane bound sugars; and (ii) they inhibit the synthesis of the secondary proteins responsible for all the interferon-dependent biological functions that lead to the antiviral state. Consequently, the original virus-sensitive state is restored in the cells [4]. Furthermore, in such sarcolectin-treated cells, refractoriness to a second interferon induction is diminished or abolished [3]. They stimulate cellular DNA synthesis in all immune-competent cells, as well as in epithelial cells and fibroblasts [5] in conformity with the known general properties of lectins.

The aim of this study was to investigate the involvement of sarcolectin in HIV-1 pathogenesis. During the infection and during progression of the disease the immune functions are indeed repeatedly challenged. We studied the presence of sarcolectin in three cohorts. Two were HIV-infected patients randomly selected at different phases of the disease [6,7] as indicated: (a) controls; (b) seroconverted or early phase of AIDS [Centers for Disease Control and Prevention (CDC) I/II]; (c) advanced AIDS (CDC III) generalized lymphadenopathy with or without common symptoms (CDC IV) opportunistic infections or secondary tumours were studied. Our results indicated that sarcolectin was overproduced in sera from AIDS patients compared with sera from control donors. Statistical calculations using regression coefficients showed a significant increase of sarcolectin titres in sera: between (a)/(b) t: 6,32; (a)/(c) t: 9,77; (b)/(c) t: 10,21. In all groups $P < 0.001$ (Fig. 1). Moreover, Western blotting assays showed that more sarcolectin was produced in sera in advanced cases of AIDS when compared with controls (results not shown).

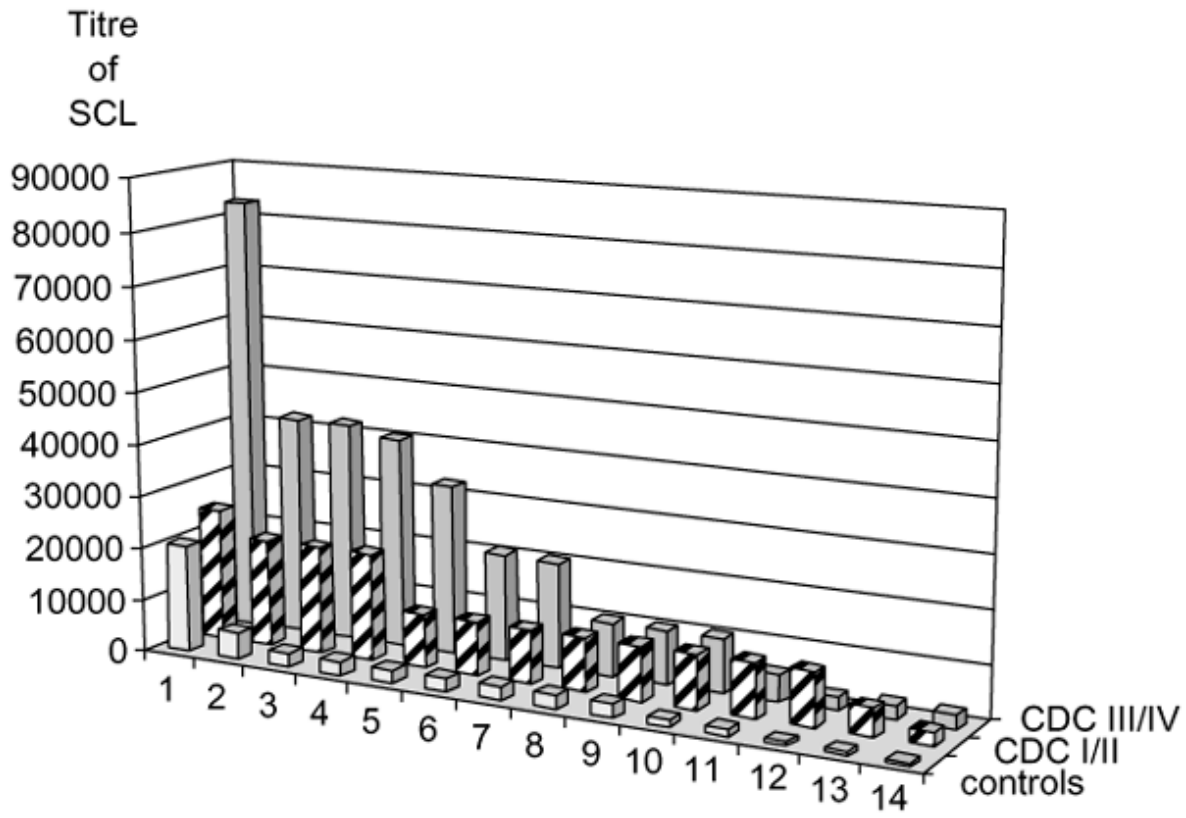


**Fig. 1.** Serum sarcolectin (SCL) titres in controls ▢ and AIDS patients (CDC I/II ▢, CDC III/IV ▢) using oligopeptide antibodies raised against the 15 terminal amino acids of the cloned protein.

We suggest that the increased serum levels of sarcolectin in the early phase of seroconversion shown in this study could be attributed to its capacity to stimulate cellular DNA synthesis [5] in all immune-competent cells, especially T cells, to compensate HIV-1-induced losses. Sarcolectin could also activate (as lectins generally do) [8] the synthesis of IL-2 receptors [9] in a way reminiscent of the role of phytohaemaglutinin in tissue culture. The feedback interferon synthesis could then arrest the propagation of the infection at the expense of T cell loss, which sarcolectin and IL-2 try to compensate. However, with the progression of the disease and increasing T cell destruction, the synthesis of sarcolectin increases, and the imbalance between the augmented sarcolectin levels and IFN-1 deteriorates. This already severe development is further complicated, (i) because of sarcolectin these interferons are unable to promote their normal cell growth inhibitory responses; (ii) the excess of sarcolectin can induce a loss of the physiological refractoriness to repeated interferon induction in the same cells [5], resulting in its accumulation as an inefficient protein. Indeed, it was reported that in sera from fast progressor CDC IV patients, more interferon can be found than in sera from long-term non-progressors [7].

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