We agree with Skidmore and Mawson that the persistence of serum IFN-α may predict the development of AIDS in individuals exposed to HIV. Furthermore, serum IFN-α is correlated with a marked deficiency of leucocyte IFN-β production in patients with AIDS or ARC. The diminished capacity of endogenous IFN production may be responsible for the AIDS patients' susceptibility to opportunistic infections.

Institute of Microbiology, Ludwigsburg Hospital, 7400 Ludwigsburg, West Germany


---

**IMMUNOBLOT TEST WITH RECOMBINANT HIV ANTIGENS**

Sir,—Confirmation of a positive anti-HIV screening test result is usually done by western blot (WB). Virus grown in tissue culture is disrupted and viral proteins are separated by gel electrophoresis and transferred to nitrocellulose paper. Attachment of serum antibody to the paper at characteristic sites indicates specific antibody against viral proteins. However, the conventional WB has disadvantages: (a) it is expensive and time-consuming to produce in tissue culture; the large amount of virus needed; (b) HIV cultivation can only be done in special laboratories; (c) concentration and relative amount of viral proteins may vary considerably in different antigen preparations; (d) the diagnostically most important envelope protein gp41 migrates as a diffuse band; and (e) false-positive reactions may occur. The modification described here does not have these disadvantages.

We use three recombinant proteins encoded by pUC-vectors* and produced in Escherichia coli—namely, proteins exhibiting antigenic epitopes of p24 (molecular weight 33 kD) and gp41 (20 kD) and a fusion protein of both (47 kD). Without purification E. coli lysates were subjected to SDS-PAGE and proteins were transferred to nitrocellulose paper strips with three lanes. Because crude bacterial lysates were used the background reaction in the modified WB is significant but testing of sera on three lanes differing only in the presence of one virus-encoded protein ensures specificity: non-specific reactions with bacterial lysates can be seen in all three lanes, whereas strong HIV-1 specific reactions for anti-p24 and anti-gp41 are found only once in each lane at a characteristic position (figure).

All three recombinant proteins are expressed without bacterial fusion proteins to avoid cross-reaction with antibody to bacterial proteins. We chose p24 because antibody to this protein seems to appear earlier after HIV infection, gp41 because antibody to this protein is the most specific for HIV-1 infection, and the fusion protein gp41/p24 to provide independent confirmation and an opportunity for blot interpretation where the background staining in the other two lanes was heavy.

We evaluated the test on sera chosen from routine diagnostic specimens and on United States-derived plasma pools. 46 sera were tested, with the following results:

### Conventional WB

<table>
<thead>
<tr>
<th>Date</th>
<th>EIA*</th>
<th>Conventional WB</th>
<th>Recombinant WB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug to Dec,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985 (n = 10)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1986-87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n = 7)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Recombinant enzyme immunoassay (Abbott).

1. Positive had reactivity to p24, p31, gp41, p51, p55, and p66. † positives had reactivity to p66, to p31 and to p51, and to p51.
2. The results suggest that pooled plasma frequently exhibits non-specific reactivity to p55 or p51. However, the positive results for anti-gp41 found in recombinant blot test pools from 1985 are probably specific.

The results suggest that pooled plasma frequently exhibits non-specific reactivity to p55 or p51. However, the positive results for anti-gp41 found in recombinant blot tests in pools from 1985 are probably specific.

Thus in this panel of 46 sera all conventional WB positive samples were confirmed; the modified WB resulted in no "false positive" results and seemed to resolve all 16 ? positive sera on conventional WB; and 2 conventional WB results were false negatives (both coming from patients with AIDS). Among the 16 ? positive specimens 4 sera from two persons with recent seroconversion were identified by recombinant WB suggesting that HIV-1 infection can be diagnosed earlier after seroconversion if the recombinant blot test rather than WB is used.

17 plasma pools have been tested:

```
Max von Pettenkofer Institute,
University of Munich,
Munchen 2, West Germany

M. Motz
E. Soutschek-Bauser
G. G. Frohner
L. Gurtler
M. Schall
H. Wolf
```


