

Japan buys British 'litmus test' for AIDS

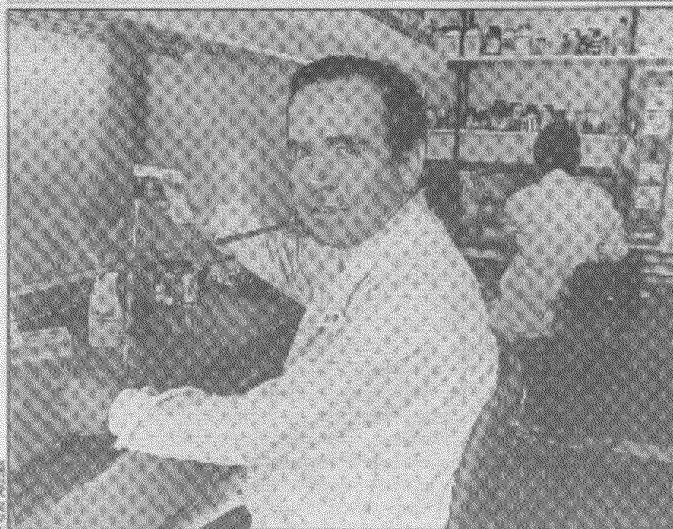
A JAPANESE company is to sell a kit developed by a British scientist to diagnose infection with AIDS virus. Existing tests for antibodies to the AIDS virus require equipment costing thousands of pounds and can take days to confirm a positive result. The new test needs only a laboratory microscope, and a positive result can be confirmed in hours.

Abraham Karpas, a virologist from the University of Cambridge's Department of Haematological Medicine, has agreed to let a Japanese pharmaceuticals company, Fuji Chemical, sell the tests throughout the world. Karpas says he is looking for a British company to distribute the kits in Britain.

The revenue from sales of the kits could run into millions of pounds, because the test is cheap enough for even the smallest clinics to afford. And it is simple enough for hospitals in the Third World to use.

Karpas, who has patented his invention, developed the test after discovering that a cell line taken from a leukaemia patient is highly susceptible to infection with the AIDS virus. This type of cell seems to provide a perfect medium for the virus to replicate. Hundreds of thousands of viruses accumulate in the cells, making the cells

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Abraham Karpas: patented latest AIDS test

highly antigenic and good at detecting the presence of AIDS antibodies in the blood.

Karpas's test kit consists of ordinary microscope slides coated in Teflon, which contains 30 tiny wells. A carpet of the virus-riddled cells is placed at the bottom of each well. These cells are fixed in acetone to kill the viruses, and break open the cell membranes to expose the viruses.

The doctor performing the test places a drop of blood serum from the patient in

one of these wells, so patients can be tested simultaneously on one slide. After incubating for an hour, the slide is washed in saline solution for five minutes to wash away any unbound antibodies.

If any antibody is present, it will be bound to the virus particles at the bottom of the well. To find out if this is indeed the case, the doctor adds a protein that binds human antibodies. The protein is chemically bound to a peroxidase enzyme.

The protein and peroxidase stick to the antibody-virus complex if any antibodies are present.

After incubating for five minutes, the slide is washed again for five minutes to wash away any free peroxidase. If peroxidase is present, the doctor adds a substrate, aminoethylcarbazole, which changes colour in the presence of peroxidase. If

antibody-peroxidase compound is present, the well changes colour. It can be seen with the naked eye.

The advantage of aminoethylcarbazole is that it precipitates at the site of the antibody. A doctor can therefore confirm the presence of AIDS antibodies by looking at the slide under the microscope. If the membranes and cytoplasm of the cell are stained then the patient has antibodies to the AIDS virus.