

DISTRIBUTION OF THE SERUM PROTEINS OF SYRIAN HAMSTER AS REVEALED BY STARCH - GEL ELECTROPHORESIS

by

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ALTHOUGH considerable work has been published on the distribution of the serum proteins of various laboratory animals, little has been reported on the electrophoretic pattern of the serum proteins of hamster. Moore (1) investigated the serum proteins of several species of animals, including that of the hamster, by moving boundary electrophoresis. He identified six components in the serum of hamster corresponding to albumine, alfa-and betta-globulins and a gamma-globulin. Since starch-gel electrophoresis was first suggested by Smithies,(2) this technique has been applied to the examination of the normal serum proteins of a great many species, including vertebrates as well as invertebrates.

In the work presented here the serum protein pattern of individual Syrian white hamster of both sexes were examined by the technique of vertical starch-gel electrophoresis, (12) using borate buffer of ionic strength of 0.03 and pH 8.6, with a voltage of 150 and 16-17 m.amp, using Shandon constant current power supply and run for a period of 15.5 h. Eight serum samples were used in each run. Paper electrophoresis was also performed, using sodium veronal and sodium acetate of 0.1 ionic strength and pH 8.6. The hamsters used in these experiments came from Walter LaCasse Laboratory of Montgomery, Alabama, and were given to us by the State of New York Department of Health, where they had been inbred since 1955. The hamsters were received at this laboratory more than a year ago and have been bred here ever since.

(1) Reprinted from Nature, 198, 485, (1963).

Seventy-two individuals, about 4 months old, equally of both sexes, were tested. Fig. 1 represents a photograph of the starch-gel electrophoretic pattern of six hamsters. Numbers 1-3 refer to three individual females and 4-6 to three individual males. Individual variations were shown to exist among those which were examined. In Fig. 1, serum No. 3 is different from the other five sera, at the region behind the albumin band. Further qualitative variations are also observed among some of the other fractions. Only 2 out of 72 samples examined were the same as serum No. 3 of Fig. 1. No differences were noticed among fresh sera and sera stored at -20°C . Fig. 2

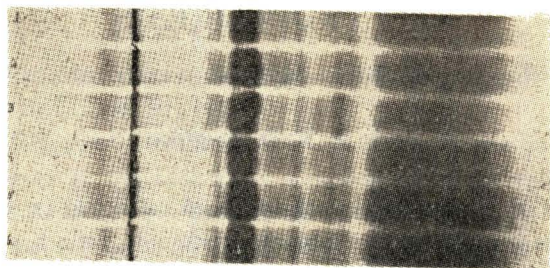


Fig. 1. A photograph of the starch-gel electrophoretic pattern of sera of six individual hamsters. Nos. 1-3 refer to females and 4-6 to males.

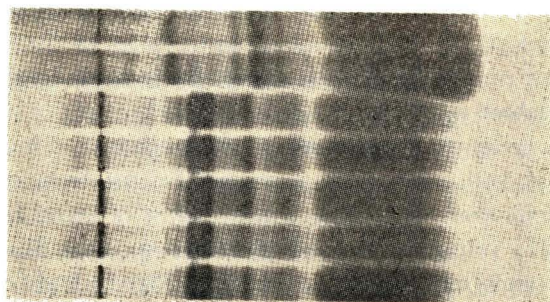


Fig. 2. A photograph of the starch-gel electrophoretic pattern of the sera of a normal human individual (the upper two) and five individual hamsters.

is a photograph of the serum proteins of a normal human individual (upper two) and sera of five individual hamsters. Two pre-albumins are present in the serum of hamster, as is also present in human serum. Marked differences are noticed between the serum pattern of these two species. No attempt has

been made to identify the various fractions of hamster serum at present. The paper electrophoretic pattern of hamster serum appeared to contain six distinct bands corresponding to albumin, alfa-1-, alfa-2-and alfa-3-globulin, betta-globulin, and a gamma-globulin.

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