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PRODUCTION OF EMBRYONAL α-GLOBULIN BY TRANSPLANTABLE MOUSE HEPATOMAS

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SUMMARY

It was previously reported that one strain of mouse hepatoma (strain XXIIa) contained an antigenic substance which was absent from liver, spleen, kidney, lung or serum of normal adult mice *(1, 13)*. This antigen was isolated in an immunologically pure state *(2, 3)*. It reacted only with anti-hepatoma sera and did not precipitate with antisera against liver, spleen, kidney or against normal adult mouse sera. The present work, however, demonstrates that this antigen is a normal constituent of the embryo and of newborn mouse serum, and that it disappears from the serum as the mice become older. It also shows that the same antigen reappears in the serum of adult hepatoma-bearing mice as a result of its synthesis in the tumor tissue followed by its secretion into the blood. Judged by its electrophoretic mobility this antigen is related to the α-globulin fraction of mouse serum.

Our experiments were carried out mainly with hepatoma strain XXIIa; this tumor was induced in 1951 in C3H-A mice by the action of orthoaminoazotoluene, and it has been maintained within the same line of mice *(7)*. Three other hepatoma strains were originally induced by the same carcinogen in the same line of animals: strain XXII is the substrain of XXIIa, strain XXXVIII was induced in 1960, and hepatoma XLVI in 1961 *(8)*.

Two antisera against newborn mouse sera (anti-NB) were obtained by immunization of rabbits as follows: 3 injections, each consisting of 3 ml, were given at intervals of two and one weeks, respectively; the first of these injections was with complete Freund's adjuvant and the other two without it. Blood was taken one week after the last injection. Two sera against adult mouse serum (anti-AS) were prepared in the same way. The preparation of antihepatoma sera has been described previously *(1, 13)*. All analyses were performed by the agar-precipitation microtechnique *(10)* and by the immunoelectrophoresis method *(9)* in semi-micro-modification *(2, 12)*.

The presence of the specific antigenic component in the sera of newborn mice and its estimation in different systems was carried out in the following way. The anti-NB-serum was absorbed by an equal volume of adult mouse serum (AS) and after discarding the precipitate formed, it was tested with different dilutions of newborn mouse sera (NB). The precipitin line which occurred in this system was formed by the NB-dilutions up to $^1/_{2000}$. The optimal reaction was seen between absorbed anti-NB and NB diluted $^1/_{256}$. These components formed the standard test system used for further investigations. In each experiment the