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Diet and tissue regeneration.

By ARTHUR H. SMITH and T. S. MOISE.

[*From the Sheffield Laboratory of Physiological Chemistry and the Department of Surgery, Yale University, New Haven, Conn.*]

Two types of diets were used: one, containing casein as the protein, and being adequate for normal growth; the other, having gliadin as the protein, sufficing for maintenance but not for growth. Both foods provided 5.3 Cals. per gram and were identical in their composition except for the difference in quality of the protein.

White rats of similar ages were employed. A standard tissue damage (liver necrosis) was induced by subcutaneous injection of 1 c.c. sterile mineral oil containing 0.15 c.c. chloroform per 100 grams body weight, which had been previously determined to be the maximum non-lethal dose. The animals were killed at definite intervals, a control rat on standard food together with an experimental rat on gliadin food.

This procedure produces a necrosis of the liver cells around the central vein of the lobule appearing at its maximum 24 to 48 hours after the injection. In both series of rats there occurs an early mobilization of leucocytes and clearing away of the cellular debris with a simultaneous initiation of regeneration from the uninjured cells at the periphery of the lobule. The process of repair is most active at about 72 hours after the injection in both series. At 120 to 148 hours the regeneration is apparently complete and the liver is histologically normal.

The rate of procedure of the repair, so far as we have been able to observe, is the same for both groups of animals. This fact raises the question as to the possibility of such repair involving, as it does, tissue reconstruction upon the gliadin food—a diet upon which general body growth is impossible. A discussion of the application of these results to the theories of intermediary protein metabolism will be reserved for a later publication.