Technical Papers

The Absence of Dietary Effects on the DNA Content of Liver Nuclei of the Adult Rat

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Ely and Ross (*1*) reported recently that in young growing rats fed on protein-deficient diets for periods of 8–49 days, the liver nuclei had a higher mean desoxyribonucleic acid (DNA) content than had nuclei obtained from livers of control animals fed on the stock diet.

In the adult rat, dietary variations do not seem to have similar effects. Campbell and Kosterlitz (*2–4*) found in a large number of rats that feeding of a protein-free diet for periods of up to 3 weeks and variations in the fat and choline contents of the diet had no influence on the DNA content of the liver. The only factors that appeared to determine the value of liver DNA were body weight and sex. Mandel, Jacob, and Mandel (*5*) showed that, when adult rats were fed on a protein-free diet for 50–75 days, no DNA was lost from the liver and the number of nuclei remained unchanged. In order to give further support to these findings, we have now determined the mean DNA contents of liver nuclei isolated by the method of Vendrely and Vendrely (*6*). Five male littermate pairs of rats with a mean initial body weight of 325 g were used, one member of each pair being fed on the stock diet and the other on a protein-free but otherwise adequate diet for 28 days. The mean DNA content was 10.8×10^{-6} μg/nucleus in the rats fed on the stock diet and 11.0×10^{-6} μg/nucleus in the rats fed on the protein-free diet. The standard error of the difference between the DNA values of the two groups was $\pm 0.48 \times 10^{-6}$.

The significance of these results is further underlined by the findings of Davidson and McIndoe (*7*) and of Mirsky and Kurnick (*8*). These authors found no change in the mean DNA content of rat liver nuclei after fasting, which in the experiments of Mirsky and Kurnick was continued until the livers had lost as much as half their original weight.

It would appear, then, that in the adult rat even such severe dietary conditions as prolonged fasting and prolonged consumption of protein-free diets have no significant influence on the mean DNA content of liver nuclei. The DNA content of the liver of the adult rat is thus a suitable standard of reference for those liver constituents which vary with altered dietary conditions. On the other hand, the findings of Ely and Ross (*1*) indicate that this is not the case in young growing rats, at least not if they are exposed to severe dietary deficiencies for long periods. Under these conditions, the normal growth of the liver is seriously interfered with, and changes in the DNA content of liver nuclei are therefore more likely to occur than in adult animals.

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A New Class of Organic Fungicides

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A series of new compounds has been synthesized by the reaction of perchloromethyl mercaptan with the alkali metal salts of imides and amides. The purified products obtained from these reactions are, in nearly all cases, colorless, crystalline, odorless compounds and are readily obtained in yields ranging from 80 to 95%. In a cooperative testing program with Rutgers University, the compounds were found to possess

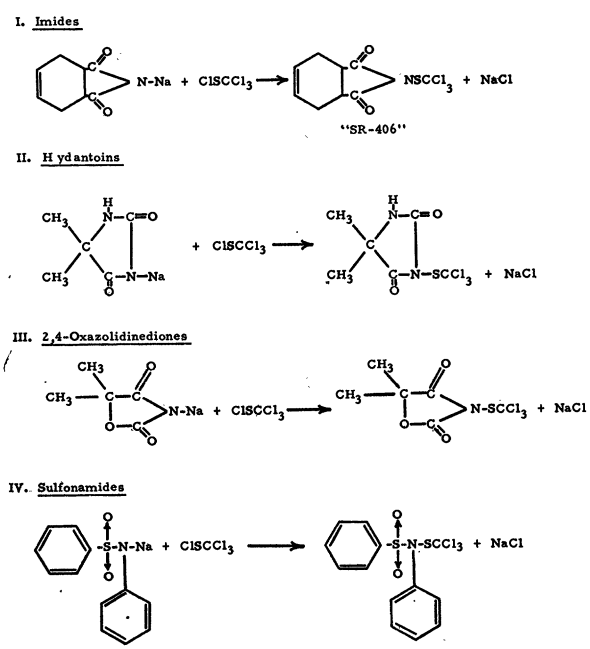

FIG. 1.