are apparently correlated with changes in dihydroxyacetone phosphate concentration. In non-diabetic rats they are both decreased in starvation and increased 48 h after re-feeding with glucose, glycerol or sucrose. Further, in diabetes the activity of liver-type pyruvate kinase and dihydroxyacetone phosphate concentration are decreased, and in this state both are raised by treatment with insulin and by re-feeding with sucrose or glycerol but not with glucose. However, no causal relationship has been established.

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The Effect on the Activities of some Hepatic Enzymes of Weaning Rats on to a Diet High in Sucrose Content

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There is a marked increase in hepatic lipogenesis and the activities of enzymes associated with lipogenesis on weaning rats from the high-fat-content milk diet of suckling to the high-carbohydrate (starch)-content laboratory diet (Taylor *et al.*, 1967; Lockwood *et al.*, 1970), Hepatic lipogenesis is also considerably higher in rats fed on sucrose rather than on starch-containing diets (Bailey *et al.*, 1968). To investigate further the involvement of diet in the post-weaning increase in lipogenesis we have studied the effect on the activity of some enzymes involved in carbohydrate conversion into fatty acids of weaning female rats on to a diet high in sucrose content.

Fructokinase (EC 2.7.1.4) activity increased after weaning (at 21 days of age) to a maximum at 40–45 days and then fell to pre-weaning values by the end of the experiment (70 days of age), and feeding with sucrose had little effect on the enzyme activity. Phosphofructokinase (EC 2.7.1.11) and fructose 1,6-diphosphatase (EC 3.1.3.11) activities varied little during the period studied and dietary sucrose had little effect on the activity of either enzyme. Aldolase (EC 4.1.2.13) activity was constant between 21 days and 40 days of age, rose to a maximum at 50 days and then fell to 70 days of age. Feeding with sucrose caused slightly elevated aldolase activities at all ages studied. Pyruvate kinase (EC 2.7.1.40) activity rose steadily during the experiment to a maximum at about 50–60 days of age, and activities in the livers

of sucrose-fed animals were always higher than those of controls. ATP citrate lyase (EC 4.1.3.8) and 'malic' enzyme (EC 1.1.1.40) increased in activity after weaning to a maximum at 35–40 days of age and then fell to the end of the experiment, and feeding with sucrose caused elevated activities at all ages studied. Extramitochondrial aconitate hydratase (EC 4.2.1.3) and NADP-dependent isocitrate dehydrogenase (EC 1.1.1.42) activities fell after weaning until 25–30 days of age and then rose throughout the rest of the experimental period. From 30 days of age the activities of both these enzymes were lowered by feeding with sucrose. Glucose 6-phosphate dehydrogenase (EC 1.1.1.49) activity rose rapidly after weaning to 40 days of age and then remained constant for the remainder of the experimental period. Feeding with sucrose increased this enzyme activity at all ages studied.

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Changes in the Activities of some Kidney Enzymes during Development of the Rat

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Although changes in the activities of many hepatic enzymes during development of the rat are well documented, little is known about the developmental changes that occur in the activity of rat kidney enzymes (for review see Greengard, 1971). We have measured the postnatal changes that occur in the activities of the following kidney enzymes: hexokinase (EC 2.7.1.1), pyruvate kinase (EC 2.7.1.40), 'malic' enzyme (EC 1.1.1.40), glucose 6-phosphate dehydrogenase (EC 1.1.1.49), extramitochondrial NADP-dependent isocitrate dehydrogenase (EC 1.1.1.42), extramitochondrial aconitate hydratase (EC 4.2.1.3), ATP citrate lyase (EC 4.1.3.8) and fructose 1,6-diphosphatase (EC 3.1.3.11). We have also measured developmental changes in the incorporation of [^{14}C]acetate into lipid by kidney homogenates. The experiments were carried out with both male and female rats weaned at 21 days of age, and unless otherwise stated similar results were obtained with both sexes.

Hexokinase activity increases after birth to a maximum at 30 days of age, thereafter falling to reach adult values by 50 days of age. These results extend