the cell had been burst artificially during the preparation (Fig. 3). This shows that at least some of the molecules containing iron-59 were distributed in the enchylemma of the cytoplasm and were not bound to the morphological structures of the cytoplasm.

An accumulation of grains around and on the nucleus could be seen in some autoradiographs. However, the number of the grains per mm^2 on the cytoplasm was clearly greater than those on the nucleus. The chromosomes were either unlabelled or showed very weak autoradiography. In squash preparations where the cytoplasm and the nucleus were burst artificially one could observe grains on the chromosomes, too (Fig. 4). But the number of grains seems to be less than those on the intact nucleus and varies from chromosome to chromosome. Therefore, it can be suggested that some iron-59 molecules are not bound to the chromosome, but are localized in the nucleoplasm as observed by Feldherr. No relation could be found between labelling of cytoplasm and chromosomes. For example, in some cells the cytoplasm showed a light radioactivity, whereas the chromosomes were not labelled, and vice versa. In some cases the nucleus showed stronger autoradiography than the cytoplasm.

Similar results were obtained in another experiment, when *Drosophila melanogaster* was used instead of *Chironomus plumosus*.

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BIOLOGY

Glucose Utilization in Pregnant Sheep by a Continuous Infusion Isotope Dilution Method

The importance of carbohydrate as a metabolic substrate in the ruminant has given rise to much discussion[1]. The question of the source(s) of glucose is of special interest because there is no evidence that hexose is absorbed from the ruminant alimentary tract and because acetate is the major end product of ruminal fermentation. The fœtal lamb, however, has considerable hexose requirements[2], and, as a consequence, it is thought that the pregnant female sheep is normally in a precarious state of carbohydrate balance[3]. It is known that even a slight fall in food intake in the pregnant sheep may cause the accumulation of ketone bodies in the tissues and blood stream followed by clinical signs of pregnancy toxæmia.

The continuous infusion isotope dilution technique[4] has been used to study glucose utilization rates in normal pregnant sheep and those with induced pregnancy toxæmia. Four determinations on two normal Clun Forest ewes, pregnant for 130 and 142 days respectively, gave a mean utilization rate of $1\cdot35 \pm 0\cdot18$ mg/min/kg, and two ketotic ewes, pregnant for 135 and 140 days, gave a mean rate of $1\cdot22 \pm 0\cdot13$ mg/min/kg. This difference is not significant ($P > 0\cdot5$). The opportunity was also taken to use 1-^{14}C-glucose and 6-^{14}C-glucose in the same animal on successive days and the specific activities of the expired carbon dioxide were compared. It is generally accepted that the ratio of the specific activity of expired carbon dioxide, produced when 1-^{14}C-glucose is injected, to the specific activity of expired carbon dioxide, produced when 6-^{14}C-glucose is injected, that is, the C1/C6 ratio, should be unity if the main catabolic route for glucose is the Embden–Meyerhof pathway to pyruvate, followed by conversion to carbon dioxide in the tricarboxylic acid cycle. Deviation from unity is considered to indicate the existence of another pathway which incorporates C1 of the glucose into carbon dioxide at a greater rate than C6, for example, the pentose cycle.

The C1/C6 ratios for the two normal pregnant sheep were 1·24 and 1·38, respectively, and for the two ketotic animals 1·74 and 2·05. The mean value for the ketotic sheep did not differ significantly from the mean for the normal sheep ($0\cdot1 > P > 0\cdot05$). The situation in ketotic pregnant sheep therefore differs from that in ketotic lactating cattle in which lower C1/C6 ratios than in normal lactating cattle were found[5].

The glucose utilization rates in the pregnant sheep are of the same order as those in non-pregnant sheep after 24 h starvation, but only about half the rates in fed non-pregnant sheep[6]. It would seem therefore that tissue glucose supply is indeed marginal in pregnant sheep, but is not significantly reduced when the animals are showing clinical signs of ketosis. The C1/C6 ratio is of special interest. The decreased ratio in ketotic cattle has been interpreted[5] as indicating a reduction of glucose metabolism by the hexose monophosphate pathway. In a detailed discussion on the use of glucose labelled with carbon-14 for evaluating glucose metabolism[7] it has been pointed out that the C1/C6 ratio may be influenced by at least four variables, that is, the activity of the pentose and of the glycolytic pathways, the use of glucose in synthetic pathways and the proportion of triose phosphate oxidized to carbon dioxide. It is therefore not possible to interpret the C1/C6 ratio in pregnant sheep in terms of percentage pentose cycle activity, but it can be concluded that 1C of glucose is incorporated into CO_2 more readily than 6C in both normal and ketotic pregnant sheep.

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Effects of Lysergic Acid Diethylamide on the Nesting Behaviour of Male Pigeons

Present-day advances in psychotherapy have added impetus to investigations into the actions of drugs which affect the central nervous system and thus cause changes in behaviour patterns. One such psychomimetic agent, lysergic acid diethylamide (LSD-25), exerts both peripheral and central actions[1]. Some of these effects in various animals and humans are nausea, vertigo, hyperhydrosis, hypersalivation, mydriasis, vasodilation or vasospasm, hypotension or hypertension, bradycardia or tachycardia, and changes in the white blood cell count[2].

The vasomotor changes are partially related to disturbances in the hypothalamic-hypophyseal-adrenal axis[2]. Rinkel *et al.*[3], studying the effects of LSD-25 on human beings, suggested that this drug stimulated the pituitary-adrenal axis yet rendered the adrenal glands unresponsive to adrenocorticotrophic hormone. It is reasonable to assume that this pituitary response may also cause a change in the blood or pituitary levels of prolactin, which has been shown to be responsible for broodiness or nesting behaviour as well as the development of the crop in pigeons[4–6].