seen in RSV- and RIF-infected cells treated with either sera from RIF-free birds or yolk extracts from their eggs.

Compared to the other procedures utilizing egg yolk rather than mother hen's serum to assay for RSVA(1,2), our method offers the advantage of rapidity (hours rather than days) and simplicity in that it does not require the exacting adjustments of cell culture population or medium composition.

Conclusions. Substitution of egg yolk for the mother hen's serum does away with the cumbersome procedure of bleeding the birds for antibody tests. The level of RSVA in yolk reflects the serum antibody level but is usually somewhat lower. Furthermore, substitution of egg yolk for the mother hen's serum in an indirect immunofluorescence procedure provides a simple, rapid, reliable and relatively inexpensive testing system. Flocks of birds can be easily examined and in most cases the test results are available the same day.

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Insulin Half-Life in Normal and Diabetic Subjects.* (43434)

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Recent reports have suggested the likelihood that I^{131} labelled insulin preparations may have altered biological properties when compared with unlabelled insulin(1,2). As a result, previous studies of the turnover of insulin in normal and diabetic subjects conducted with labelled insulin have become suspect. Samols *et al*(3) in 1 normal patient and Orskov *et al*(2) in forearm studies in 5 normal patients have studied respectively the disappearance rates of plasma insulin following infusion of glucagon or exogenous unlabelled insulin, in an effort to obtain the true t½ of insulin. Both groups used immunoassay procedures for insulin measurements. This is in sharp contrast to the measurements of plasma TCA precipitable radioactivity or to the chromatographic distribution of radioactivity used in the *in vivo* I^{131} insulin experiments. The t½ arrived at by immunoassay was of the order of 5-15 minutes with mean values of approximately 7.5 minutes, a considerably shorter time than reported with radioactive insulin studies.

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The t½ of insulin in untreated diabetics, based on radio-insulin studies, has been reported to be the same as in normals(4). In view of the substantially shorter t½ observed with the methods of Samols and also of Orskov in normals, it seemed important to restudy untreated diabetics. The present investigation reports studies in 6 normal subjects and 5 newly diagnosed untreated diabetics. No significant differences in insulin disappearance rates were observed following the administration of 2 units of *unlabelled* crystalline bovine insulin I.V.

Methods and materials. Normal young medical students served as control. All were in good health, on good diets, and with no evidence of carbohydrate abnormalities. The diabetic subjects were in-patients at the Washington, D. C., Veterans Administration Hospital. None had ever received insulin and were on diets containing at least 200 g of carbohydrate. All subjects were fasted overnight. After the fasting samples were obtained and 2 units of crystalline bovine insulin (E. Lilly Co.) were injected rapidly, an indwelling needle was placed in the opposite

brachial vein. Samples were taken at 5 minute intervals for 50 minutes. Blood sugars were determined by the Somagyi-Nelson method (5) and plasma insulin by the immunoassay of Hales and Randle(6). In a few cases additional samples were obtained at 2½, 7½ and 12½ minutes in an attempt to define the time for initial mixing or distribution of insulin.

Results. Fig. 1 plots the mean values and

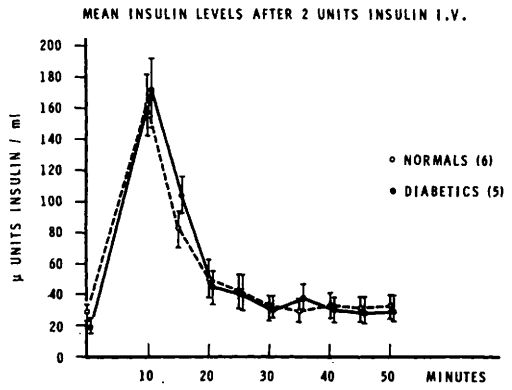

FIG. 1. Mean values ± SEM for plasma insulin following injection of 2 units of insulin I. V. No significant differences can be seen between normals and diabetics.

standard errors of plasma insulin levels observed in the 2 groups of subjects studied. Examination of the semilogarithmic plots of individual patients reveals a typical pattern which is shown in Fig. 2. Calculations of the t½ of insulin for each subject were obtained from this type of plot. It appears that initial mixing of insulin is completed in 10-12 minutes. The insulin peak of approximately 170 μu/ml reached 10 minutes after the injection of 2 units suggests that the insulin is distributed in 10-12 liters of fluid or approximately 20% of body weight. This figure is compatible with a distribution in the extra cellular fluid compartment.

The second slope, from 10 minutes to 35 minutes, was used in the calculation of t½. Insulin t½ ranged from 6.5-9.0 minutes in the normals, with a mean of 8.1 minutes and from 6.5-8.5 minutes in the diabetics with a mean of 7.4 minutes. The difference between the mean values is not statistically significant, perhaps because of the small numbers of cases studied.

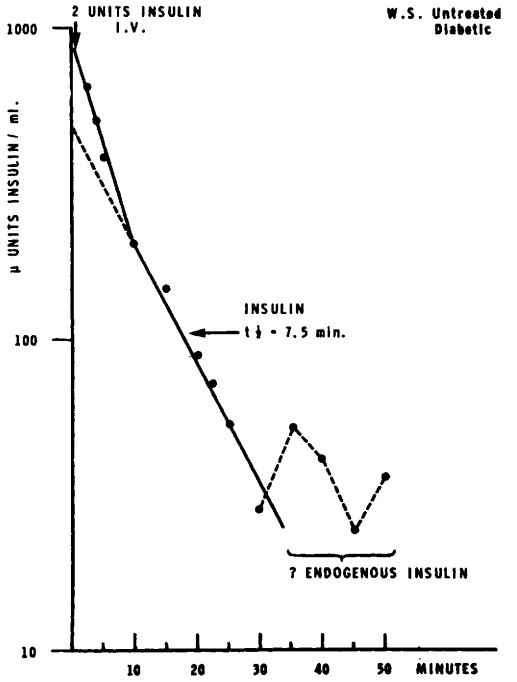

FIG. 2. Semilogarithmic plot of plasma insulin levels following 2 units of insulin in a newly diagnosed diabetic.

After the 35 minute point, there was either a leveling off at the preinjection or fasting insulin level or a tendency for a small secondary rise in insulin to occur. The blood sugar response to insulin as calculated in per cent of starting level was similar in the two groups, but diabetics had a slower return of blood sugar to starting levels than did the normal subjects (Fig. 3). Possibly related to this phenomenon is the fact that the mean insulin levels between 35 and 50 minutes remained somewhat higher than the

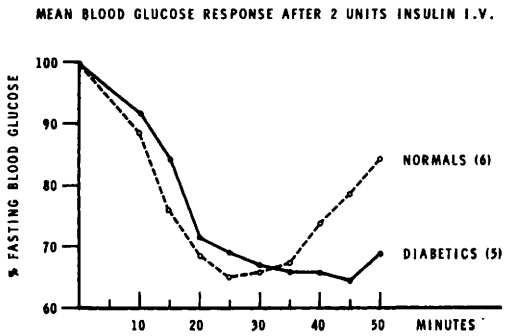

FIG. 3. Blood glucose responses to 2 units of insulin. The response is prolonged in diabetics.

fasting insulin levels in the diabetic subjects. Although the 35-50 minute insulin levels were similar in the 2 groups, the initial fasting insulin level was lower in the diabetics (Fig. 1). The prolonged lowering of blood sugar in diabetics (Fig. 1) following exogenous insulin is similar to that observed following I.V. tolbutamide. In the latter instance, endogenous insulin levels reach fasting levels though the blood sugar levels remain lower than fasting.

Discussion. Within the framework of these experiments, several points can be made. First, the t½ of exogenous insulin measured by immunoassay appears quite short and the values confirm the observations of Samols and Orskov. Secondly, there is no obvious significant difference between normal subjects and untreated mild adult diabetic patients, though the number of subjects studied is small. It should be noted that these patients were not obese and that their blood sugar response to the injected insulin was of the same order of magnitude as that seen in the normal subjects. One normal subject who was moderately obese manifested a markedly decreased blood glucose response although the level of circulating exogenous insulin was identical to that noted in other subjects. His insulin t½ (9.0) was not different from that of a thin, normal control with a good sugar response to insulin (8.5).

No correlation between insulin t½ and fasting insulin levels was observed. It would be of interest to extend these observations to a larger series of diabetics and to study the endogenous insulin decay rates.

Conclusions. The data provide no evidence for a significant alteration either in the decay rate of exogenous insulin or in the response to insulin in non-obese newly diagnosed, mild diabetics. A short t½ for insulin is confirmed (6.5-9.0 minutes).

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Effects of Transplanted Pituitary Tumors on Host Pituitary Prolactin Secretion.* (32435)

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Implantation of anterior pituitary (AP) tissue into the infundibular recess of the rat results in a depression of adrenal function(1). Implantation of ACTH into the median eminence reduces ACTH content in the pituitary and abolishes the increase in hypothalamic CRF induced by adrenalectomy(2). Gonadotropin secretion is also depressed by implantation of gonadotropins into the hypothalamus(3,4,5,6).

Recently, MacLeod *et al*(7) reported that prolactin and growth hormone (GH) were reduced in the host AP of rats bearing a transplanted pituitary tumor ($MtTW_5$) which secretes large amounts of prolactin and GH. Prolactin and GH were detected by disc electrophoresis and were not assayed biologically. The present study was undertaken to determine whether pituitary tumor ($MtTW_5$ and $MtTW_{15}$) transplants could alter the content of hypothalamic prolactin-inhibiting factor (PIF) and pituitary prolactin concentration in the host rat.

Materials and methods. Eight-week-old in-

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