Table II. The fate of pituitary grafts and their influences upon vaginal smear patterns

Group	Pituitary grafts recovered at autopsy	Pituitary grafts recovered and smears showing pseudopregnancy type patterns	Pituitary grafts recovered but smear patterns returned to regular cycles after pseudopregnancy type
Control	12/38 grafts (31.6%) in 9/19 mice (47.3%)	5/38 grafts (13.2%) in 4/19 mice (21.0%)	7/38 grafts (18.4%) in 5/19 mice (26.3%)
Experimental[a]	8/20 mice (40.0%)	7/20 mice (35.0%)	1/20 mice (5.0%)

[a] Each host carried single pituitary grafts.

(Figure 1d). One of 8 experimental mice which carried surviving grafts did not maintain pseudopregancy-type patterns and returned to normal cycles (Figure 1e), which was indicative of the lack of prolactin secretion. Therefore, only 7 of 20 grafts (35%) were actively secreting prolactin even after the cessation of CB 154 treatment. With the same criteria, only 21% of control mice carried pituitary grafts which ceased to secret enough prolactin but survived on transplantation (Figure 1b).

Discussion. The present experiments demonstrated that sex-linked rejection of pituitary glands isografted from adult male donors to adult female C57BL mice is due to pituitary tissues of male mice as well as to some unknown mechanisms involved in the secretion of prolactin from pituitary grafts derived from male C57BL mice. The difference in the constituents of prolactin secreted by C57BL mice between the 2 sexes is unlikely to account for this phenomenon. Possibly, some unknown substances are secreted along with prolactin. These substances may possess male specific antigenicity. An alternate explanation is the possibility that male grafts require an adequate stimulation by androgens. This possibility was originally postulated for a sex-linked skin graft rejection[3,12], but is not experimentally supported[21,22]. Furthermore, this hypothesis could not explain the positive effect of CB 154 in reducing rejection rates of pituitary isografts as observed in the present experiments. Further studies are warranted for the elucidation of the mechanisms of this sex-linked pituitary graft rejection phenomenon.

Zusammenfassung. Eine geschlechtsbedingte Unverträglichkeit von Hypophysen-iso-transplantat unter ausgewachsenen weiblichen C57BL Mäusen wurde durch simultane Behandlungen mit CB 154 bedeutend reduziert und nach Unterbrechung der Behandlung erhöht.

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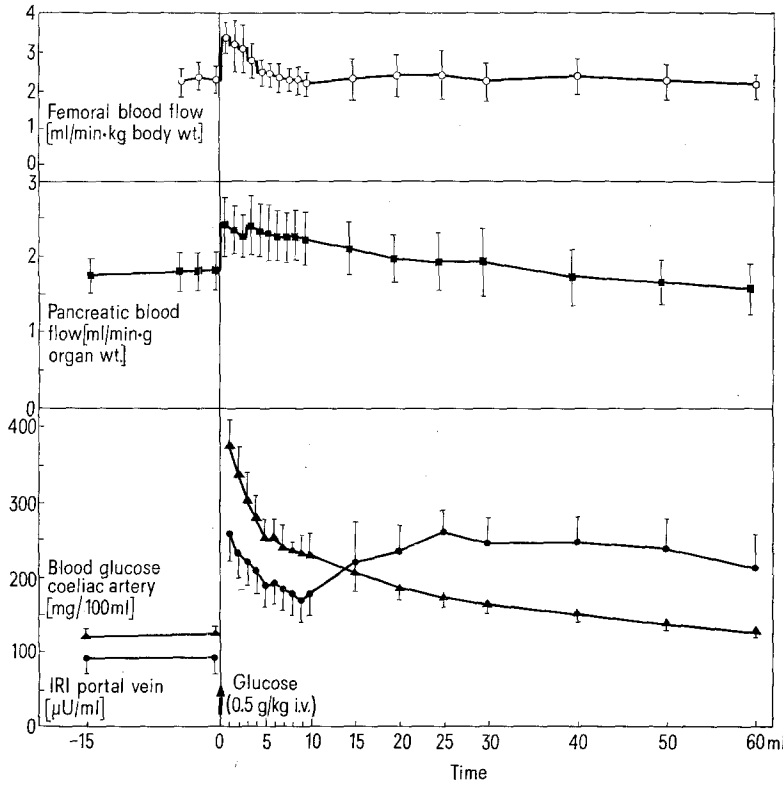
[21] E. J. EICHWALD, C. R. SILMSER and I. WEISSMAN, J. natn. Cancer Inst. *20*, 563 (1958).
[22] S. E. BERNSTEIN, A. A. SILVERS and W. K. SILVERS, J. natn. Cancer Inst. *20*, 577 (1958).

Continuous Registration of the Pancreatic Blood Flow After Intravenous Application of Glucose

For the evaluation of the actual pancreatic insulin output under in-vivo-conditions one must know the pancreatic blood flow[1,2]. After rapid elevation of glycemia, the pancreatic circulation increases too[3-5]. But up to now all in-vivo-procedures for characterization of the dynamics of insulin secretion have been incomplete because they neglect both the real hemodynamics and the amount of insulin reaching the organ with the arterial blood stream. Therefore in these experiments the pancreatic blood stream was measured continuously during hyperglycemia and compared to the alternations of blood glucose and insulin concentrations.

Material and methods. Alsatian dogs of both sexes (25.6 ± 1.1 kg body wt., age 24 ± 3 months) in general anesthesia (N_2O/O_2 after introduction with hexobarbital, relaxation and endotracheal intubation, no premedication) have been used. They got indwelling plastic catheters both into the A. coeliaca via (A. lienalis) and into the V. portae near the liver (via V. lienalis). Flow probes of an electromagnetic blood flowmeter were arranged both on the A. pancreaticoduodenalis superior (= A. gastropancreatica) near the parenchyma of the pancreas and on the A. femoralis. Both probes were connected with a double-channelled electromagnetic flowmeter recording continuously (Nycotron 372 S, Norway). After the operative preparation (90 min) and the stabilization period (30 to 60 min), the animals were injected with glucose (0.5 g/kg = 1.25 ml/kg of a 40% solution) within 25 sec. In addition to the flow measurements, arterial blood pressure (Biometer BM 101, GDR), arterial blood glucose[6] and portal venous immunoreactive insulin (IRI)[7] have been analyzed. For statistical evaluation the actual amount of blood stream was taken from the original registration curves for that experimental time when chemical analyses were performed. At the end of the experiments, by the injection of China-ink into the A. gastropancreatica that

[1] R. METZ, Diabetes *9*, 89 (1960).
[2] H. S. SELTZER, J. clin. Invest. *41*, 289 (1962).
[3] I. MANDELBAUM and C. R. MORGAN, Ann. Surg. *170*, 753 (1969).
[4] P. LEFEBVRE et A. LUYCKX, J. Ann. Diab. Hôtel Dieu *10*, 139 (1969).
[5] A. M. RAPPAPORT, T. KAWAMURA, J. K. DAVIDSON. B. J. LIN, S. OHIRA, M. ZEIGLER, J. A. COODLING, J. HENDERSON and R. E. HAIST, Am. J. Physiol. *221*, 343 (1971).
[6] P. KÖHLER, Z. ges. inn. Med. *17*, 674 (1962).
[7] U. FISCHER, H. HOMMEL, M. ZIEGLER and R. MICHAEL, Diabetologia *8*, 104 (1972).



Blood flow in the A. pancreaticoduodenalis superior and the A. femoralis and concentrations of arterial blood sugar and portal venous IRI in anesthetized dogs (n = 13) before and after i.v. injection of 0.5 g/kg glucose. 0 min = end of the injection. Glucose assimilation constant k 2.12 ± 0.17.

part of organ weight was estimated which is supplied by these arteria (= 62.0 ± 1.8 %). By means of this number the pancreatic flow could be calculated on the basis of the organ fresh weight.

Results and discussion. After i.v. injection of saline (1.25 ml/kg) the pancreatic as well as the femoral blood stream are not altered. The Figure shows that the femoral flow increases to 150 % during the glucose injection already. The level diminishes in relation to the first phase of the blood glucose decrease (distribution phase). After 5 min the blood glucose decrease is slower (assimilation phase), and the femoral circulation becames normal. The pancreatic flow increases rapidly too. But there is no early decrease. It diminishes parallel to the glycemia, the starting level is reached after 20 to 40 min. The portal venous IRI concentration increases biphasically. No part of the mean IRI-curve is directly related to the flow alteration.

Obviously during this short-lasting hyperglycemia, 2 mechanisms influence the flow reaction of the pancreaticoduodenal vascular bed. On the one hand the blood stream increases rapidly. This reaction seems to be unspecific. It can be seen in the A. femoralis too. In a part of the individual registration curves of the A. gastropancreatica, this primary circulatory reaction may be differentiated from the following long-lasting and possibly specific reaction of the pancreas. The second part of the circulatory reaction has never been seen in the A. femoralis or in the gastric blood flow[8]. The immediate unspecific reaction depends on the increase of osmolarity. The later phase is connected with a long lasting reduction of the peripheral vascular resistance in the pancreatic vascular bed only.

Zusammenfassung. Die Hyperglykämie nach einmaliger stossartiger Glukoseinjektion bewirkt einen Durchblutungsanstieg der Bauchspeicheldrüse. Dieser wurde kontinuierlich mit einem elektromagnetischen Blutstrommesser bei narkotisierten Hunden registriert. Der Anstieg setzt sich aus 2 Abschnitten zusammen, wovon der erste unspezifisch auch in der A. femoralis auftritt.

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[8] L. S. Semb, S. Aune, Scand. J. clin. Lab. Invest. *27*, 105 (1971).

Obtention, par la méthode des greffes de gonades embryonnaires, d'une femelle à descendance unisexuée femelle, chez le Triton *Pleurodeles waltlii* Michah.

La possibilité de réaliser, chez des Amphibiens tant Anoures qu'Urodèles, l'inversion phénotypique et fonctionnelle du sexe des femelles ou des mâles génétiques a été démontrée depuis longtemps[1]. La fécondité des individus inversés obtenus a montré la labilité de la détermination du sexe chez plusieurs espèces d'Amphibiens; elle a permis également de connaître pour chacune des espèces étudiées, à l'aide de croisements appropriés, les sexes homogamétique et hétérogamétique. Chez le Triton *Pleurodeles waltlii* Michah., un traitement gynogène administré pendant la vie larvaire a permis à Gallien[2] d'obtenir des néo-femelles (*ZZ*) qui, croisées avec des mâles standard (*ZZ*), donnent naissance à des pontes unisexuées constituées uniquement d'individus mâles. Dans