Cl^--Methode ± 2,2 mval/l und für die PO_4^{---}-Methode ± 0,11 mval/l. Bei 20 gesunden Versuchspersonen ergab sich für den erythrocytären Cl^--Gehalt ein Mittelwert von 57,15 mval/l mit einem σ von ± 2,4 und für den erythrocytären PO_4^{---}-Gehalt ein Mittelwert von 2,03 mval/l mit einem σ von ± 0,44.

Demgegenüber fanden sich bei 20 Patienten, die an graduell unterschiedlich ausgeprägten chronischen Niereninsuffizienzen litten, deutliche Abweichungen der erythrocytären Anionenkonzentrationen. Als Kriterien der Niereninsuffizienz galten eine Erhöhung des Serum-Rest-N auf über 40 mg% und eine gleichzeitige Erniedrigung des aktuellen Serumbicarbonats (HCO_3^-) auf unter 20 mval/l. Wie aus der Figur hervorgeht, sind die erythrocytären Cl^-- und PO_4^{---}-Konzentrationen beim Vorliegen einer renalen Insuffizienz mit grosser Regelmässigkeit erhöht. Relevante Korrelationen zwischen Grad der Rest-N-Steigerung einerseits und der Höhe der erythrocytären Anionenkonzentrationen andererseits bestanden jedoch nicht. Positive Korrelationen ergaben sich für die Beziehung $Cl^-_{Erythrocyten}/Cl^-_{Serum}$ ($r = +0{,}55$) und die Beziehung $PO_4^{---}{}_{Erythrocyten}/PO_4^{---}{}_{Serum}$ ($r = +0{,}46$). Für die Beziehung $PO_4^{---}{}_{Erythrocyten}/HCO_3^-{}_{Serum}$ war eine negative Korrelation ($r = -0{,}59$), für die Beziehung $Cl^-_{Erythrocyten}/HCO_3^-{}_{Serum}$ war keine relevante Korrelation festzustellen.

Die erhobenen Befunde zeigen, dass die erythrocytären Anionenkonzentrationen in die Entgleisungen des Elektrolytstoffwechsels, die sich bei renalen Insuffizienzen entwickeln, mit einbezogen werden. Die festgestellten korrelativen Beziehungen sprechen für die Beteiligung passiver Verteilungsmechanismen am Zustandekommen dieser Veränderungen.

Summary. In chronic renal insufficiency, concentrations of chloride and inorganic phosphate in human red blood cells are elevated. There is no correlation between serum non-protein nitrogen and the anionic concentrations of red blood cells. Positive correlations exist between corresponding cellular and extracellular anionic concentrations.

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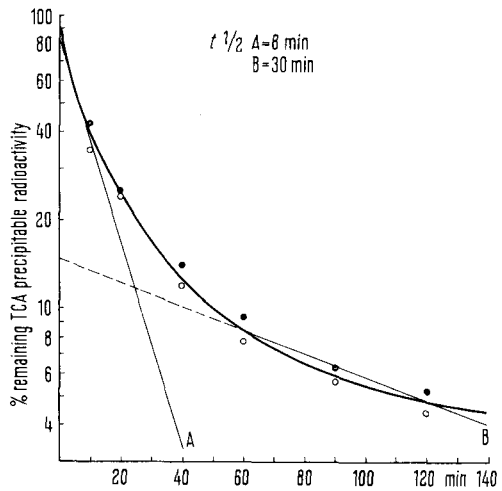
Lack of Transplacental Passage of Growth Hormone in Rabbits

The purification of growth hormone (GH) from pituitary glands[1] and the discovery of a technique for the radioiodine tagging of protein hormones[2], has made possible the development of radioimmunoassays[3,4] sufficiently sensitive to measure the small concentrations of GH in human plasma. Using these methods it was found that plasma concentration of GH in new-born infants was much higher than in the mothers at delivery[5,6], suggesting that human growth hormone (HGH) is not transferred from the mother to the foetus. This was recently confirmed by Gitlin et al.[7] and Laron et al.[8], who injected pregnant women before delivery with either I^{131}-labelled or non-labelled HGH and found no transfer to the umbilical plasma.

Since the studies on women just prior to delivery provided information only as to the final stage of gestation, this study with pregnant rabbits was undertaken in order to determine whether or not GH is transferred through the placenta at earlier stages.

Rabbits in the third week of pregnancy (usual gestation 4 weeks), weighing between 3.8 and 4.0 kg, were given i.v. injections of 20 μc HGH-I^{131}. The blood samples were collected in heparinized tubes at predetermined intervals for 120 min. At this stage the rabbits were sacrificed by torsion of the neck and rapidly dissected. Samples of amniotic fluid were collected and the foetuses, numbering 8 or 9 in each rabbit, were divided into two – head and neck with thyroid and the remainder of the body.

Aliquots of the plasma were counted in a well-type NaI ('T1') scintillation detector, and the proteins were precipitated by a 20% solution of cold trichloroacetic acid (TCA). The values of the TCA-precipitable radioactivity were compared with the injected dose and the ratio was plotted on a semilogarithmic paper against time. Pieces of placenta and the divided foetuses were homogenized



Plasma disappearance of I^{131}-labelled growth hormone in 2 pregnant rabbits.

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in 0.5% bovine albumin solution and centrifuged. The supernatant was treated in the same way as the plasma.

The Figure shows the plasma disappearance curve of radioiodinated HGH in 2 rabbits resolving into 2 single exponential equations, A and B. The rate of disappearance of curve A ($t^1/_2$) is 8 min, whereas that of B is 70 min. It is evident that the biological half-life of HGH is markedly shortened in pregnant rabbits, as compared with the results obtained in experiments with non-pregnant rabbits. This finding was similar to that made in pregnant women[8,9].

No significant TCA-precipitable radioactivity could be detected in the amniotic fluid and supernatants of the homogenized foetuses. This proves that there is no transfer of GH through the placenta in rabbits during gestation. Consequently, any effect which maternal GH may have on the foetus can only be indirect.

Zusammenfassung. Die Plasma-Verschwindungskurve des präzipitierbaren TCA in schwangeren Kaninchen zeigt nach Injektion von radiojodiertem menschlichem Wachstumshormon, dass dieses während der Schwangerschaft eine kürzere Halbwertszeit besitzt ($t^1/_2$). Kaninchen, die 2 h nach i.v. Injektion des Wachstumshormons geopfert wurden, wiesen einen Transfermangel zu den Foeten auf.

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Permanent Culture of an Aphid on a Totally Synthetic Diet

Since an aphid, *Myzus persicae* (Sulzer), was first successfully reared through its larval stages on a synthetic diet[1] the method has been applied to other species with considerable success, notably the pea aphid, *Acyrthosiphon pisum* (Harris), which was reported to go through 3 successive generations although of progressively diminishing size[2,3]. By contrast, *Myzus persicae* failed to produce a viable second generation; in spite of a ten- to twelvefold weight increase during first generation growth, proportionally better than that reported for *A. pisum*, second generation larvae at best sometimes doubled their weight, molted once or twice, and then, with rare exceptions, ceased growing and died[4]. Recently this impasse was broken and we now have a culture currently in its 20th successive generation on synthetic diet.

The changes which first allowed a second generation to be reared were probably twofold: the incorporation of iron in the diet (by the routine inclusion of a small amount of U.S.P. Salt Mixture No. 2, a precautionary modification, following the use of it in pea aphid diet[2]), coupled subsequently with more stringent care in storing diet so as to avoid pre-experimental loss of ascorbic acid[5].

These modifications, though allowing viable second, and sometimes third generations to develop, caused little, if any, improvement in growth during the first generation, which continued, as before, to become adult at weights of about 250 µg for *apterae* and 300 µg for *alatae*. Last summer we tested crude nucleic acid in the diet, and were rewarded with a doubling in the weight of our first-generation adults: *apterae* of 400–500 µg and *alatae* of 500–600 µg – as heavy as in many plant-reared cultures. At the same time it became routinely possible to rear the third generation, but these, though living as adults for many weeks, totally failed to deposit a single fourth generation larva.

Since a mixture of appropriate nucleotides failed to substitute effectively for crude nucleic acids, it seemed probable that we were dealing with active impurities rather than the nucleic acids themselves. That this was so became apparent when a mixture of the trace minerals iron, zinc, manganese and copper was found to be about as effective in growth as the crude nucleic acids. Since

Composition of diet

L-amino acids (mg):		Sucrose (g)		15
Alanine	100	Ascorbic acid	(mg)	100.0
Arginine	270	Thiamin	(mg)	2.5
Asparagine	550	Riboflavin	(mg)	0.5
Aspartic acid	140	Nicotinic acid	(mg)	10.0
Cysteine HCl	40	Pyridoxin	(mg)	2.5
Glutamic acid	140	Folic acid	(mg)	0.5
Glutamine	150	Ca pantothenate	(mg)	5.0
Glycine	80	Inositol	(mg)	50.0
Histidine	80	Choline chloride	(mg)	50.0
Isoleucine	80	Biotin	(mg)	0.1
Leucine	80	KH_2PO_4	(mg)	500
Lysine HCl	120	$MgCl_2 \cdot 6H_2O$	(mg)	200
Methionine	40			
Phenylalanine	40		As sequestrene	As elemental metal
Proline	80			
Serine	80			
Threonine	140	Fe[a]	1.5 mg	230 µg
Tryptophan	80	Zn[a]	0.8 mg	112 µg
Tyrosine	40	Mn[a]	0.8 mg	113 µg
Valine	80	Cu[a]	0.4 mg	65 µg

Water: to 100 ml, adjusted to pH 7.0 with KOH. [a] Provided as metal sequestrenes (Geigy Chemical Co.), the complexes with sodium EDTA.

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