Résumé. La désagrégation des polysomes du foie provoquée par des agents toxiques peut être mise en évidence par polymérisation, après centrifugation, d'un gradient de saccharose auquel des monomères d'acrylamide ont été additionnés. Ce procédé simple et souple donne de bons résultats et exige moins d'instrumentation que les méthodes habituelles.

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Absence of Renin Secretion in the Portal Venous System in Rats

Barnardo et al.[1] reported an unexpected higher plasma renin activity in the portal venous plasma as compared to peripheral venous plasma in patients with various abdominal and liver diseases. The mean difference of 34%, with a range up to three times the peripheral venous level, was considered to indicate an extrarenal site of renin production in the splanchnic area. In dogs[2,3] and rats[4,5] similar differences in renin activity could not be detected. To clarify whether a splanchnic source of renin can be demonstrated in animals without renal renin secretion, studies were performed on nephrectomized rats subjected to acute hemorrhagic hypotension.

Methods. In male and female Wistar rats, ranging in weight from 340 to 500 g (average 392 g), both kidneys were removed under light ether anesthesia. Two to 24 h later urethane anesthesia was induced by i.p. injection of 0.5 ml 25% solution/100 g body weight and a thin heparinized polyethylene tube was inserted into the carotid artery. The catheter allowed sampling of arterial blood and measurement of the blood pressure by connection to a mercury manometer. After opening the abdominal cavity, a canula (No. 12) was passed through a mesentric vein to the hilar part of the portal vein. Avoidance of external blood loss and fixation of the canula could be readily achieved by use of Histacryl®.

After reading the blood pressure, hemorrhagic hypotension was induced by sampling blood simultaneously in heparinized tubes from the carotid artery and the portal vein, serving also for the determination of plasma renin activity. The total blood loss reached 3.5 to 4.5 ml, ranging from 10 to 12 ml/kg body weight, with a decrease in blood pressure of 25.3 $\pm$ 12.2 mm Hg ($n = 17$). Second sampling of blood from either site was performed 60 to 165 min later when the blood pressure had decreased below 30 mm Hg in 4 and between 30 and 50 mm Hg in 10 animals.

Plasma renin activity was determined after dialyzing the plasma against a solution of ethylene-diamintetraacetic acid 0.22% in 0.9% saline for 20 h and then against

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Renin activity in portalvenous and arterial plasma in 18 nephrectomized rats subjected to hemorrhage

Animal No.	Sex	Weight (g)	Time interval between nephrectomy and bleeding (h)	Blood pressure after bleeding (mm Hg)	Time interval between bleeding and blood sampling (h)	Renin activity Portovenous	Arterial
15	♂	345	2	35	1	n.d.[a]	n.d.[a]
16	♀	350	2	not registrated	1	n.d.[a]	n.d.[a]
17	♀	380	2	25	1	n.d.[a]	n.d.[a]
18	♀	340	2	25	1.2	n.d.[a]	n.d.[a]
19	♀	340	2	25	2	n.d.	n.d.
20	♀	340	2	22	1	n.d.	n.d.
21	♀	340	7.5	30	2	n.d.	n.d.
22	♀	380	12	42	1.4	n.d.	n.d.
23	♀	370	18	28	1.45	n.d.	n.d.
25	♀	370	17	85	1.45	n.d.	n.d.
26	♂	400	12	40	1.3	n.d.	n.d.
27	♂	420	8	60	2	n.d.	n.d.
28	♂	410	24	30	1	n.d.	n.d.
29	♂	420	18.5	26	2	++	n.d.
30	♂	420	17.5	32	2	n.d.	n.d.
31	♂	440	24	50	2	n.d.	n.d.
32	♂	490	24	45	2.45	n.d.	n.d.
33	♂	500	24	80	1.30	n.d.	n.d.

[a]Renin activity determined after 1 h incubation time; ++material with a slight depressor effect; n.d. = non detectable.

0.9% saline. The incubation mixture contained 1.0 ml of a pretreated angiotensinase-free plasma pool of nephrectomized animals without pressor or depressor activity. The angiotensinogen concentration in different charges was about 4000 ng angiotensin II-amid equivalent/ml. In the presence of 0.01 ml of 5% di-isopropylfluorophosphate (in isopropanol), 0.3 ml phosphate buffer (0.1 mol, pH 5.5), 0.65 ml 0.9% saline, 0.04 ml neomycin-sulfate 0.5 %and 0.25 to 0.5 ml plasma, the mixture was adjusted to ph 5.5 and incubated at 37 °C for 2 h. Following heat inactivation at ph 5.1, the clear supernatant was bioassayed by pressor response in the nephrectomized, vagotomized, pentolinium-blocked rat as described in details elsewhere[6].

Results. As to be expected, bilateral nephrectomy resulted in a complete disappearance of renin activity in the arterial and portal venous plasma within 2 to 24 h after operation. When these animals were subjected to hemorrhagic hypotension lasting from 60 to 165 min, reappearance of renin in the portal venous or arterial plasma could not be detected (Table). Under the same circumstances, 40 to 65 min after inducing hemorrhage, unnephrectomized animals revealed a threefold increase in the arterial plasma renin activity from 65 $\pm$ 21 ng/ml to 221 $\pm$ 48 ng/ml ($n = 5$) within a one-hour incubation time. According to our findings, the portal system of rats does not liberate renin. This contrasts with published results[7] in which a prevalent increase in renin activity in portal venous blood has been reported in dogs under similar conditions. Whether this difference is due to a species-specific binding of plasmatic renin located in the mesenteric vessel wall[8] which can be liberated by the hypoxic hypotensive state, remains to be established. In non-nephrectomized dogs, a significant increase but no measurable difference in the arterial and portal venous renin level after hemorrhage was reported[8]. So far renin synthetizing structures in the splanchnic area have not been described.

Zusammenfassung. An 2–24 h nephrektomierten männlichen und weiblichen Wistar-Ratten wurden Vergleichsbestimmungen der Renin-Aktivität im arteriellen und portalvenösen Plasma durchgeführt. Die Renin-Aktivität war in beiden Gefässystemen auf nicht messbare Werte abgefallen. Die infolge Blutentzug von 10–12 ml/kg erzielte hämorrhagische Hypotension führte im Zeitraum von 60–165 min nicht zu einem Renin-Aktivitätsanstieg. Die Versuchsresultate ergeben keine Bestätigung, dass Renin in der portalen Strombahn produziert oder freigesetzt wird.

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Stretch Sensitive Intrinsic Autoregulatory Mechanisms for Rhythmicity and Contractility of the Heart

While conducting experiments on isolated frog hearts, the author observed that change in the perfusion pressure consistently produced changes in heart rate. Extensive experiments conducted on various preparations of isolated frog hearts and its individual chamber (Pathak[1–4]) and on isolated dog hearts and isolated atria of dogs, rabbits, ginea-pigs and albino rats (Pathak[5]) demonstrated that distension of various chambers of frog hearts and distension of right atria of mammalian hearts by raising the intraluminal pressure resulted in cardioacceleration in a progressively linear fashion up to a certain critical pressure beyond which either no further acceleration occured or the heart rate started declining. In a given heart, depending upon initial stretch of the pacemaker due to prevalent right atrial pressure in relation to this critical degree of stretch, one could get either acceleration or deceleration or no change in the heart rate, on increasing the distending pressure.

The present communication is based upon further confirmation and extension of these findings using more refined electronic recordings.

Material and method. The activity of isolated frog hearts (*Rana temporaria*) perfused in situ with frog Ringer solution was recorded with a four-channel inkwriting recorder. The recorded parameters included perfusion (venous) pressure, heart rate, arterial pressures (systolic, diastolic and pulse pressure) developed by the isolated heart working against an artificial resistance and cardiac output. The effect of graded increase in venous pressure by raising the perfusion pressure and of graded increase in arterial pressure produced by increasing the artificial resistance, was investigated. Although pressure-tachycardia was observed in a large number of frogs used in various experiments, detailed analysis of this nature was undertaken in 18 hearts. The temperature of laboratory was thermostatically regulated.

Results. Graded increase in venous pressure in steps of 1 cm from 0 to 6 cm of Ringer produced graded increase in the heart rate up to 3 to 4 cm pressure. Further increases in pressure beyond this level either produced no further increase in the heart rate or the heart rate declined (Figure 1) below the plateau level. Graded increases in arterial pressure in steps of 10 mm Hg produced similar changes due to back pressure causing distension of the sinus venosus. The following additional observations were confirmed: 1. The pressure-acceleration response was reversible. 2. For each heart there was a critical pressure up to which both inotropic and chronotropic responses increased simultaneously with the degree of pressure-stretch. The frog hearts worked optimally at about 3 cm Ringer pressure. 3. Hypodynamic hearts could be reactivated and quiescent hearts could be restarted by increasing the distending pressure. Heart beat considerably slowed down or stopped altogether when the pressure was reduced to zero level. 4. Repeated testing with pressures

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