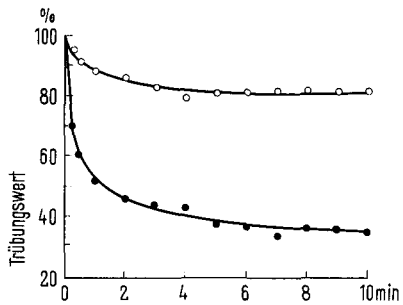

Fig. 1. Einfluss von Papaverin ($10^{-4}M$) auf die durch 5 NIH-E. Thrombin/ml ausgelöste Agglomeration menschlicher Blutplättchen ($0{,}3 \cdot 10^9$ Plättchen/ml) in hitzedefibriniertem Plasma (-o-); Kontrolle ohne Papaverin (-●-). Mittelwerte aus jeweils 5 Einzelbestimmungen.

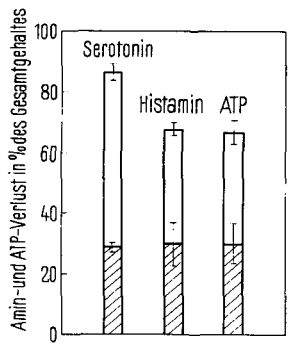

Fig. 2. Freisetzung von Serotonin, Histamin und ATP aus Kaninchenblutplättchen nach 5 min langer Einwirkung von 2 NIH-E. Thrombin/ml in Tyrodelösung pH 7,4 bei 37 °C. Gestrichelte Säulen = Freisetzung nach 30 min langer Vorinkubation mit $10^{-4}M$ Papaverin. Mittelwerte mit Standardabweichung aus jeweils 3–4 Einzelbestimmungen.

durch Papaverin gehemmt. Die Hemmung der geprüften Plättchenfunktionen konnte durch Waschen der Plättchen in papaverinfreier Tyrodelösung aufgehoben werden.

Die zum Vergleich geprüften Derivate des Papaverins, Eupaverin (1-Benzyl-3-äthyl-6, 7-dimethoxyisochinolin) und Äthylpapaverin (6, 7-Diäthoxy-1'-(3', 4'-diäthoxybenzyl)isochinolin), wirkten gleichfalls hemmend auf die untersuchten Plättchenfunktionen, während äquimolare Mengen anderer Opiumalkaloide, wie Morphin, Narkotin und Kodein ohne erkennbaren Einfluss waren.

Summary. The adhesiveness and the ADP-induced aggregation of human blood platelets as well as the agglomeration and viscous metamorphosis initiated by thrombin was inhibited by papaverin. The release of biogenic amines and ATP from rabbit blood platelets induced by thrombin or other proteolytic enzymes was diminished. Also eupaverin and ethylpapaverin have an inhibitory effect on the platelet functions.

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Polyamines and Nucleic Acids in Rat Liver Subjected to Ionizing Radiation

Although we now have a wider knowledge of the distribution, metabolism and biosynthesis of the aliphatic polyamines, spermine and spermidine, the effects exercised by them on biological systems are still little known[1,2]. Recently Moruzzi et al.[3] were able to show a strict relationship between the variation of polyamine content and nucleic acids during chick embryo development. Bertossi et al.[4], using explants of artichokes in vitro, demonstrated that spermine exercises a stimulating action on cellular proliferation. Therefore we have decided to make a parallel study on the behaviour of polyamines and hepatic DNA and RNA in rats subjected to ionizing radiation in which the effects of these latter structures are well known. The research that we report here concerns the effects of radiation after 48 h of pan-irradiation.

Male Wistar rats were used, weighing 160–200 g and maintained on a standard laboratory diet. The X-rays were obtained by means of a Philips apparatus with the following characteristics: 180 kV, 0.5 Cu, focal distance 50 cm. The animals were divided into 3 groups: the first group received for every single exposure a total dose of 800 r (400 r dorsally and 400 r ventrally), the second group was exposed under the same conditions with a total dose of 1000 r (500 r dorsally and 500 r ventrally), while the third group was maintained as control. Each single animal was irradiated after having been placed in a perspex box. After 48 h the animals were sacrificed and the livers removed, frozen and then utilized for the determinations.

The polyamines were isolated by homogenizing the liver on 0.1 *N* HCl and extracting them with *n*-butanol. The butanolic extract evaporated to dryness was dissolved with 0.1 *N* HCl and the polyamines separated by paper electrophoresis as indicated by Raina[5]. The buffer at pH 3.5 contained citric acid-sodium hydroxide, and the voltage was 300 V. Spermine and spermidine stained with amido-black, after elution, were determined by the photometer at 615 nm.

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Effects of X-rays on polyamines, nucleic acids and amino oxidase and catalase activity in rat liver 48 h after irradiation

	Control	Irradiated with 800 r	Δ%	Irradiated with 1000 r	Δ%
Spermine (γ/g fresh tissue)	97 ± 4.2[a]	163 ± 11.2	+ 68	206 ± 19.6	+ 112
Spermidine (γ/g fresh tissue)	84 ± 3.7	120 ± 10.4	+ 43	189 ± 16.9	+ 125
RNA (mg/g fresh tissue)	12.16 ± 0.11	14.18 ± 0.18	+ 17	14.70 ± 0.15	+ 21
DNA (mg/g fresh tissue)	2.64 ± 0.07	2.97 ± 0.08	+ 12	2.86 ± 0.08	+ 9
Amino oxidase (μM NH_3/6 h/mg N)	0.48 ± 0.03	0.47 ± 0.04	–	0.47 ± 0.03	–
Catalase (μM/min/mg protein)	12.00 ± 1.10	9.26 ± 0.98	– 23	9.00 ± 0.91	– 25

[a] Values represent the means ± S.E.M. of 8 animals.

The nucleic acids were evaluated by the spectrophotometer at 260 nm after extraction and separation according to the SCHNEIDER technique[6]. The amino oxidase activity was measured by the ammonia content in CONWAY capsules[7].

The reaction system contained 0.1 N phosphate buffer pH 7.4 and spermine 75 μM; 10% liver homogenate in the buffer solutions centrifuged at 1000 g for 15 min corresponding to 3.4 mg of protein. The final volume was 3 ml.

The ammonia was collected in 0.01 N H_2SO_4 and determined spectrophotometrically by means of the Nessler reaction.

Catalase activity was evaluated spectrophotometrically[8]. The system was composed of 0.05 M phosphate buffer pH 7 and liver homogenate to 0.025% containing 0.2–0.3 mg of proteins. The proteins were determined according to FOLIN and CIOCALTEU[9].

From the results reported in the Table, one can see that the hepatic polyamine content of spermine and spermidine increases considerably in the first 48 h after irradiation, either in the groups that received 800 r or 1000 r; such an increment is higher for those receiving the higher dosage. A smaller increase was observed in RNA, while DNA shows less evident changes.

The values of the 2 enzymatic activities correlated to the polyamine catabolism, i.e. the amino oxidase and catalase, show no modification of the first enzymatic activity (which shows a different behaviour, however, every time there is an increase of the amines), while the second enzymatic activity decreases for both radiation doses given.

The results obtained, and in particular the decrease of catalase activity, lead us to suppose that at least after 48 h the X-rays determine a stimulatory effect of biosynthesis of some constituents rather than a slowing down of metabolic processes.

Riassunto. Un considerevole aumento di spermina e spermidina è stato osservato nel fegato di ratti dopo 48 h dalla pan-irradiazione con dosi totali di raggi X di 800 e di 1000 r. Gli acidi ribonucleici si modificano nello stesso modo, quantunque in misura minore.

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Stability of Erythrocytic Reduced Glutathione and Nicotinadenine Dinucleotide Phosphate in HbE-Thalassaemia Disease

Earlier reports by the present workers have shown a high incidence (30%) of instability of erythrocytic reduced glutathione (GSH) in HbE-thalassaemia disease[1]. This instability could not be explained on the basis of any deficiency in the related enzymes, glucose-6-phosphate dehydrogenase (G-6-PD) and glutathione reductase (GR)[2,3]. It was, therefore, thought worthwhile to investigate the status of nicotinadenine dinucleotide phosphate (NADP) in these subjects[4]. Preliminary results are reported in the present communication.

The series included the following subjects: HbE-thalassaemia disease 11, thalassaemia trait 2, and normal 7. GSH stability test was done according to the technique employed by BEUTLER[5]. Activity of G-6-PD

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