migration[10] or by specific stimulation of phagocytosis. The exact nature of this respective substance is not yet clear but apparently it is not a known immunoglobulin. It is known, however, that this type of substance is present also in supernatant B with distinct migration inhibitory activity[10]. The significance of this substance for the intracellular digestion process of *Mycobacteria* (the proper Mackaness-type of immunity) will be dealt with in another paper.

Zusammenfassung. Es wurde festgestellt, dass die Mediatoren der Überempfindlichkeit des verzögerten Types die Fähigkeit besitzen, die Phagocytose der Mykobakterien durch normale Makrophagen zu unterstützen. Die Wirkung hat sich als immunologisch spezifisch bewiesen.

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A Stimulant Effect of Anti-Macrophage Serum on Antibody Production

During the last decade, evidence has suggested the important role of macrophages in antibody synthesis[1,2]. Recently this essential role of phagocytic cells seems, however, to be somewhat weakened. It was reported that these cells inhibited rather than enhanced the immune response[3–6]. Very recently clear evidence has been presented that both induction of immunity and tolerance occured in vitro in the absence of macrophage[7]. A new possibility to study this problem is the administration of anti-macrophage serum (AMS). Some investigators have found no immunosuppression in mice treated with AMS[8–10]. Others reported impairment of antibody production only under limited conditions[11,12].

In this report we present preliminary data of the enhancing effects of AMS on antibody synthesis of mice immunized with a single large dose of sheep RBC.

AMS was produced in rabbits with peritoneal cells from Swiss donor mice. The lymphocytes were not eliminated from the peritoneal exudate. Rabbits were inoculated twice at 3-week intervals, s.c. with 10^8 cells in complete Freund adjuvant. The animals were bled 1 week after the last injection. The serum was absorbed with spleen cells. Data of agglutinating antibodies in AMS before and after the absorption with spleen cells are presented in Table I. Cytotoxicity of AMS was tested in vitro and in vivo[13,14]. In vitro cytotoxicity titre to macrophages was 1:3670. The in vivo administration of 0.5 ml AMS caused marked change in the cellular content of the peritoneal exudate: the number of viable macrophages was reduced to 7% as compared to control mice treated with normal rabbit serum (NRS).

Table I. Titre of agglutinating antibodies in AMS

	Titre to		
	Macrophages	Lymphocytes	Erythrocytes
AMS	1/2187	1/135	1/5
AMS absorbed with spleen cells	1/729	1/5	0

Effect of AMS on antibody synthesis. Swiss mice weighing 25–30 g were pretreated with 0.5 ml AMS i.p. and 24 h later were immunized with 0.5×10^9 sheep RBC, i.p. AMS treatment was repeated on the 4th day; experiments were made on the 5th day. Antibody formation was assessed by a modification of the Jerne haemolytic plaque technique[15] using agarose and glass microscope slides[16] and the values were expressed as the number of haemolytic plaques/10^6 recovered cells. Each group consisted of 10 mice and average values of 7 parallel determinations were

Table II. Number of haemolytic plaques/per 10^6 spleen cells in mice immunized with 0.5×10^9 sheep RBC

Experiment	Treatment			
	AMS		Saline	
	Mean	±SE	Mean	±SE
1	77.4	13.3	53.6	27.8
2	264.3	68.3	75.2	20.1
3	295.0	69.1	275.0	48.6
4	143.8	25.1	182.8	61.6
5	239.8	34.7	94.6	9.5

AMS was administered 1 day before and 2 days after the immunization. Experiments were made 1 day after the 2nd AMS treatment. Control groups Were administered saline.

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Table III. Variance analysis of data in Table II.

Source of variation	Sum of squares	Degree of freedom	Variance	F-test	
Between treatments	66 710	1	66 710	F[1,40] = 66 710/8 765 = 7.61	$p < 0.01$/
Between days	326 710	4	81 678	F[4.40] = 81 678/8 765 = > 9	$p < 0.005$/
Interaction	63 314	4	15 829	F[4.40] = 15 829/8 765 = < 2	$p > 0.05$/
Within treatments	356 582	40	8 764.5		
Total	813 316	49			

recorded. Results are given in Table II and evaluation with variance analysis in Table III.

Our findings provide strong evidence that the AMS administered 1 day before and 3 days after the inoculation of the antigen, caused a significant increase in the number of haemolytic plaques.

For the time being we cannot explain the mechanism of this adjuvant effect. We may presume that the enhancing effect of AMS is similar to that of endotoxin, i.e. it exerts a toxic effect on macrophages with subsequent damage of the lysosomal membrane[17].

Zusammenfassung. Beitrag zur Frage über den Einfluss des Antimakrophagenserums auf die Antikörpersynthese.

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Effect of Hypophysectomy on Sodium Excretion in Rats without Blood Dilution during Blood Volume Expansion

One of the most controversial problems of the mechanism of homeostatic increase of renal sodium excretion during extracellular fluid volume expansion is the question of the existence of a natriuretic hormone. Those who are inclined to admit its existence suggest that such a hormone could promote an increase of sodium excretion by decreasing sodium reabsorption in the renal tubules and possibly by dilating the renal vascular bed as well (for more detailed information see recent reviews[1–5]). In searching for the source of a natriuretic hormone in the organism, mostly techniques of organectomies have been used. It was found that neither decapitation, nor hepatectomy and nephrectomy (the latter in cross-circulation experiments[6]) substantially influenced natriuresis during extracellular fluid volume expansion with saline[7,8]. However, expansions with saline (or Dextran) in such experiments may have been the cause of a partial increase of sodium excretion by diluting plasma proteins and decreasing haematocrit[9–11]. Such a partial saluretic effect of diluting factors might be mistaken for an effect of a natriuretic hormone of unknown origin as the particular organectomy failed to prevent natriuresis.

On the other hand, electrolytic lesions of the posterior hypothalamus were found to have weakened the saluretic response to the expansion[12,13]; the renal extracts of saluretic dogs induced natriureris in the kidneys of non-expanded animals[14].

The discrepancies in the results of studies on the role of various organs in the mechanism of the 'volume' natriuresis induced us to reexamine the possibility of a cerebral origin of a natriuretic hormone without diluting blood during intravascular expansion.

Materials and methods. 10 male rats of Wistar strain weighing between 250–270 g were anesthetized by Inactin Promonta (100 mg per 100 g of body wt.), 3 mg of Decorton Spofa (desoxycorticosteronum aceticum, solutio oleosa) were injected subsequently i.m., then the trachea was cannulated and hypophysectomy performed through the sphenoid bone in 5 rats – the other group of 5 rats was not hypophysectomized. The surgical preparation was completed by cannulating 1 carotid artery, the jugular vein, femoral artery, femoral vein and urinary bladder with polyethylene catheters. Finally, the animals were heparinized (300 IU of Heparin Spofa i.v. and a continous infusion of Inulin-C^{14} and Vasopressin Sandoz/5 I mU per h/100 g body wt. in 1 ml of saline was started). Plasma from 2 further intact rats was pooled and administered to the experimental animal by means of an isovolemic exchanged infusion[15] in the amount of 33% of the estimated blood volume (plasma was infused into the jugular vein and the equivalent volume of blood was withdrawn from the caro-

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