

reactions and from most of the immune reactions. Even if we consider antiprolan formation *in vivo* as a process of immunization, yet antiprolan is distinguished from the other groups of immune bodies, which have hitherto been known, by the quantitative behavior of its *in vitro* reaction. The absence of the usual serologic reactions of prolan and antiprolan *in vitro* also demonstrates that we are considering a group of immune bodies of an exceptional type.

10319

Progonadotropic Augmentary Immune Sera after Protracted Injection of Hypophyseal Gonadotropic Hormone in Rabbits.

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Collip¹ as well as Thompson² showed that the injection of gonadotropic extracts of the pituitary gland occasionally led to the production of immune sera which augmented the gonadotropic effect of the antigen. Rowlands³ was able to confirm these results. These synergistic sera exert their progonadotropic action exclusively on the gonadotropic extracts of hypophyseal origin (prosydan), not however on hormones derived from pregnancy blood or pregnancy urine (prolan). Thompson, therefore, explains the effect of the progonadotropic sera as acting through the formation of an augmentary factor, which is formed as an antihormone against Evans' antagonist⁴ of the pituitary. The progonadotropic effect is invariably replaced by the anti-gonadotropic effect during the course of the immunization process. It is by no means the rule that the augmentary factor is produced following injection of gonadotropic extracts of hypophyseal origin. Its formation is, as a matter of fact, subject to laws which have hitherto been unknown.

In 14 cases in which we used protracted immunization with gonadotropic extracts from pregnancy blood, pregnant mare's blood, and pregnancy urine we have so far not detected the presence of a

¹ Collip, J. B., *Canad. Med. Assn. J.*, 1937, **36**, 199.

² Thompson, K. W., *PROC. SOC. EXP. BIOL. AND MED.*, 1937, **35**, 640.

³ Rowlands, I. W., *Proc. Roy. Soc. London*, 1938, Ser. B, No. 837, **124**, 492.

⁴ Evans, H. M., Pencharz, R. I., and Simpson, M. E., *Univ. Calif. Publ. Anat.*, 1936, **1**, 237.

progonadotropic serum either in rabbits or in male goats. When, however, we injected 2 rabbits several times with hypophyseal extracts from rats, we found, in one case, a serum which showed a progonadotropic instead of an antigonadotropic effect.

The 2 rabbits had daily been injected subcutaneously with the pituitary glands of 2 rats extracted with 2 cc of distilled water. After 5 months' immunization one of the rabbits showed the progonadotropic effect. The technic of the titration was that indicated by Zondek and Sulman⁵ in prolan A units after 2 hours' incubation of antiserum and hypophyseal extract.

Infantile female rats 3-4 weeks old, weighing 25 to 30 g were given in 3 series of experiments: (1) Aqueous extracts of hypophyseal glands of rats, 4 cc = 1 RU. (2) Increasing quantities of progonadotropic serum. (3) A mixture of extracts of the hypophyseal glands of rats and progonadotropic serum after 2 hours' incubation.

TABLE I.

	Inf. rats	Hypophyseal extr.	Progon. serum	Gonadotropic reaction
		cc RU	cc	
1st series	R 1	0.5 = 0.125	—	—
	R 2	1.0 = 0.25	—	—
	R 3	2.0 = 0.5	—	—
	R 4	3.0 = 0.75	—	—
	R 5	4.0 = 1.0	—	+
2nd series	R 6	—	0.025	—
	R 7	—	0.05	—
	R 8	—	0.1	—
	R 9	—	0.5	—
	R10	—	1.0	—
3rd series	R11	0.5 = 0.125	0.025	+
	R12	0.5 = 0.125	0.05	+
	R13	0.5 = 0.125	0.1	+
	R14	0.5 = 0.125	0.5	+
	R15	0.5 = 0.125	1.0	+

Table I shows the progonadotropic effect. It shows that as small a quantity as 0.025 cc of progonadotropic serum is able to increase the gonadotropic effect of 0.5 cc = 0.125 RU of hypophyseal extract, which amount is below the threshold, so that it equals the effect of 4 cc = 1 RU. Thus the gonadotropic effect of the hypophyseal extract of rats can be multiplied by 8. Control experiments proved that the addition of normal rabbit serum was unable to increase the gonadotropic titer of hypophyseal extracts.

⁵ Zondek, B., and Sulman, F., *Proc. Soc. Exp. Biol. and Med.*, 1937, **36**, 708.

Moreover, the augmentary effect could be obtained exclusively in connection with extracts derived from the pituitaries of rats, not with those of men.

Summary. Following protracted injection in 16 rabbits of gonadotropic hormone derived from different sources we succeeded in one case in producing a progonadotropic serum, after treatment consisting of daily injections for a period of 5 months. 0.025 cc of this serum was able to multiply by 8 the gonadotropic effect of an aqueous extract of rat pituitaries. Control experiments showed that this augmentary effect was specific: it was neither obtained with normal serum acting on extracts of the rat pituitary, nor with progonadotropic serum acting on gonadotropic hormones of a different origin, *viz.*, of human pituitaries.

10320 P

Allergy in *Brucella* Infections.

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Cutaneous hypersensitiveness to specific antigen as a test for *Brucella* infection has been used by several authors.¹⁻¹¹ Unfortunately, the diversity of preparations used as antigen makes correlation of results difficult. As a rule, a positive reaction has been considered as denoting past or present infection.

Recently, the authors¹² published a method for the preparation of

¹ Fleischner, E. C., and Meyer, K. F., *Am. J. Dis. Children*, 1918, **16**, 268.

² Burnet, E. T., *Arch. Inst. Pasteur del Afrique du Nord*, 1922, **2**, 187.

³ Taylor, R. M., Lisbonne, M., and Vidal, L. F., *Mouvement Sanitaire*, 1935, **12**, 51.

⁴ Dubois, Ch., and Sollier, N., *Annals Inst. Pasteur*, 1931, **47**, 311.

⁵ Bastai, P., and Rotta, C., *Policlinico*, 1928, **35**, 393.

⁶ Levin, W., *J. Lab. and Clin. Med.*, 1930, **16**, 275.

⁷ Trenti, E., *Policlinico*, 1925, **32**, 867.

⁸ Mitra, M., *Pediatrics*, 1924, **32**, 721.

⁹ Bua, F., *Minerva Medica*, 1926, **6**, 394.

¹⁰ Giordiano, A. S., *J. Am. Med. Assn.*, 1929, **93**, 1957.

¹¹ Huddleson, I. F., Johnson, H. W., and Hamann, E. E., *Am. J. Public Health*, 1933, **23**, 917.

¹² Morales Otero, P., and Gonzalez, L. M., *Proc. Soc. Exp. Biol. and Med.*, 1938, **38**, 703.