

TABLE I.
Tests for reciprocal immunization of parabionts.

Serum	Absorbed by cells of	First Serum Dilution	Agglutinations of cells of:			
			510H	532B	Pearlneck	Ring dove
510H	—	3	0	4	+4	3
532B	—	3	2	0	±	+
Anti-Pearlneck	Ring dove	180	≡	4	+8	≡
Anti-Ring dove	F ₁ <u>Pearlneck</u> Ring dove	45	4	±	0	+4

Symbols: ≡ = doubtful clumping; ± = very faint trace; + = faint trace. The numbers signify the highest serum dilution (by halves) at which definite agglutination was observed under the microscope (*i. e.*, if 1 = 180; 4 = 1440, and 8 = 23,040).

The reactions with Pearlneck antiserum absorbed by Ring dove cells, and with Ring dove antiserum absorbed by the cells of the hybrid between the 2 species, show that the cells of 532B and 510H were characterized, respectively, by specific Pearlneck and specific Ring dove constituents which were not present in the cells of the co-twin. Further, since the serum from each parabiont agglutinated the cells of both Pearlneck and Ring dove, it would seem that cellular differences were present other than those particular to each of the 2 species.

Summary. Each member of a pair of parabiotic twins developed antibodies against the red cells of the other.

8452 P

Augmentation of Ovary-Stimulating Action of Gonadotropic Preparations.*

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A "prolan-like" substance in the urines and blood sera of different mammals which has little or no action by itself, but which was augmented or "synergized" by the gonadotropic action of an hypophyseal extract has been reported by Evans, Simpson and Austin.¹

* Aided in part by a grant from the National Research Council, Committee on Problems of Sex, administered by F. L. Hisaw.

¹ Evans, H. M., Simpson, M. E., and Austin, P. R., *J. Exp. Med.*, 1933, **58**, 545.

Cole and Hart² and Saunders and Cole³ attributed an analogous activity in the blood sera of pregnant and non-pregnant mares to a "luteinizing" substance resembling that found in the pituitary.

The present paper reports the ability of extracts of liver, thyroid, milk, egg white, and lemon juice, to augment the action of pituitary extracts, and deals with the augmentive interaction of human male urine with various gonad stimulating preparations. Female rats 21 to 22 days old were used as test animals and augmentation was determined by the increased weight of the test rats' ovaries over that of the controls receiving gonadotropic extract alone (Table I).

TABLE I.
Ovarian Weights of Immature Rats Showing Augmentation of Gonadotropic Preparations.

Gonadotropic Extract	Ovary Wt.-Gon. Extr. Alone			Augmenting Extract	Ov. Wt.-Comb. Gon. and Aug. Extr.		
	No. rats	Range mg.	Av. mg.		No. rats	Range mg.	Av. mg.
Unfr.Sh.A.P.	9	16-34	27	Male ur. (200 cc. eq.)	9	81-171	112
" " " "	6	11-13	12	" " "	6	63-135	89
Unfr.Hr.A.P.	3	22-27	26	" " "	3	35-79	57
Sh.-F.S.	8	15-26	22	" " "	8	15-29	23
Sh.-Lut.	5	11-14	13	" " "	5	10-13	12
Sh.A.P.							
(F.S. + Lut.)	5	18-26	21	" " "	5	84-104	91
Preg. Urine	3	35-42	37	" " "	4	32-40	37
Pr. Mare Ser.	3	18-21	20	" " "	4	16-20	18
Unfr.Sh.A.P.	6	11-13	12	Milk (100 cc. eq.)	6	51-124	74
(The same amount of the above A.P. preparation was used in the subsequent combinations.)				Egg white (25 gm. eq.)	3	44-57	51
				Lemon (100 cc. eq.)	3	54-86	67
				Hr. Thyroid (.5 gm.)	3	41-62	54
				Beef Liver (.5 gm.)	5	64-128	91

Unfr.Sh.A.P. = unfractionated sheep anterior pituitary.

Unfr.Hr.A.P. = " horse " "

Sh.-F.S. = follicular stimulating fraction of sheep pituitary.

Sh.-Lut. = luteinizing fraction of sheep pituitary.

Preg. urine = human pregnancy urine.

Pr. Mare Ser. = pregnant mare serum.

The male urine preparation was a tannic acid precipitate subsequently extracted with aqueous pyridine, reprecipitated with acetone, and reextracted with water in a procedure like that described for pregnancy urine by Hellbaum, Fevold and Hisaw.⁴

The male urine preparation produced marked augmentation of

² Cole, H. H., and Hart, G. H., PROC. SOC. EXP. BIOL. AND MED., 1934, **32**, 370.

³ Saunders, F. J., and Cole, H. H., PROC. SOC. EXP. BIOL. AND MED., 1935, **32**, 1477.

⁴ Hellbaum, A. A., Fevold, H. L., and Hisaw, F. L., PROC. SOC. EXP. BIOL. AND MED., 1935, **32**, 1566.

unfractionated pituitary extracts but failed to augment the follicle-stimulating and luteinizing fractions when these were used alone. However, when the 2 fractions were combined, to simulate the unfractionated extract, the augmentive action of male urine was apparent. The action of gonadotropic preparations of extra-pituitary origin, such as urine of pregnant women and blood serum of pregnant mares, is not augmented by the male urine (Table I).†

The milk, egg, liver, thyroid, and lemon extracts were prepared by dehydrating the raw material with excess acetone and extracting the residues with aqueous pyridine. These preparations were combined with unfractionated pituitary extracts only. From 3 to 6 test rats were used to demonstrate the augmenting activity in each preparation, and the results show that the effects of the unfractionated pituitary extract were markedly augmented in each case.

The augmentive action of male urine appears similar to that of extracts from the other sources. Active preparations of male urine are soluble in water, dilute acids and bases, low concentrations of acetone and alcohol, and are precipitated by tannic acid and by high concentrations of alcohol or acetone. These preparations are stable to boiling, but are destroyed by incineration. They are not effective when given orally.

8453 C

Relative Gonadotropic Augmentive Action of Plasma and Formed Elements from Blood of Cattle.*

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That the blood of cattle contains a substance which interacts with certain anterior pituitary extracts in a manner which enhances the ovary-stimulating effect of the latter was shown first by Evans,

† Investigations similar to these reported here, involving augmenting activity from the blood of cattle, have been carried on by Dr. L. E. Casida,⁵ with similar results. Likewise, the blood of pregnant and non-pregnant mares, in their reactions with the various gonadotropic preparations, appear identical with those of the human male urine and blood of cattle (unpublished data).

⁵ Casida, L. E., *J. Dairy Science*, 1935, **18**, 430.

* Paper from the Department of Genetics, Agricultural Experiment Station, University of Wisconsin, No. 197. Published with the approval of the Director of the Station.