proliferation observed may be a prelude to subsequent transformation, possibly tending toward the malignant state, remains to be determined. Also for future study is the nature of the target cell. The present results point to the fibroblast. Whether or not this cell will prove to be the only element in which virus multiplies, it may be emphasized here that the cytopathic changes described were evident only in cells of this description.

Summary. Multiplication of SV_{40} virus has been demonstrated in primary cultures of several human tissues. The virus multiplied without cytopathic effect during the first passage in these systems. In subsequent passages in kidney cell cultures, CPE was noted which included nuclear changes, increased cell proliferation and necrosis.

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Effect of Anterior Pituitary Preparations on Rat Mammary Gland Growth.* (27247)

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A number of anterior pituitary preparations have been shown to stimulate varying degrees of lobule-alveolar mammary gland growth when injected into rats alone and with varying amounts of steroids(1,2,3). Most previous studies on experimental effects of pituitary preparations on mammary gland growth in the rat have relied on visual observation as index of glandular growth. Recent technics employing desoxyribosenucleic acid (DNA) as index of growth provide quantitative, objective measurement of growth observed normally and under experimental conditions(4).

Previous studies(5) have demonstrated mammogenic capacity of various anterior pituitary (AP) preparations in the mouse, using DNA as index of growth. Present report deals with progress in determination of mammogenic effectiveness of crude and purified AP preparations in ovariectomized rats.

Materials and methods. Sprague-Dawley-

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Rolfsmeyer rats with an initial weight of 220-250 g were ovariectomized. Animals killed approximately 35 days post-castration served as controls. Remaining animals were divided into groups receiving 1 μg estradiol benzoate (EB), 1 μg EB plus 3 mg progesterone (P), 1 μg EB plus 4 mg bovine acetone dried AP, 1 μg EB plus 4 mg initial extract (IE)(6), 1 μg EB plus 4 mg initial residue (IR)(5), 1 μg EB plus 1 mg Mammogen "A"(5), 1 μg EB plus 1 mg Mammogen "C" (7), 1 μg EB plus 2 mg lactogenic hormone, 1 μg EB plus 2 mg growth hormone (GH), and 1 μg EB plus 2 mg lactogenic hormone plus 1 mg Mammogen "C". Fractions rich in lactogen and growth hormone were obtained from the Endocrinology Study Section, N.I.H. Mammogen "C" was prepared by stirring one part initial residue(5) twice with fifteen parts (by weight) distilled water at approximately 29°C for 2-3 hours, centrifuging and saving clear supernatants. Supernatants were pooled and made up to 60% by addition of 95% ethanol. After adjusting pH to 12-13 by addition of 2N NaOH, solution was chilled by placing in deep freeze (−10°C) over night. A fine precipitate formed either immediately or on standing thereafter at room temperature for several days. A Whatman No. 50 filter paper over a Buchner funnel was used to recover precipitate, after which it was dried by washing with acetone. Resulting precipitate was crystalline, white, apparently salt-free, and readily soluble in distilled H_2O. EB and P were dissolved in an olive oil carrier in concentrations such that each animal received 0.1 ml oil carrier daily for 19 days. Pituitary preparations were suspended in a water carrier and injected separately from the synergizing dose of 1 μg EB injected daily. Groups were killed one day following last injection, skinned rapidly and 6 abdomino-inguinal glands removed and frozen. DNA was determined as described previously(4). Visual observations were made for presence of lobule-alveolar development but no attempt was made to subjectively quantitate extent of growth by this method.

Results. Injection of 1 μg EB plus 4 mg AP or plus 4 mg IE produced significantly greater total DNA than did injection of EB alone ($P<.01$) although significantly less total DNA than produced by EB plus P ($P<.01$). Injection of EB plus IR, Mammogen "A" or Mammogen "C" failed to increase mean total DNA over that produced by injection of EB alone. Injection of 1 μg EB plus 2 mg lactogenic hormone or 2 mg GH produced only slight increases in mean DNA compared with mean DNA of groups injected with EB alone. EB plus 2 mg lactogenic hormone plus 1 mg Mammogen "C" produced significantly higher DNA than did EB alone ($P<.01$).

Discussion. Previous studies using DNA as index of growth(5) have indicated that IR, Mammogen "A" and Mammogen "C" are effective in production of lobule-alveolar

TABLE I. Effects of Anterior Pituitary Preparations on Rat Mammary Gland Growth.

Treatment	No. of animals	Body wt (g) mean	DFFT* (mg) mean	DNA (μg/mg DFFT)	Total DNA (mg/100 g BW)
Castrate controls	8	282	682	11.6	2.807 ± .22†
EB, 1 μg	12	304	823	13.0	3.523 ± .18†
Idem + P, 3 mg	10	318	1499	15.4	7.009 ± .34†
" + AP, 4 mg	15	291	862	15.8	5.460 ± .26
" + IE, 4 mg	14	276	797	17.3	4.99 ± .29
" + IR, 4 mg	20	289	686	15.7	3.736 ± .27
" + Mammogen "A," 1 mg	15	255	750	12.3	3.629 ± .35
" + Mammogen "C," 1 mg	15	269	647	15.8	3.794 ± .40
" + lactogen, 2 mg	14	291	708	17.5	4.206 ± .24
" + GH, 2 mg	12	320	903	14.3	3.985 ± .21
" + lactogen, 2 mg + Mammogen "C," 1 mg	13	272	801	15.2	4.472 ± .28

* Dry, fat-free tissue.

† Data from(8).

mammary gland growth in mice when injected with EB. Present study illustrates difference between species reactivity to these preparations, in that no significant rat mammary gland dvelopment was found after injection of larger doses of these fractions. That IE produced almost as much growth as AP indicates that mammogenic factors effective in production of lobule-alveolar growth in rats are extracted to a certain extent by methods employed in extracting ACTH, TSH, lactogen, GH, and gonadotropins(6). However, since relatively poor lobule-alveolar growth was obtained when large amounts of lactogen or GH were injected, it would appear methods employed in purification of these hormones only poorly retain mammogenic factors in the fractions being concentrated.

Since a slight increase in significance was noted when Mammogen "C" was added to 2 mg lactogen plus EB, it would appear possible that this fraction may have a synergistic effect in rats.

Summary. Using desoxyribosenucleic acid (DNA) as an index of mammary gland growth, crude and purified anterior pituitary extracts were tested for mammary gland growth promoting (mammogenic) effectiveness. Acetone dried AP powder and an initial extract of AP were shown to be effective in stimulating production of mammary gland DNA. Initial residue, Mammogen "A" and "C", shown previously to produce mammary gland growth in mice, were found to be ineffective in rats. Fractions rich in lactogen and growth hormone were found to be minimally effective in stimulating mammary gland lobule-alveolar growth.

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Sodium and Potassium Content of Rat Heart Muscle Following Nephrectomy.* (27248)

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Several investigators have reported that characteristic necrotic lesions can be found in the cardiac muscle of dogs and rats following bilateral nephrectomy(1-4). Darrow and Miller(5) produced similar lesions by injections of DOCA. These lesions were prevented by KCl, but NaCl caused uncertain effects. Selye(6) found that DOCA produced hyalinized lesions in the heart, but that 2-alpha-methyl-9-alpha chlorocortisol and certain sodium salts produced extensive myocardial necrosis. These lesions were enhanced by phosphates and sulfates, unaffected by chlorides, and inhibited by magnesium and potassium. This potassium-sodium antagonism suggested that analysis of cardiac muscle might reveal a disproportion between these 2 ions after nephrectomy.

Methods. Thirty-six male rats of a Long-Evans strain, weighing between 300 and 400 grams, were divided into 3 equal groups. The

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