known to be active as a synthetic plant growth hormone (*2*). In two separate series of experiments it was found to be effective in reducing the virus concentration of the tissue cultures. The results of one series at 100 mg/l (Table 1) indicate an average ratio of T/C of 0.40. It was noted that the callus produced in the presence of indolebutyric acid (IBA) at 100 mg/l had a cinnamon-buff (Ridgway) appearance similar to that produced by naphthalenacetic acid at 1.0 mg/l. IBA was not tried at higher concentrations than 100 mg/l, but it was found to be similarly effective at 10 mg/l. At both concentrations it was noted that the terminal weight of the treated cultures was significantly higher than that of the control cultures. This would establish the growth-promoting property of IBA in mosaic-infected tobacco tissue cultures.

It is interesting to note that in contrast to naphthalenacetic acid and IBA, phenylacetic acid at 10 and 1.0 mg/l does not change the amount of virus present, although it is known to possess growth-promoting properties (*2*).

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A New Method for Detecting Penicillinase Production by Staphylococci

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Bondi, Spaulding, Smith, and Dietz (*1*) in 1947 described a method for rapid determination of susceptibility of infecting microorganisms to penicillin and other antibiotics. While using this method to study the incidence of penicillin-resistant staphylococcal infection in Farouk I University Hospital,[2] it has been found that it could also be used as a basis for a test to detect whether the strains studied produced penicillinase. Several other methods have been described for this purpose in recent years (*2–9*).

A blood agar plate that has already been dried in the incubator is uniformly streaked with a small loopful (using a loop 1 mm in diam) of a 24-hr broth culture of a known penicillin-sensitive strain of *Staphylococcus aureus*. With fine-pointed forceps sterilized in an alcohol flame, several sterilized filter paper disks (6.5 mm in diam) are individually dipped into a penicillin solution of 15 u/ml and then put on the streaked plate, at least 20 mm apart (after Bondi *et al.* [*1*]). One of the disks, which is given no further treatment, serves as a control, and its position is marked on the back of the plate. On each of the remaining disks a loopful of a 24-hr broth culture of one of the strains to be tested for penicillinase production is carefully placed, with appropriate identification on the back of the plate. In this way several strains are tested on one plate (usually 4 when using the ordinary 9-cm diam plates). A control disk is left in every plate used.

TABLE 1

Disk	Inhibition zone	Penicillinase production
Control	21 mm	
Strain A	Negative	Positive
Strain B	21 mm	Negative

The results are read after aerobic incubation of the plates at 37° C for 24 hr. Table 1 and Fig. 1 illustrate an experiment including one penicillinase-producing strain and one non-penicillinase-producing strain.

A zone of complete inhibition of growth of the streaked strain measuring over 20 mm in diameter is observed around the control disk. It is also present around the disk saturated with a culture of a non-penicillinase-producing strain. This is due to the inhibiting action of the penicillin, which is left intact in both conditions.

The disk saturated with a culture of a penicillinase-producing strain, on the other hand, is surrounded with very little or no inhibition. The streaked strain usually grows right to the disk, but often the growth is less marked in the immediate vicinity. The tested strain sometimes shows, beyond the rim of the disk, a concentric heavy growth which can easily be differentiated from the comparatively light streaked growth (Fig. 1). Presumably this is the result of destruction or inactivation of the penicillin by the enzyme produced by the tested strain.

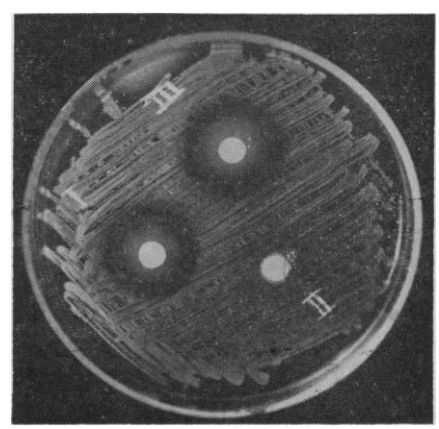

FIG. 1. I, growth inhibition around control disk; II, penicillinase positive test (no growth inhibition); III, penicillinase negative test (growth inhibition as control).

In some experiments, a second control was used by placing a loopful of sterile broth on one disk. But there was no difference between this and the previ-

[1] Thanks are due to M. M. Moussa, who prepared the photograph.

[2] This is the subject of another report.

ously described control, and its use was therefore discontinued.

Forty-four naturally penicillin-resistant strains and 39 penicillin-sensitive strains of coagulase-positive *Staph. aureus*, all of which were isolated from suppurative conditions and from nasal swabs, were tested for penicillinase production by this method. The results were clear-cut and reproducible. All strains of the former group were found positive, and all strains of the latter negative.

In parallel with this method, the same strains were tested by the cup method described by Bondi and Dietz (*3*), with slight modification. The results obtained by the two methods were in complete agreement.

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The Decrease of Albumin Concentration of Human Blood Serum during Heat Inactivation

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Perusal of available literature fails to reveal a record of the consistent decrease of albumin content of human blood serum which occurs during heat inactivation.

In the following study, freshly obtained, undiluted blood serum was heated for 30 min at 56° C. Total protein and albumin concentrations, the latter after separation of globulins by Kingsley's modification of

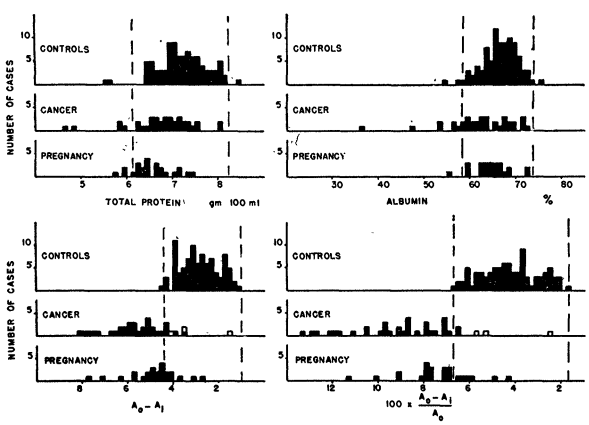

FIG. 1

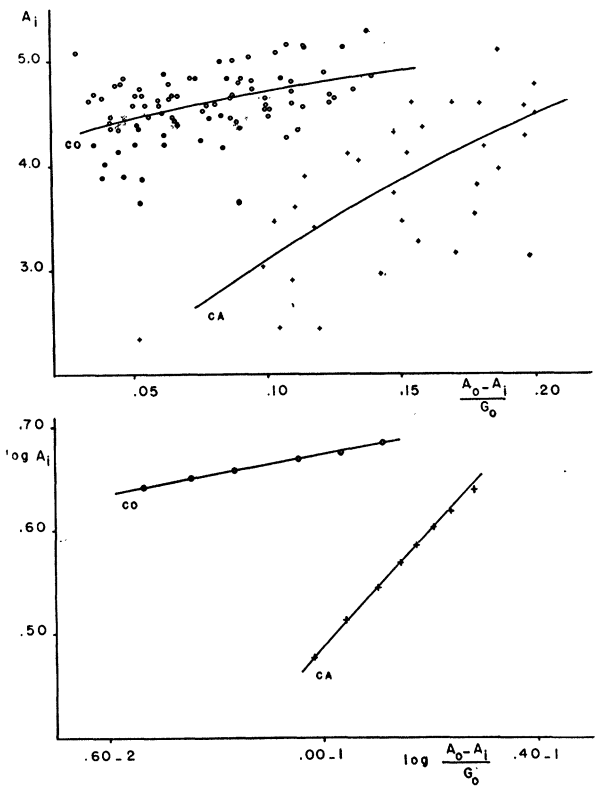

FIG. 2

Howe's procedure using 22.6% sodium sulfate at room temperature (*1*), were determined without delay in samples of the unheated and of the inactivated serum by means of the biuret color reaction (*2*).

The 92 "controls" were predominantly ambulant patients of the Gynecological Clinic. Excluded were patients who had had recent surgery or irradiation, those who were known to have fever, and those known to have a positive serum Wassermann reaction. Grouped separately were 37 cases of cancer involving cancer of the salivary gland, 1; esophagus, 1; stomach, 3; colon, 3; pancreas, 1; vulva, 1; vagina, 1; cervix uteri, 11; endometrium, 5; ovary, 2; breast, 4; skin, 3; and retroperitoneal sarcoma, 1. Also grouped separately were 24 pregnancy cases ranging from 10 weeks to term.

Fig. 1 represents the frequency distribution of total serum protein (mean value of "controls" 7.17 g/100 ml, standard deviation 0.53 g), of the albumin fraction of unheated serum (mean value of "controls" 65.7%, standard deviation 3.8%), and of the difference between the albumin fractions of unheated and of inactivated serum, $A_o - A_i$ (mean value of "controls" 2.75%, standard deviation 0.85%). Since serum albumin concentrations can vary greatly in pathological conditions, the decrease of albumin during inactivation was further expressed as a percentage value of the albumin fraction of unheated serum, 100 $\frac{A_o - A_i}{A_o}$ (mean value of "controls" 4.17%, standard