

Effect of Sodium Salt of Cinnamoyl Glycerol Phosphatidic Acid on Lesions Produced by Tubercle Phosphatide.*

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The phosphatide of the tubercle bacillus isolated by Anderson¹ and shown to be causatively related to proliferation of epithelioid cells and tubercle formation by Sabin² has also been investigated in relation to its antigenic properties (Pinner³). Animals injected with this compound do not develop increased resistance to subsequent inoculation with viable tubercle bacilli (Sabin, *l.c.*).

Earlier communications^{4,5} have pointed out that the cleavage of phosphatide in the mammalian organism is effected by two enzymes, a lecithinase and a phosphatase. The lecithinase liberates fatty acids that inhibit further action of the enzymes, with the result that the phosphatase cannot complete the cleavage of the phosphatide. On these premises search was made for a compound that would require the same enzymes for its breakdown but yield fatty acids that would not inhibit the function of the enzymes. It was postulated that a compound of such type administered in increasing doses might augment activity of the enzymes. This might hasten the breakdown of the tubercle phosphatide and prevent formation or accelerate disappearance of the tubercle that results from the phosphatide.

The sodium salt of the cinnamoyl glycerol phosphatidic acid[†] (SCG) was found to fulfill

the preliminary requirements.

Each of a group of 6 rabbits received 18 intravenous injections of increasing doses of SCG totaling 435 mg. After the first 3 weeks, the individual animals were injected intraperitoneally with 210 mg tubercle phosphatide, when the total quantity of SCG they had received was 57.5 mg. The SCG treatment was continued for 3 weeks. Two months after discontinuance of the tubercle phosphatide injections, the experiment reached the stage when anatomical and histological study was desired.

Six rabbits of the same stock and of similar weight were used as controls. Each was injected intraperitoneally with 210 mg tubercle phosphatide and allowed to survive for the same time period as the previous group.

Results. Preparations of the omenta of 5 of the 6 rabbits injected with tubercle phosphatide only (control group) showed large proliferative nodules with central caseous necrosis surrounded by epithelioid cells, giant cells and fibrous tissue. The entire omenta were the seat of considerable fibrosis and also of a more diffuse cellular infiltration. The sixth rabbit of this group showed moderate diffuse fibrosis of its omentum and only mild mononuclear cell infiltration.

Three of the 6 rabbits receiving both the SCG compound and the tubercle phosphatide presented essentially normal omenta. The reaction in the other 3 was characterized by slight diffuse fibrosis throughout the omenta and small foci of epithelioid, lymphocytic and giant cell infiltration. A few small entirely proliferative nodules were also observed. Except for one nodule in one omentum containing a few disintegrated cells, no necrosis was found.

These results suggest that the SCG renders animals capable of disposing of tubercle phosphatide. There is little evidence of tissue damage, the proliferative response is definitely diminished and necrosis in this new formed tissue is very slight.

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¹ Anderson, R. J., *J. Biol. Chem.*, 1927, **74**, 525.

² Sabin, F. R., Doan, C. A., and Forkner, C. E., *J. Exp. Med.*, 1930, **52**, Suppl. 3.

³ Pinner, M., (a) *Am. Rev. Tuberc.*, 1928, **18**, 493; (b) *Beitr. Klin. Tuberk.*, 1930, **73**, 784.

⁴ Gerstl, B., and Tennant, R., *Yale J. Biol. and Med.*, 1941, **14**, 29.

⁵ Gerstl, B., and Tennant, R., *Am. Rev. Tuberc.*, 1942, **46**, 600.

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