

ERRATUM

In Article 7013, entitled Skin Changes after Subcutaneous Injection of Epinephrine, reference No. 8 should read: Luckhardt, A. B., and Koppányi, T., *Am. J. Physiol.*, 1927, **81**, 436.

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Possible Prophylactic Value of Bacteriophage Lysed Staphylococcus Cultures in Recurrent Skin Boils in Horses.

E. W. SCHULTZ AND L. P. GEBHARDT.

From the Department of Bacteriology and Experimental Pathology, Stanford University.

Recurrent skin boils in saddle horses may present something of a problem. In March, 1932, the Department of Military Science and Tactics of Stanford University requested assistance in checking the spread of cutaneous boils among about 70 saddle horses. Twenty-one horses had already become badly infected. The use of autogenous staphylococcus vaccines and the usual sanitary precautions had failed to keep the disease in check, three-fourths of the horses having become affected. Aerobic and anaerobic cultures of sterilely procured material from the lesions of several of the horses indicated that *Staphylococcus aureus* might be the responsible agent. The Preisz-Nocard bacillus was not isolated. The organisms cultured from the lesions proving bacteriophage susceptible, a quantity of lysate was prepared for prophylactic injections. The 21 horses already infected were given 3 injections of 10 cc. each of the

* P represents a preliminary, C a complete manuscript.

undiluted lysate by the subcutaneous route within a period of 12 days. The remaining 50 horses were given 2 such injections. The lesions in the horses already infected regressed very rapidly so that by the tenth day following the first injection all of the horses were apparently entirely free of boils. A few weeks later one of the inoculated horses developed 2 small boils, but with this exception all of the horses have remained free of boils for more than a year.

In view of the fact that staphylococcus vaccines and other prophylactic measures failed, it would appear that the injections of staphylococcus lysate were directly responsible for the improvement which followed. The condition among these horses subsided too rapidly to be satisfactorily accounted for on other grounds. It appears quite unlikely, however, that such a rôle as the lysate may have played in checking the disease is attributable to a direct lytic or sensitizing action of bacteriophage on the organisms in the lesions, since the lysate was not injected directly into the individual lesions, and probably could not have reached the more distant lesions in a concentration sufficiently high to effect a lytic or sensitizing action on the organisms present in the lesions. It is possible, however, that the results may be attributable to a superior antigenic quality of bacteriophage lysed, as against intact but killed staphylococci used as a vaccine, such lysed cultures containing in addition to bacteriophage, a certain residue of dispersed staphylococcus proteins, as well as certain toxic products of microbic growth, against both of which the body may have to react in establishing an effective immunity. Larkum¹ has recently reported experimental observations which indicate that staphylococcus bacteriophage antigenically behaves like a toxoid, stimulating the formation in animals of an antiserum endowed with antitoxic action for staphylococcus toxins. It seems quite unlikely that the results observed by us are attributable in any important degree to so-called non-specific protein action, since the condition among the horses not only cleared up quickly but permanently.

The observations on these horses, together with the results which have been obtained with lysates in furunculosis in man,² satisfy us that whatever the precise mode of action of these lysates may be when injected into the animal body, bacteriophage lysed staphylococcus cultures possess definite virtues in the treatment and prevention of certain pyogenic infections of the skin.

¹ Larkum, N. W., *Proc. Soc. Exp. Biol. and Med.*, 1933, **30**, 1395.

² Schultz, E. W., *California and Western Medicine*, 1933, **37**, No. 1.