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Modified Live Virus
Hog Cholera Vaccine—M.L.V.

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During the past several months great interest has been shown, especially by veterinarians and swine growers, in the new modified live-virus vaccines for use in vaccination of swine against hog cholera. These vaccines have been given wide publicity through articles appearing in newspapers, farm journals and veterinary publications. Some of these articles have been misleading and tend to create a false impression by seeming to imply that all modified live-virus vaccines are alike or that there is but one such vaccine.

All modified live-virus vaccines now approved for sale are similar in that modification in virulence of the virus used in their preparation is accomplished by passage through other than the natural host. They are similar also in that all are vacuum-dried and vacuum-sealed. However, they differ widely in techniques of modification and production.

The modified live-virus hog-cholera vaccine now produced by the Fort Dodge Laboratories, Inc. under the trade name of M.L.V. was the first modified live-virus vaccine to be licensed for general use and is the only one of porcine origin to date. It was developed from a strain of hog cholera virus which had been successfully modified in virulence by Dr. James A. Baker in work at Rockefeller Institute, through use of the technique of serial passage in rabbits. This strain of virus previously had been successfully grown in eggs, but without attenuation of virulence, by TenBroeck of Rockefeller Institute through addition of minced swine testicle to the inoculum. The virus also has been grown in tissue culture, with swine tissue as the source of living cells, by Hecke, TenBroeck and Boynton.

Following Baker’s successful attenuation of this virus, designated by him as “Strain A,” this project was taken up by Fort Dodge Laboratories for the purpose of adapting Baker’s method of attenuation to production of a vaccine for general use in hog cholera control.

It was known that passage in rabbits did not materially alter the antigenic properties of the virus, but did modify the virulence to the extent that the virus no longer was capable of producing hog cholera when injected into susceptible pigs. Therefore, it seemed logical to assume that a single-injection vaccine could be developed by this method which would be safe for use in routine vaccination of swine against hog cholera. It was soon discovered, however, that, while such a single-injection vaccine could be used safely and satisfactorily under ideal conditions and circumstances, its use under less favorable conditions was frequently attended by undesirable results. Many situations encountered during the vaccinating season are far from ideal and it is practically impossible to determine accurately to what extent vaccination results might be adversely affected under such conditions.

It has been shown that anti-hog cholera serum, in sufficient amounts, is always

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safe and usually is highly beneficial when used in such situations.

In order to be able to cope with conditions such as occur when there is doubt as to the state of health and nutrition of the swine to be vaccinated, or when there is possibility of exposure to hog cholera before immunity can be established, it seemed desirable to develop a vaccination procedure in which modified live virus would be used with anti-hog cholera serum.

During development of this idea it was demonstrated that a modified live-virus vaccine, produced from swine tissues rather than rabbit tissues, could be used simultaneously with varying amounts of anti-hog cholera serum without antagonistic action by the serum. Therefore, M.L.V. was developed as a rabbit-modified, swine-propagated vaccine for simultaneous use in vaccination of healthy swine in a 2 cc. dose together with such amounts of anti-hog cholera serum as the existing situation seemed to require. Fort Dodge Laboratories has been granted a patent on this product.

By this simultaneous method of vaccination, immediate protection against hog cholera is provided during the time between vaccination and the establishment of active immunity.

This immediate protection was demonstrated by the administration of virulent hog cholera virus to various groups of pigs at hourly intervals on the first day and, subsequently, at daily intervals through the 14th day after vaccination with M.L.V. and 15 cc. doses of serum. All groups were resistant to the virus challenge. It was further demonstrated that a full prophylactic dose of serum, such as would be indicated with virulent virus, could be used with M.L.V. when it became necessary or desirable to vaccinate susceptible swine which had undergone exposure to other infections in sales-barns or public stockyards.

Practicality of the simultaneous use of M.L.V. and anti-hog cholera serum was demonstrated by virus challenge of at least three individuals from each herd at market weight. About one-third of the pigs in this experiment were around 5 to 7 weeks of age at the time of vaccination and were still nursing. No appreciable difference could be demonstrated between their resistance to challenge and that of pigs that were weaned before vaccination. General field use of M.L.V. on young unweaned pigs has further proved the practicality of such procedure.

This practice is in accord with official recommendations for vaccination of young pigs before they are weaned as a possible means of avoiding some of the undesirable conditions which sometimes develop following vaccination of older swine.

M.L.V. is a vacuum-dried and vacuum-sealed product, and must be restored to liquid form by adding the diluent which accompanies each package. Care should be taken to prevent contamination during this process. The restored vaccine should be kept refrigerated and used within 24 hours following restoration.

M.L.V. is recommended in a 2 cc. dose with a 15 cc. dose of anti-hog cholera serum in vaccination of healthy swine. Larger doses of serum may be used in any situation where, in the judgement of the veterinarian, more serum seems to be indicated. The function of the serum is to confer immediate protection against hog cholera and increased resistance to many secondary diseases. Therefore, larger doses of serum always should be used with M.L.V. in vaccination of swine with unknown history, those which may have been exposed in hog cholera or other disease, and those which will be subjected to such exposure soon after vaccination.

Over a million doses of M.L.V. have now been used by practicing veterinarians throughout the country and reports from them indicate universal satisfaction where the product was used as directed. M.L.V. and serum may be used in any situation where virulent virus and serum can be used and with little danger of adding to any existing disease or disturbance. However, best results can be expected only when the swine are healthy and in proper condition for vaccination.

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