

Guest Editorial
Historical Note
on the Origin of the LaSota Strain
of Newcastle Disease Virus

Tevis M. Goldhaft
2245 East Landis Avenue
Vineland, New Jersey 08360

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It has been more than thirty years since live-virus Newcastle disease vaccines were introduced for use in poultry production. One aspect of the situation has never been reported: the complete history of the LaSota strain of vaccine virus, now used throughout the world. The writer is the last person alive who had intimate knowledge of the situation; the others were Dr. Fred R. Beaudette, Dr. Arthur D. Goldhaft, Dr. Nathan E. Wernicoff, and Charles B. Hudson.

In 1975, Dr. Stephen B. Hitchner (4) published a paper on the discovery of the B1 strain of Newcastle disease virus. I then wrote to him about some of his statements and assumptions. I tried to provide him with background information on the other side of the coin, i.e., some of the attitudes, statements, and action of Dr. F. Beaudette.

I had worked closely with Dr. Beaudette and his assistant Charles Hudson from 1932 until both of their deaths. Our company, Vineland Poultry Laboratories, was the first to produce laryngo-tracheitis vaccine, developed by Beaudette and Hudson in 1932 (1). We held an agreement with the New Jersey Agricultural Experiment Station under which we paid royalties on sale of the product and in return were able to utilize Beaudette and Hudson as consultants on and overseers of the product we manufactured and sold.

When the respiratory and nervous disorder was determined to be Newcastle disease, many researchers began a search for virus strains that would be adaptable for live-virus vaccine production. Killed vaccines, on the market in a variety of forms, were of inadequate effectiveness.

Dr. Beaudette screened 105 strains of Newcastle disease virus (3) and had determined that the Roakin strain offered the best

hope of being an effective immunizing product with least potential danger to the animal. In the late spring of 1948 our company introduced the first Roakin-strain live-virus Newcastle disease vaccine. Simultaneously, Lederle Laboratories Division of the American Cyanamid Corporation introduced a similar product based on a strain from Dr. Van Roekel in Massachusetts. Both products were administered by the wing-web method, and demand for them was often greater than the productive capacity of the two companies at that time.

Both products were for use on birds no less than four weeks old. Dr. Beaudette was adamant that earlier vaccination would produce poor immunity, and, further, that parental immunity would seriously interfere with the production and quality of the resultant immunity. In any case, there was considerable evidence that both the Roakin and Van Roekel strains would result in deaths and paralysis if administered to birds under 4 weeks old.

In 1948, Hitchner and Johnson (5) reported on a Newcastle disease strain of low virulence for immunizing fowls against Newcastle disease. Dr. Hitchner had requested some strains of various viruses from Dr. Beaudette, and one of them, labeled bronchitis virus, turned out to be a Newcastle disease virus, known today as the B1 strain. Those who remember that period will recall that Dr. Beaudette was firm in his conviction that no error had been made in his laboratory and that any Newcastle disease virus found had to have come from errors or contamination in the recipient's laboratory.

To complicate the matter further, Dr. Hitchner recommended that his newly discovered low-virulence virus be applied intranasally at one day of age.

Dr. Beaudette repeatedly took the position that early vaccination was fraught with problems mainly because of the existence of parental immunity. He frequently advised users of the B1 vaccine to revaccinate with wing-web vaccines.

Our company was small at that time, an extension of a practice of four veterinarians in partnership. We were making fowl pox, pigeon pox, laryngotracheitis, and Newcastle disease vaccines and pullorum disease stained antigens. We also did vaccination of poultry, consultation on poultry disease problems, and some large- and small-animal work.

Introduction of the B1-strain vaccines by a variety of manufacturers began to affect our company seriously. When a company sold its lead product, which was then Newcastle vaccine, the buyers

would usually also buy from the same manufacturer the other vaccines they planned to use.

Because we were in the field every day vaccinating flocks in the South Jersey area, we soon realized that poultrymen could not wait until their birds were four weeks old to use the Roakin-strain product. We were constantly using and testing the B1 products of other manufacturers in the laboratory and in the field. We recognized its virtues and its faults. It was not pride and our association with Dr. Beaudette that prevented us from adding the B1 product to our line. He was willing to proceed with us in any manner that would have been to our benefit. The major problem, as we saw it, was the time and method of application of the B1 product in the field. Much of the application was very haphazard, and the products were taking the blame when later outbreaks of Newcastle occurred.

We felt that application of a vaccine intramuscularly would eliminate many of the field problems that were occurring. We repeatedly tried the B1 products intramuscularly, with poor results. It was soon obvious that that strain was not going to work by that method.

Our group sent me to discuss this matter with Dr. Beaudette. I asked him if he had any strains of low-virulence virus that might be effective if applied intramuscularly.

He jumped at my suggestion and said he would review his records to see what he could find that might be usable. Several months later, he gave us three strains that he thought might have some possibilities. We immediately produced material from each of the strains for laboratory and field testing. About 9 months later I went back to Dr. Beaudette with all of our test data. There was no question in our minds that one of them was far superior to the other two. He showed me his data, which brought him to the same conclusion. The strain was identified by its case number 21717. Some time later we learned that the strain had been isolated from the farm of Adam LaSota in Westwood, Bergen County, New Jersey. He had submitted chicks for postmortem examination on February 6, 1946, and Newcastle disease virus was isolated from the specimens and identified on 22 February 1946.

When we had completed our work with the strain, we submitted the data to the USDA and were ultimately issued a license to produce a live-virus vaccine to be applied intramuscularly. We identified the strain on the packaging not by the farmer's name but by a combination of our trade name (Vineland Poultry Laboratories, contracted to VIPOL) and the last three digits — 717 —

of Dr. Beaudette's case number. We promoted the product to be used intramuscularly on chicks two weeks old or more. Simultaneously, we developed a simple but effective automatic syringe capable of delivering 0.2 ml of our mixed VIPOL 717 vaccine.

Right from the beginning we recognized that the strain could be used intranasally, ocularly, and in the drinking water as well as intramuscularly. Because it had good spreading potential, we felt that any birds missed in initial application of the product had the potential of being exposed during the period of spread. We felt that this gave us a material advantage over the producers of the B1 products.

Some time later, other vaccine manufacturers began to produce lentogenic vaccines, which we were sure were made by using our product as their seed virus. That resulted in many different identifying names, and the USDA instituted the phrase B1 type to identify products made from lentogenic strains that were not specifically the B1 strain. Since that USDA requirement included our company, the VIPOL 717 trade name became extraneous, and we decided to use the strain name LaSota since Dr. Beaudette had named all of his strains of various viruses for the farmer on whose property they were isolated. Some years later we presented a commemorative plaque to Adam LaSota's son after the first billion doses of LaSota strain Newcastle disease vaccine had been manufactured.

In Dr. Beaudette's original screening of 105 strains of Newcastle disease virus (3) he narrowed down his final choice for a vaccine strain to five strains. In that group of five, one was Roakin and another was LaSota. Part of his test procedure was to inject 50 chicks (free of parental immunity) with each strain being tested. In the ensuing 18-day period one chick died in the Roakin group and 2 in the LaSota. The losses in the other three groups were considerably higher. With the pressure on him to come up with a vaccine strain, he selected Roakin and so advised the USDA. In 1950, when we settled on the LaSota strain, Dr. Beaudette said to me, "The world of Newcastle disease vaccination would have been different if those 2 chicks had not died on my preliminary screening of the LaSota virus."

Obviously, if those 2 chicks had not died he would have selected it and there never would have been a Roakin strain, and it also might have prevented the Hitchner-Beaudette confrontation that ultimately occurred.

In advance of preparing this report, I asked Dr. David Tudor for a copy of case report 21717 from the records of the New Jersey

Agricultural Experiment Station. It is dated 6 February 1946. The case was handled by Charles B. Hudson, and the owner brought in 8 dead red chickens less than two weeks old. On postmortem the specimens showed fibrinous plugs in the bronchi and some exudate in the air sacs. Four spleens were saved for egg inoculation, 1 of which was positive for Newcastle disease. Other documents I have on hand indicate that the virus was identified and confirmed on 22 February 1946. Diagnosis on the basis of the postmortem symptoms was infectious bronchitis in all eight chicks. To my knowledge, no one other than myself is aware that it was from that isolation that the LaSota strain virus for vaccine production was developed. In the production of vaccines for field use we used 8th-passage material as seed virus.

Before his death, Dr. Beaudette repeatedly said to me that he was proud that Roakin, B1, and LaSota strains (the only ones in use at that time for vaccine production) had all come from his laboratory and that he had isolated them. His last publication (2) in 1956, was an admission that he had misdiagnosed certain of his isolations and had identified them as infectious bronchitis when they were really Newcastle disease viruses. What he did was to go back and redo all of the early isolations that his records carried as infectious bronchitis. To his surprise, some of them turned out to be Newcastle disease viruses. Thus, his final paper reported that Newcastle disease was prevalent long before it was found in California by Dr. Beach and his co-workers.

What it also reveals was that the strain of virus he sent to Dr. Hitchner was mislabeled. He apparently could not bring himself to make that statement directly. It is my understanding that the designation B1 was Dr. Hitchner's way of identifying the presumed infectious bronchitis strain received from Dr. Beaudette.

When Dr. Beaudette said that all three of the vaccine strains had been isolated in his laboratory he was technically correct. Only one of them, Roakin, was developed by him as a vaccine.

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