

# EXPOSURE TO POLIO VACCINE THROUGH AERIAL VACCINES AND NANO GENE DELIVERY SYSTEMS

by Hildegard Staninger, Ph.D., RIET-1, Industrial Toxicologist/IH & Doctor of Integrative Medicine. Integrative Health Systems, LLC, 415 3/4<sup>th</sup> N. Larchmont Blvd., Los Angeles, CA 90004 Tel: 323-466-2599 Fax: 323-466-2774 © Sept. 9, 2009

Presented at the NREP 2009 Virtual Conference, Des Plaines, IL, Oct. 5 & 6, 2009

**ABSTRACT:** The use of adenoviral protein envelopes as specific immunization and nano gene delivery systems has been observed in an individual, who was never vaccinated for polio or had parents who were vaccinated. A 1:128 Tier I, II, and III titer was observed through clinical testing of a female after exposure to aerial spraying for West Nile Virus in Anaheim, CA, during the spring of 2009. Use of PCR analysis showed positive protein band readings for KD-45 (Simian Green Monkey polio virus-40) as associated in the original cancer research findings of former leading American Cancer Institute's researcher, Dr. Mary Sherman in the 1950's. Amendments to the Chemical and Biological Warfare Act of 1949 in December 2007, state that under terrorist and riot control measures mass aerial immunizations may occur. Many of the new biological pesticides are made from various bio-nanotechnology materials that utilize the same technologies used in nasal vaccine technology.

## HISTORICAL PROSPECTIVE OF AERIAL SPRAYING

The use of aerial manned and unmanned vehicles for the aerial spraying under State and Federal mandates for vector control began under the Geneva Act for Chemical and Biological Weapons in 1949. Over the years since its inception many amendments to this act and US parallel acts such as the Patriot Act of 2001, Space Preservation Act of 2001 and Weather Modification Research and Technology Act of 2005<sup>1,2,3,4</sup> have included the following implementations under terrorist and riot control for aerial spraying of the mass population in selective city locations:

- Weather Modification.
- Vector Control (insects, virus, and other similar vectors).
- Mass Inoculations of the Public.

The Defense Sciences Office of the Pathogen Countermeasures Program<sup>5</sup>, in September 23, 1998 funded the University of Michigan's<sup>7</sup> principal investigator, Dr. James Baker, Jr. Dr. Baker, Director of Michigan Nanotechnology Institute for Medicine and Biological Sciences under several DARPA grants. Dr. Baker developed and focused on preventing pathogens from entering the human body, which is a major goal in the development of counter measures to Biological Warfare. This research project sought to develop a composite material that will serve as a pathogen avoidance barrier and post-exposure therapeutic agent to be applied in a topical manner to the skin and mucous membranes. The composite is modeled after the immune system in that it involves redundant, non-specific and specific forms of pathogen defense and inactivation. This composite material is now utilized in many nasal vaccines and vector control through the use of hydro-gel, nanosilicon gels and actuator materials in vaccines.<sup>6</sup>

Through Dr. Baker's research at the University of Michigan; he developed dendritic polymers and their application to medical and biological science. He co-developed a new vector system for gene transfer using synthetic polymers. These studies have produced striking results and have the potential to change the basis of gene transfer therapy. Dendrimers are nanometer-sized water soluble polymers that can conjugate to peptides or carbohydrates to act as decoy molecules to inhibit the binding of toxins and viruses to cells. They can act also as complex and stabilize genetic material for prolonged periods of time, as in a "time released or delayed gene transfer". Through Dr. Baker's ground breaking research many pharmaceutical and biological pesticide manufacturers can use these principles in DNA vaccines specific applications that incorporate the Simian Monkey Virus SV40.

It is important to realize that under these acts and the current testing for pathogen countermeasures the general public may be exposed to these countermeasures without written permission for USDA Vector Control, Domestic Preparedness and Weapons of Mass Destruction counter measures.

## **WEST NILE VIRUS AERIAL SPRAYING**

In 2006 Michael Greenwood wrote an article for the Yale School of Public Health entitled, "Aerial Spraying Effectively Reduces Incidence of West Nile Virus (WNV) in Humans."<sup>8</sup> The article stated that the incidence of human West Nile virus cases can be significantly reduced through large scale aerial spraying that targets adult mosquitoes, according to research by the Yale School of Public Health and the California Department of Public Health. The studies project's lead researcher, Ryan M. Carney, an M.P.H/M.B.A. student at Yale, examined infection rates in humans before and after planes applied an insecticide over two areas of Sacramento County, California. The infection rate of people within the treated areas decreased significantly after spraying, compared to that within areas of the county that were not treated. (See Figure 1-1)

West Nile virus is transmitted to humans through the bite of an infected female mosquito and can lead to severe fever, encephalitis, paralysis and even death. The disease spread throughout all 58 counties of California in 2004, and Sacramento County was the area hardest hit in the United States in 2005. The disease has appeared in all of the lower 48 states, with varying levels of intensity.

Over a period of several nights in the summer of 2005, two regions of the county measuring hundreds of square kilometers each were subjected to aerial spraying with the pyrethrin-based insecticide, EverGreen Crop Protection EC 60-6. It was the first time in state history that aerial insecticides had been applied over a large urban setting and that results were available from such well-defined application areas.

The two target areas had a combined population of 560,407 people. Prior to treatment there were 48 documented cases of human infection from West Nile virus. The infection level fell to seven people following treatment with the insecticide and to zero post incubation (14 days after treatment). In contrast, the surrounding untreated areas (which had a combined population of 518,566 people) had 41 documented cases prior to treatment and 35 cases after spraying was completed in the treated areas. The researchers concluded that the risk of infection in the untreated areas was approximately six times higher than it was in the treated areas after spraying.

The Sacramento-Yolo Mosquito and Vector Control District and California health officials decided to spray the two areas amidst a growing public health crisis in 2005 that had already resulted in several deaths statewide.

Another example of aerial spraying for vectors has been in Liverpool, Ohio where they sprayed on August 27, 2008 for rabies vaccinations. The Ohio Department of Health announced the aerial baiting for the local vaccination of the raccoon population would cover 3,871 square miles along the northeastern and eastern borders of the state. Participants in the operation included the Ohio Department of Health, the Ohio Department of Natural Resources and the U.S. Department of Agriculture Animal and Plant Health Inspection Services, Wildlife Services program and local health departments.<sup>9</sup>

Under the mandate for aerial spraying for specific vectors that pose a threat to human health, aerial vaccines known as DNA Vaccine Enhancements and Recombinant Vaccine against WNV<sup>10</sup> may be tested or used to “protect” the people from vector infection exposures. DNA vaccine enhancements specifically use Epstein-Barr viral capsid’s with multi human complement class II activators to neutralize antibodies. The recombinant vaccines against WNV use Rabbit Beta-globulin or the poly (A) signal of the SV40 virus. In early studies of DNA vaccines it was found that the negative result studies would go into the category of future developmental research projects in gene therapy.<sup>11</sup> During the studies of poly (A) signaling of the SV40 for WNV vaccines, it was observed that WNV will lie dormant in individuals who were exposed to chicken pox, thus upon exposure to WNV aerial vaccines the potential for the release of chicken pox virus would cause a greater risk to having adult onset Shingles.<sup>12, 13</sup>

### **CALIFORNIA AERIAL SPRAYING for WNV and SV40**

In February 2009 to present date, aerial spraying for the WNV occurred in major cities within the State of California. During spraying of Anaheim, CA a Caucasian female (age 50) was exposed to heavy spraying, while doing her daily exercise of walking several miles. Heavy helicopter activity occurred for several days in this area. After spraying, she experienced light headedness, nausea, muscle aches and increased low back pain. She was evaluated for toxicological mechanisms that were associated with pesticide exposure due to aerial spraying utilizing advanced biological monitoring testing. The test results which included protein band testing utilizing Protein Coupled Response (PCR) methods were positive for KD-45. KD-45 is the protein band for SV-40 Simian Green Monkey virus. Additional tests were performed for Epstein-Barr virus capsid and Cytomeglia virus which are used in bioengineering for gene delivery systems through viral protein envelope and adenoviral protein envelope

technology. The individual was positive for both; indicating a highly probable exposure to a DNA vaccination delivery system through nasal inhalation.

**SV40** is an abbreviation for **Simian vacuolating virus 40** or *Simian virus 40*, a polyomavirus that is found in both monkeys and humans. Like other polyomaviruses, SV40 is a DNA virus that has the potential to cause tumors, but most often persists as a latent infection. The SV40 virus was found as a contaminant in polio vaccines in the late 1950's.

The medical history of the individual revealed that she never had a polio vaccine and neither did both of her biological parents. Test for Tier I, II and III polio vaccination was performed on the individual and the results were a 1:128 titer for each tier. These results indicated that the individual had a recent vaccination for polio.

### **THE CREATION AND PRODUCTION OF POLIO VACCINE: Type I, II, and III**

In the 1950s, scientists like Doctors Jonas Salk and Albert Sabin had isolated the poliovirus strains to make vaccines.<sup>14</sup> Dr. Salk's strains would be inactivated with formaldehyde and injected into children. Dr. Sabin's strains would be attenuated or weakened by transferring or passaging the live viruses through different host cells and then fed to children orally.<sup>15</sup>

Because his goal was to create a live attenuated vaccine, Dr. Sabin had to isolate the poliovirus strains and then passage the strains through a myriad of host cells in order to attain the right virulence—strong enough to illicit an immune response, but weak enough so as to not cause polio in the recipient. Sabin's oral polio vaccine (OPV) is a trivalent vaccine and was, therefore, comprised of three types - Type I, II, and III. For example, Type I has the following lineage: In 1941, Drs. Francis and Mack isolated the Mahoney poliovirus "from the pooled feces of three healthy children in Cleveland."<sup>16</sup> Dr. Salk then subjected the strain to passages through fourteen living monkeys and two cultures of monkey testicular cultures.<sup>17</sup> In 1954, the strain (now called Monk14 T2) was given to Drs. Li and Schaeffer who subjected the virus to nine more passages through monkey testicular cultures.<sup>18</sup> Next, the strain (now called Monk14 T11) underwent fifteen more passages in monkey testicular cultures, eighteen passages in monkey kidney cells, two passages through the skin of living rhesus monkeys, and additional passages through African Green monkey skin and monkey kidney cell cultures.<sup>19</sup> This strain was now called MS10 T43 or LS-c. In 1956, Dr. Sabin took this virus and passaged it through seven cultures of African Green Monkey kidney cells.<sup>20</sup> That same year, the pharmaceutical company, Merck, Sharp & Dohme, passed the strain (now called LS-c, 2ab/KP2) through a rhesus monkey kidney cell culture.<sup>21</sup> The resulting material was called Sabin Original Merck (SOM) and was provided to Lederle in 1960 as the seed material to manufacture its polio vaccine. Types II and III were created in a similar fashion.<sup>22</sup>

Once their strains were isolated, pharmaceutical companies needed a method to propagate the viruses in order to produce the vast quantities of vaccine needed for nation-wide immunization campaigns. This required a substrate upon which the poliovirus could be efficiently grown and harvested. Kidney cells from rhesus monkeys were chosen because they were found to be an effective growth medium.<sup>23</sup> A small quantity of poliovirus could be added to the minced kidneys

surgically removed from these monkeys and within a few days, large quantities of poliovirus could then be harvested from these same monkey cells.

There was a problem, however, with using these monkey kidney cells to both create the original vaccine strains and grow the vaccine in large quantities. Monkeys contain simian viruses.<sup>24</sup> When the poliovirus was passed through the monkeys or grown on the monkey kidney cells for production, extraneous viruses became part of the final poliovirus vaccine.<sup>25</sup> As early as 1953, Dr. Herald R. Cox, a scientist working at Lederle Laboratories, one of the polio vaccine manufacturers, published an article in a peer reviewed scientific journal in which he stated, “Poliomyelitis virus has so far been cultivated only in the tissues of certain susceptible species—namely, monkey or human tissues. Here again we would always be confronted with the potential danger of picking up other contaminating viruses or other microbic agents infectious for man.”<sup>26</sup> In fact, in 1958, a scientific journal reported that “the rate of isolation of new simian viruses (from monkey kidney cells) has continued unabated.”<sup>27</sup> Additionally, in 1960, the pharmaceutical company Merck & Co. wrote to the U.S. Surgeon General:

Our scientific staff have emphasized to us that there are a number of serious scientific and technical problems that must be solved before we could engage in large-scale production of live poliovirus vaccine. Most important among these is the problem of extraneous contaminating Simian viruses that may be extremely difficult to eliminate and which may be difficult if not impossible to detect at the present stage of the technology.<sup>28</sup>

### **THE DISCOVERY OF SIMIAN VIRUS 40 (SV40)**

Between 1959 and 1960, Bernice Eddy, Ph.D., of the National Institute of Health (NIH) examined minced rhesus monkey kidney cells under a microscope.<sup>29</sup> These were the cells of the same species of monkeys used to create and produce the oral polio vaccine. Dr. Eddy discovered that the cells would die without any apparent cause. She then took suspensions of the cellular material from these kidney cell cultures and injected them into hamsters. Cancers grew in the hamsters.<sup>30</sup> Shortly thereafter, scientists at the pharmaceutical company Merck & Co. discovered what would later be determined to be the same virus identified by Eddy.<sup>31</sup> This virus was named Simian Virus 40 or SV40 because it was the 40th Simian virus found in monkey kidney cells.

In 1960, Doctors Benjamin Sweet and Maurice Hilleman, the Merck scientists who named the virus SV40, published their findings:

Viruses are commonly carried by monkeys and may appear as contaminants in cell cultures of their tissues, especially the kidney . . . . The discovery of this new virus, the vacuolating agent, represents the detection for the first time of a hitherto “non-detectable” simian virus of monkey renal cultures and raises the important question of the existence of other such viruses . . . . As shown in this report, all 3 types of Sabin’s live poliovirus vaccine, now fed to millions of persons of all ages, were contaminated with vacuolating virus.<sup>32</sup> The vacuolating virus was another name for SV40.

In 1962, Dr. Bernice Eddy published her findings in the journal produced by the Federation of American Societies for Experimental Biology. She wrote:

There is now an impressive list of oncogenic (cancer causing) viruses—the rabbit papilloma, polyoma, Rous sarcoma, the leukemia viruses . . . . It has been known for a number of years that monkeys harbor latent viruses . . . . The (SV40) virus was injected at once into 13 newborn hamsters and 10 newborn mice. Subcutaneous neoplasms indistinguishable from those induced by the rhesus monkey kidney extracts developed in 11 of the 13 hamsters between 156 and 380 days . . . .<sup>33</sup>

Subsequent studies performed in the early 1960s demonstrated that SV40 caused brain tumors in animals<sup>34</sup> and that SV40 could transform or turn cancerous normal human tissue in vitro.<sup>35</sup> A disturbing experiment performed during this era also suggested that SV40 could cause human cancers in man in vivo.<sup>36</sup> In 1964, Fred Jensen and his colleagues took tissue from patients who were terminally ill with cancer.<sup>37</sup> They exposed the tissue to SV40 and then after it was transformed, they implanted the tissue back into the patient.<sup>[25]</sup> These implants grew into tumors in their human hosts.<sup>38</sup> Research conducted at the Ochsner Clinic by Dr. Mary Sherman and staff observed SV40 contamination in their research for a vaccine for soft tissue cancers.<sup>39</sup> This suggested the possibility that SV40 could cause cancers in man. Current studies conducted by the National Institute of Cancer have shown an increased risk of pleural mesothelioma by exposure to SV40 through possible early childhood polio vaccinations.<sup>40</sup> Mesothelioma has been known to be caused by exposure to asbestos. SV40 exposure may potentate the toxicity of asbestos as a co-carcinogen to the pleural lining of the stomach due to the interaction of SV40 to previous chicken pox virus that is known to remain dormant in the GI track after exposure to individuals with specific mutated HLA genes.<sup>41</sup>

#### **Type I has the following lineage:**

- In 1941, Drs. Francis and Mack isolated the Mahoney poliovirus “from the pooled feces of three healthy children in Cleveland.” Dr. Salk then subjected the strain to passages through fourteen living monkeys and two cultures of monkey testicular cultures.
- In 1954, the strain (now called Monk14 T2) was given to Drs. Li and Schaeffer who subjected the virus to nine more passages through monkey testicular cultures.
- In 1956, Dr. Sabin took this virus and passaged it through seven cultures of African Green Monkey kidney cells.
- Next, the strain (now called Monk14 T11) underwent fifteen more passages in monkey testicular cultures, eighteen passages in monkey kidney cells, two passages through the skin of living rhesus monkeys, and additional passages through African Green monkey skin and monkey kidney cell cultures. This strain was now called MS10 T43 or LS-c.
- That same year, the pharmaceutical company, Merck, Sharp & Dohme, passed the strain (now called LS-c, 2ab/KP2) through a rhesus monkey kidney cell culture.
- The resulting material was called Sabin Original Merck (SOM) and was provided to Lederle in 1960 as the seed material to manufacture its polio vaccine.

Types II and III were created in a similar fashion. (See Figure 2-2)

## CONCLUSION

Aerial spraying for vector control is not only for pesticide applications but for aerial vaccinations of wildlife and humans as stated in US Acts and Regulations. This paper clearly shows the potential risk to exposure from aerial emissions of known pesticides and the increased risk factor to exposure to aerial DNA virus vaccines. The DNA virus vaccines which were designed for West Nile Virus may have been in the aerial spraying of Anahim, CA in February 2009 as a test for a Pathogen Countermeasures Program as stated in Federal and State Acts. The utilization of toxicogenomics in future analysis may determine the exact DNA plasmid of the SV40 found in the individual. Through these types of advanced biological monitoring tests, one may be able to not only identify the bioengineering technology of the design, but the manufacturer or research facility as well. Further investigation will be necessary into the crossover of biological pesticides used for vector control and DNA viral vaccines in future studies involving SV40 as an actuator for vaccines.

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