

AUTOGENOUS VACCINES:

In human medicine, autogenous vaccines have been used for more than 100 years. Already in 1903, the bacteriologist A. E. Wright reported the use of an autogenous vaccine in the treatment of boils. In a protocol provided in 1903 by Sir Amiroth Wright states that autogenously vaccines are heat inactivated suspensions of bacterial cultures where the micro-organism is obtained from a lesion or from the site of infection of the patient for which the autogenously vaccine ought to be manufactured.

Definition of Autogenous Vaccine:

- A vaccine prepared from micro organisms which have been freshly isolated from the lesion of the patient who is to be treated with it.
- A vaccine prepared from cultures obtained from a specific lesion of the patient himself & used to immunize him against further spread & progress of the same organism
- *An autogenous vaccine is an inactivated vaccine produced from bacteria or virus isolated from diseased animals of an individual farm once a particular infectious problem has been identified. As the organism that causes the disease is originating on the farm, also the vaccine is to be used only on that distinct farm. This specificity of the tailored vaccine is an important characteristic of autogenous vaccines.*

In veterinary medicine, autogenous vaccines gained more and more interest after the ban of certain antibiotics and the increasing need for cost-effective, consumer-friendly alternatives to cure diseases of farm animals. Today, the following indications are in favour of autogenous vaccines:

- In case a disease is caused by micro-organisms for which no vaccine is yet available
- In case a commercial product or a licensed product is available but not of sufficient efficacy
- In case prophylaxis and/or /treatment of a particular disease is needed, but a multitude of different micro-organisms may cause this disease (for instance
 - mastitis in dairy cattle, goat and sheep: more than 130 different micro-organisms are known to be associated with mastitis)
 - In case a disease is caused by micro-organisms which are known to display high antigenic diversity and high antigenic drift/shift (thereby hampering traditional vaccine development)

Autogenous vaccines are made from cultures of pathogenic micro-organisms which are isolated from the site of an infection (furuncle, boils, abscess, urine, organ, pistils etc) from a specific herd/flock of animals/birds and used under veterinary supervision in that specific herd/flock of animals/birds only. These causal organisms has to be isolated, grown up, killed, and made into a safe vaccine form.

Although there are different protocols in use, they all have in common that the suspended micro-organisms are inactivated, either by the use of chemicals or by use of heat. These vaccines are known to stimulate the immune system in order to be able to prevent future relapses

Specificity is thus an important characteristic of autogenous vaccines.

Vaccination in general involves the exposure of the animal to the protein components (called the antigen) of the infectious agent. The immune system responds by producing antibodies that destroy the infectious agents, usually in co-operation with specialized body cells or by neutralizing the toxins that are responsible for the disease. This process of stimulating immunity is called vaccination.

Some vaccines contain live organisms that have been altered so that they cannot produce a disease but still produce immunity.

Vaccines contain antigens (an antigen is a foreign substance, usually a protein or polysaccharide that stimulates an immune response) from viruses, bacteria, bacterial toxins, or parasites.

Vaccines are given to animals, either by injection or in the mucous membranes of the animals, to stimulate an immune response which will protect the animals against later natural infection with the organism from which the vaccine was derived.

Most stimulate both a humoral response and a cell-mediated response.

Vaccines in general can either contain live organisms that will multiply in the animal, or inactivated ones that will not multiply in the animal.

Differences between Live and Autogenous vaccines.

Autogenous vaccines:

- contain killed or inactivated organisms.
- They cannot multiply or change character.
- They are furthermore stable under heat conditions.
- Autogenous vaccines are therefore also a therapeutic vaccines and a prophylaxis against further recurrent episodes as it is, individually tailored made for a patient.
- Inactivated vaccines may also contain toxins which have been modified.
- Inactivated (dead) vaccines may contain whole organisms, antigenic parts of organisms or antigens which have been synthesized chemically.

Live vaccines :

- the organism has usually been attenuated (i.e. its virulence has been reduced) so that although it multiplies in the animal it does not normally cause disease. Live attenuated vaccines have the advantage that because they multiply in the animal they give a bigger antigenic stimulus resulting in stronger longer-lasting immunity.
- *They have the disadvantage that they may become inactivated in wrong storage conditions (e.g. heat) or during dosing, by exposure to antiseptics or disinfectants, and are then useless. It is also important that they are stable and not able to return to full virulence.*

Virus Diseases That Can Be Controlled By Autogenic Vaccination

- Lumpy Skin Disease
- Foot & Mouth Disease
- Porcine Parvovirus
- PRRS
- Swine Fever
- Swine Influenza
- TGE
- Bird Flu
- Pseudo Rabies

Bacterial Disease that can be controlled by Vaccination

- Pasteurellosis
- Leptospirosis
- Enzootic Pneumonia
- Clostridial Diseases
- Actinobacillus Pleuropneumonia
- E-Coli diarrhoea
- Streptococcal Meningiti

Sometimes vaccines do not work particularly well on a farm and in such cases the following possibilities need to be considered:

- The vaccine was contaminated.
- The vaccine was not capable of producing the required immunity.
- The animal was already incubating a disease when it was vaccinated.
- The vaccine had been incorrectly stored. High temperatures reduce the effectiveness. (Always keep vaccines in a refrigerator but do not freeze).
- The vaccine had been exposed to direct sunlight.
- The vaccine had gone out of date.
- The needle and syringe were dirty or faulty.
- Chemical sterilization destroyed the vaccine.
- The animal had inadvertently missed being vaccinated. This is particularly common with parvo-virus vaccination in the gilt.
- Vaccine response was poor because there were maternal antibodies present.

- The vaccine was deposited in fat and was not absorbed.
- Faulty injection techniques.

Autogenous vaccines may be useful when serious disease outbreaks occur and standard commercial vaccines are not available/ineffective

- Because these vaccines are killed or inactivated, a primary vaccination followed by a booster vaccination in two to three weeks are required to obtain an immune response. These autogenous vaccines are almost all given by injection as well as applied to the mucous membrane using adjuvants.
- Adjuvants are critical for the development of an immune response that will last over time (duration). Many autogenous vaccines use aluminum hydroxide as an adjuvant. This is a marginal adjuvant and requires frequent revaccination (at least every four to six months) to sustain an immune response.
- Extensive diagnostic and molecular techniques are used to differentiate the field strains from those organisms in commercial vaccines. These intricate molecular characterizations require the use of a diagnostic laboratory with molecular biology and immunological capacity.
- Careful monitoring of the genetics of these viruses by veterinary diagnostic laboratories working with researchers is important .
- But autogenous vaccines can be produced more quickly, providing an important niche.
- Autogenous vaccines are important for emerging diseases, such as circoviruses, for which there are no commercial vaccines.

The cost of a vaccine:

Finally, don't let the cost of the vaccine be the major factor in selecting an autogenous vaccine over a commercial vaccine. If a complete economic evaluation is not done for the vaccine, looking at performance, morbidity and mortality, the true savings or loss will not be known. Always let science and the economic bottom line guide your decisions - not your emotions or someone else's persuasive skills.

Preventive Herd Health begins by working with your veterinarian and not the Veterinary Medicine Company that is out to make only money by selling his

product. The Veterinarian is **trained** to evaluate your enterprise and make recommendations to keep productivity high and your operation profitable.

The three legs of a healthy herd:

- A preventive herd health program is a three-step process: Monitoring, (to measure is to know).
- Bio-security and Vaccination is like a three-legged stool. All three legs are required to achieve success.
- Monitoring is the first leg. It requires regular visits, walk-through by your veterinarian, including the taking of samples, laboratory analyses etc. includes evaluating the production records, nutrition and environmental conditions.
- The second leg, bio-security, begins with minimizing disease risks to the unit from introducing new stock through quarantine and testing and the use of "pathogen-free" semen. Management systems like all-in, all-out (AIAO) pig flow along with shower-in, shower-out practices for employees help eliminate pathogens. An extensive disinfection program for facilities, transport vehicles and equipment is essential, along with employee education and a good dose of common sense.
- Vaccination is the third leg and requires the integration **and integrity** of information from the monitoring and bio-security programs to develop the "best" program.

Remember that the world's best vaccination program can't make up for poor management.

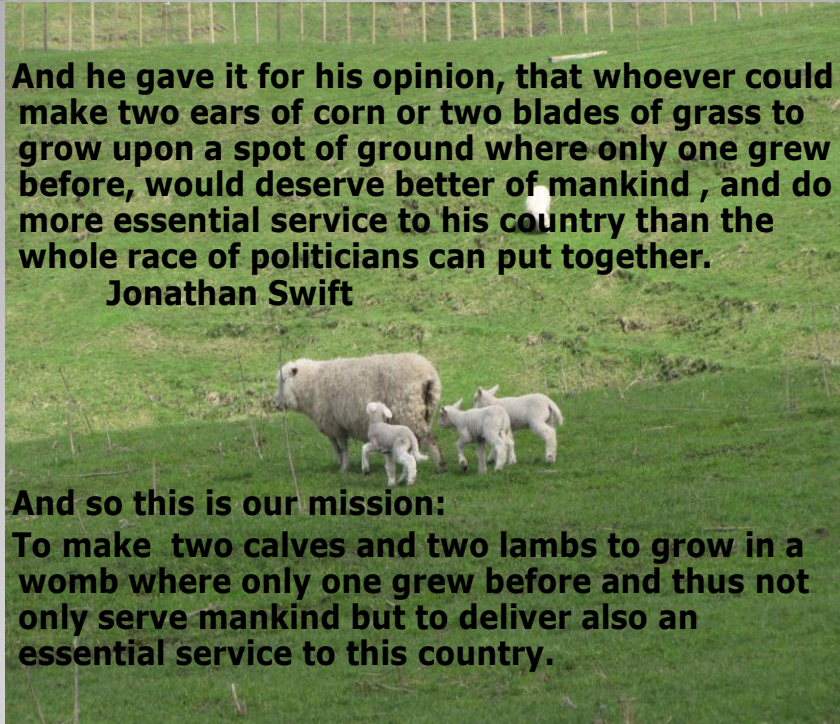
Mission and Vision Disease Control Africa

And he gave it for his opinion, that whoever could make two ears of corn or two blades of grass to grow upon a spot of ground where only one grew before, would deserve better of mankind , and do more essential service to his country than the whole race of politicians can put together.

Jonathan Swift

And so this is our mission:

To make two calves and two lambs to grow in a womb where only one grew before and thus not only serve mankind but to deliver also an essential service to this country.



Work method of DCA

- It is the believe of DCA that in order to formulate and manufacture a vaccine one has to work persistently in the field and on the relevant farms. The close correlation between field and animal are very critical. Thus Preventive Herd Health begins with the close relationship between the farmer and the Veterinarian. The relevant observation of the farmer of what is happening in his herd is of critical importance to the Vet. What is happening on one farm is not necessarily happening on the neighbor's farm as well, as far as a disease profile is concerned.

- All the relevant samples are taken under veterinary supervision. (blood/swabs from boils, abscess, pistols etc.,) These samples are then send to the relevant laboratories for either Microbiology/Bacteriology/Immunology etc isolations.
- After confirmation and typing of the relevant organisms, it will be plated out, grown up, killed and made into a safe vaccine for the specific farm.
- The label contains the name of the farm, batch number, name of the vaccine, the adminisration , expiry date and if it is a combined vaccine it is also indicated .