



Toxoplasmosis is a disease caused by a parasite called **Toxoplasma gondii**. The parasite mostly infects warm-blooded animals including humans but the primary host is the felid (cat) family. The primary hosts are the cats they carry the virus and can possibly infect other animals. Pigs can get infected by eating contaminated water and food with cat feces, or by eating other contaminated dead pigs' ears, and tails, or by eating infected rodents or other uncooked meat. Once the parasites invade the pigs' organisms it will form cysts in muscles and other organs where they remain viable for long periods of time. The parasites will mature and eventually it can be a source to infect human. The presence of the parasites in pigs rarely results in clinical disease unless infection occurs in pregnant pigs which can lead to SMEDI (stillbirth, mummification, embryonic death and infertility). If a human eats pig meat infected with *Toxoplasma gondii*, it will show two stages; acute and latent. During acute toxoplasmosis will include the following symptoms; swollen lymph nodes and muscle aches. Latent toxoplasmosis is the time where bradyzoites will form cysts in nervous and muscle tissue. Toxoplasmosis parasite can also trigger schizophrenia, bipolar disorders, Parkinson's Disease, Tourette's syndrome and ADD (attention deficit disorders). Over half of the world's human population is estimated to carry a *Toxoplasma* infection. Trimethoprim/sulfamethoxazole is the drug of choice to prevent *Toxoplasma*, but is not the drug to treat. Swine have received special attention from the public health because they are an important reservoir of *Toxoplasma* for human populations due to the longevity of the tissue cysts, and the wide dissemination of the infection in this animal species. **Toxovax (Merck)** is a live vaccine containing $>10^5$ tachyzoites of the S48 strain of *Toxoplasma gondii* per dose for sheep or other animals. Vaccination with Toxovax is known to protect for at least two lambing seasons.



Foot-and-mouth disease (FMD) is caused by the foot-and-mouth disease virus (**FMDV**) which is a single stranded RNA virus from the Picornaviridae family and Aphthovirus genus. It is a very small nonenveloped icosahedral virus. The foot-and-mouth disease virus occurs in seven major serotypes: O, A, C, SAT-1, SAT-2, SAT-3, and Asia-1. These serotypes show some regionality, and the O serotype is most common. FMDV is a very contagious disease and can be death threatened. It can infect cattle, water buffalo, sheep, goats and pigs, but not human. The symptoms of this disease include fever and blister-like lesions followed by erosions on the tongue and lips, in the mouth and between the hooves. **Raksha fmd vaccine (India)** contains inactivated fmd virus strains o, a, c and asia-1 adsorbed on aluminium hydroxide as an adjuvant. **FMD vaccine (intervet, Merck)** Decivac® FMD DOE contain antigens of the FMDV types O, A, C, Asia1 and SAT1, SAT2, SAT3 (monovalent or multivalent) for the active immunisation of pigs, cattle, buffalo, sheep and goats against Foot and Mouth Disease.



Pseudorabies is a viral disease in swine which is caused by porcine herpesvirus 1, which is also called pseudorabies virus (**PRV**) or suid herpesvirus-1 (SuHV-1) and is also known as Aujeszky's disease, and in cattle as mad itch.. PRV is considered to be the most economically important viral disease of swine in areas where hog cholera has been eradicated. The word "pseudorabies" means "false rabies," or "rabies-like;" pseudorabies is related to the herpes virus, not the rabies virus. PRV is in the group I double stranded DNA from the family Herpesviridae and genus Varicellovirus. PRV infected pigs show no clinical symptoms unless it infects pregnant pigs which will lead to SMEDI (stillbirth, mummification, embryonic death and infertility). Adult pigs are the host carrier for the virus, but it will infect cattle, sheep, cats, dogs, goats, raccoons, opossums, skunks and rodents. Symptoms for those infected animals are scratching and biting themselves followed by neurological signs and eventually death. For dogs and cats pseudorabies is so dangerous that it can cause sudden death without even having symptoms. However, PRV are harmless in human. **Pseudorabies vaccines (Pocilis AD Begonia, Merck)** A live attenuated vaccine for the immunization of pigs against Aujeszky's disease

virus infections (Pseudorabies). The vaccine based on the virus strain NIA-3(tk- and gE-). Diluvac Forte® is used as a diluent. The gE deletion allows field infections to be differentiated from vaccination responses.



Hog Cholera is also called Classical swine fever (CSF). It is very contagious among pigs and wild boar. The virus responsible for this disease is called CSFV. It is classified in the Group IV ((+) ssRNA), it is a lipid-enveloped pathogen which belongs to the genus Pest virus in the family of Flaviviridae. CSFV is very similar to a ruminant pestiviruses which cause Bovine Viral Diarrhoea (BVDV) and Border Disease (BDV). Pigs and wild boars are the only hosts for CSF. The virus will live in the blood, tissues, secretions and excretions from the infected animal. It is transmitted mostly by the oral route, conjunctiva, mucous membrane, skin abrasion, insemination and percutaneous blood transfer. Once the animal is infected the incubation period is normally from 3 to 4 days but can range between 2 to 14 days. After four days to three

weeks of the virus entered the animal's system the symptoms will start with fever which will lead to loss of appetite, depression, withdrawal from other animals, reddened and draining eyes, vomiting, constipation or diarrhea, and coughing and difficulty in respiration. CSFV is diagnosed by histology or the presence of antibodies by ELISA. Porcilis CSF Live is based on the Classical Swine Fever virus strain GPE-. The resulting vaccine is highly effective and proven safe as it does not spread to other pigs. The resulting vaccine is highly effective and proven safe as it does not spread to other pigs.



Dodge) contains

(PCV2) contains ORF2 subunit antigen: at least 4.5 log₂ ELISA units For the active immunisation of pigs to reduce the virus load in blood and lymphoid tissues and to reduce mortality and weight loss associated with PCV2 infection occurring during the fattening period.

Porcine Circovirus (PCV) is a single stranded DNA virus (group II). It is a non-enveloped with an un-segmented circular genome. PCV is the smallest virus to be able to replicate autonomously in eukaryotic cells. PCV replicates in the nucleus of infected cells using the host's polymerase for genome amplification. There are two strains, the Type 1 PCV and Type 2 PCV. Type 1 PCV has not been found any disease affecting swine. Type 2 PCV causes postweaning multisystemic wasting syndrome (PMWS) which eventually leads to depletion of lymphocytes. Side effect of PCV2 infection includes poor growth, weight loss, enlarged lymph nodes, difficulty breathing, jaundice, fever, stomach ulcers, diarrhea and sudden death. An effective vaccination is now available. Foster PCV2 vaccine (Fort inactivated virus (ATCvet code: QI09AA07). Porcilis vaccine against porcine circovirus type 2



Porcine Encephalitis Virus is also known as **Japanese Encephalitis virus (JEV)**. Japanese encephalitis virus is the virus responsible for the Japanese B encephalitis disease. JEV is a positive single stranded enveloped RNA virus that belongs to the Flaviviridae family from the genus Flavivirus. JEV is called arbovirus because it is transmitted by the *Culex tritaeniorhynchus* mosquitoes. The main reservoir of JEV is the pigs, and once transmitted to human it can cause severe symptoms. The pigs infected by the virus shows no symptoms except in pregnant ones which will lead to miscarriage or

abnormal fetus. Human can get infected with the virus by the *Culex* mosquitoes. Mosquitoes will become infected when they fed themselves with infected pigs, those mosquitoes now can infect human. This virus cannot be transferred from human to human or pigs to human, only from mosquitoes to humans. Once the virus enters the human body it follows an incubation period of four to fourteen days. The symptoms will start with fever and headache, however it can progress giving worse symptoms such as neck stiffness, stupor, disorientation, coma, tremors, occasional convulsions and spastic paralysis. Japanese Encephalitis Vaccine, JE-VC (Novartis), contains strain SA14-14-2 Inactivated, adsorbed, and it is for human use.



Porcilis PRRS for sows and piglets

Porcine Reproductive and Respiratory Syndrome (PRRS) is also known as Blue-Ear Pig Disease. It is a virus that causes a disease of pigs, called porcine reproductive and respiratory syndrome (PRRS). This economically important, pandemic disease causes reproductive failure in breeding stock and respiratory tract illness in young pigs. Initially referred to as "mystery swine disease" and "mystery reproductive syndrome, It is a disease that is caused by the virus **PPRSV** (Porcine Reproductive and Respiratory Syndrome Virus). The disease costs the United States swine industry around \$600 million annually. PRRSV is a small enveloped single stranded positive sense RNA virus. The virus has a high affinity for the macrophage found in the lung. The virus multiplies itself inside the macrophage which eventually kills the macrophage. Without macrophages the body has no defense mechanism, allowing other bacteria and viruses to proliferate and

damage the body. The two prototype strains of PRRSV are the North American strain, VR-2332, and the European strain, the Lelystad virus (LV). The European and North American PRRSV strains cause similar clinical symptoms. Porcilis PRRS vaccine (Merck) for piglets and sows is a Live attenuated PRRS virus strain DV



Porcine Parvovirus (PPV) is a Group II, a single stranded DNA virus from the family Parvoviridae and its genus is Parvovirus. PPV is one of the most common causes of infectious infertility. It is a very strong virus which multiplies itself in the pig's intestine without giving the pig any symptoms. PPV is a very difficult virus to remove from the pig's environment. PPV has unique characteristics of being resistant to most disinfectants and being able to survive living outside of its host for a long period of time. PPV will show symptoms in pregnant pigs only if the pregnancy is for the first time during the first 55 days. Its structure is composed of a viral capsid made of 2-3 proteins known as VP1-3 which forms an icosahedral structure. This specific structure makes the virus resistant to pH, solvents and temperature as high as 50 °C. PPV

causes a reproductive disease in pigs called SMEDI which stands for stillbirth, mummification, embryonic death and infertility. The disease is mostly spread by ingestion of contaminated food and water, infected feces and sometimes sexual contact and contact with aborted tissue. **PARVOSUIN® vaccine** is an Inactivated porcine parvovirus, NADL-2 strain: $\geq 1/32$ HAI; in oil adjuvant.

Alpha Diagnostic Intl's has developed ELISA kits to detect and measure the presence of antibodies to various Procine/Swine/Hog viral diseases (Toxoplasmosis, Swine Foot and Mouth Virus (FMDV), Pseudorabies (PRV), Classical Swine Flu (CSFV), Porcine Circovirus (PCV2), Porcine/Swine Epidemic Encephalitis B (JEV), Porcine Parvovirus (PPV), and **Porcine Reproductive and Respiratory Syndrome (PRRS)**).

Swine Diseases/Vaccine Related ELISA kits

Items Description	Antibody Type IgG Cat#
Swine/Porcine Toxoplasmosis Antibody ELISA kit	AE-200100-2
Swine Foot and Mouth Virus (FMDV) antibody ELISA kit	AE-200120-2
Swine Foot and Mouth Disease (FMDV) IgG Distinguishing kit	AE-200125-2
Porcine/Swine Pseudorabies (PRV) Antibody ELISA kit	AE-200130-2
Porcine/Swine Pseudorabies (PRV) Virus IgE Antibody Distinguishing kit	AE-200135-2
Swine/Hog) Classical Swine Flu (CSFV) or Cholera Virus Antibody ELISA kit	AE-200140-2
Porcine Circovirus (PCV2) ELISA kit, 4x96 tests	AE-200150-2
Porcine/Swine Epidemic Encephalitis B (JEV) antibody ELISA kit	AE-200160-2
Swine/Porcine Parvovirus Antibody ELISA kit, 2x96 tests	AE-200170-2
Porcine Reproductive and Respiratory Syndrome virus (PPRSV) Antibody ELISA kit	AE-200180-2