

# CLASSICAL SWINE FEVER (hog cholera)

## AETIOLOGY

### *Classification of the causative agent*

Family Flaviviridae, genus *Pestivirus*, one serotype divided into three major genotypes and ten subtypes. Closely related to ruminant pestiviruses causing bovine virus diarrhoea and border disease.

### *Resistance to physical and chemical action*

Temperature:	Readily inactivated by cooking: heating meat to 65.5°C for 30 minutes or 71°C for one minute. Survives months in refrigerated meat and years in frozen meat. Some strains are partially resistant to moderate heat (56°C).
pH:	Stable at pH 5-10. Rapidly inactivated at pH <3.0 or pH >11.0.
Chemicals/Disinfectants:	Susceptible to ether, chloroform, $\beta$ -propiolactone (0.4%). Inactivated by chlorine-based disinfectants, cresol (5%), sodium hydroxide (2%), formalin (1%), sodium carbonate (4% anhydrous or 10% crystalline, with 0.1% detergent), ionic and non-ionic detergents, and strong iodophors (1%) in phosphoric acid.
Survival:	Moderately fragile and does not persist in the environment. Sensitive to drying and ultraviolet light. Survives well in pens during cold conditions (up to 4 weeks in winter). Survives 3 days at 50°C and 7-15 days at 37°C. Survives in meat during salt curing and smoking for 17 to >180 days depending on the process used. Virus persists 3–4 days in decomposing organs and 15 days in decomposing blood and bone marrow.

## EPIDEMIOLOGY

Virulence of disease is related to strain of virus isolate, age of pig and immune status of herd. Virus is highly contagious. Acute disease is still the prevalent form in younger animals, with subacute and chronic forms often observed in older animals.

### *Hosts*

Pigs and wild boar are the only natural reservoir of classical swine fever virus. All feral and wild pigs, including European wild boar, are susceptible. Collared peccaries were susceptible in one study, but recovered in 10 days.

### *Transmission*

- Mainly by the oral and oronasal routes, via direct or indirect contact.
- Direct contact between animals (secretions, excretions, semen, blood)
- Spread by farm visitors, veterinarians, pig traders
- Indirect contact through premises, implements, vehicles, clothes, instruments and needles
- 'Neighbourhood effect' during outbreaks in areas of high pig farm density: airborne transmission over short distances (up to 1 km in one study)
- Insufficiently cooked waste food fed to pigs: most common means of entry into free countries
- Transplacental infection: may create inapparent carrier piglets or congenital abnormalities
- Wild boar populations may harbour virus; domestic pigs in the affected area are at a high risk; and biosecurity is crucial

## **Sources of virus**

- Blood, secretions and excretions (oronasal and lachrymal discharges, urine, faeces and semen) and tissues of sick or dead animals, including meat
- Congenitally infected piglets are persistently viraemic and may shed the virus for 6–12 months before dying
- Infection routes: ingestion (most common), contact with the conjunctiva or mucous membranes, skin abrasions, genital transmission, artificial insemination, percutaneous blood transfer

## **Occurrence**

The disease occurs in much of Asia, Central and South America, and parts of Europe and Africa. Many countries are free of the disease.

## **DIAGNOSIS**

Incubation period is 2–14 days. Clinical form varies with the strain of virus, the age/susceptibility of pigs and the occurrence of other pathogens in the herd (herd health status).

### **Clinical diagnosis**

**Acute form** (more virulent virus strains and/or younger pigs)

- Fever (41°C)
- Anorexia, lethargy
- Severe leucopenia
- Multifocal hyperaemia and/or haemorrhagic lesions of the skin
- Conjunctivitis
- Enlarged, swollen lymph nodes
- Cyanosis of the skin especially of extremities (ears, limbs, tail, snout)
- Transient constipation followed by diarrhoea
- Vomiting (occasional)
- Dyspnoea, coughing
- Ataxia, paresis and convulsion
- Pigs huddle together
- Death occurs 5–25 days after onset of illness
- Mortality in young pigs can approach 100%

**Chronic form** (less virulent virus strains or partially immune herds)

- Dullness, capricious appetite, pyrexia, diarrhoea for up to 1 month
- Ruffled appearance of pigs
- Growth retardation
- Apparent recovery with eventual relapse and death within about 3 months

**Congenital form** (outcome depends on virulence of virus strain and stage of gestation)

- Fetal death, resorption, mummification, stillbirth
- Abortion
- Congenital tremor, weakness
- Runting and poor growth over a period of weeks or months leading to death

- Born clinically normal but persistently viraemic with no antibody response: important intermittent shedders of virus until dying in 6–12 months (late onset form).

**Mild form** (usually older animals; outcome depends on virulence of virus strain):

- Transient pyrexia and inappetence
- Recovery and (lifelong) immunity

## ***Lesions***

**Acute form:** Lesions are usually complicated by secondary infections

- Leucopenia and thrombocytopenia
- Enlarged haemorrhagic lymph nodes are common
- Widespread petechiae and ecchymoses, especially in the skin, lymph nodes, epiglottis, bladder, kidney and rectum
- Severe tonsillitis with necrotic foci sometimes occurs
- Multifocal infarction of the margin of the spleen is characteristic: nearly pathognomonic but occurs infrequently with currently circulating strains
- Lungs may be congested and haemorrhagic
- Encephalomyelitis with perivascular cuffing is common

**Chronic form:** Lesions are usually complicated by secondary infections

- ‘Button’ ulcers in the caecum and large intestine mucosa
- Generalised depletion of lymphoid tissue
- Transverse striations of unmodelled growth cartilage at costochondral junctions in growing pigs
- Haemorrhagic and inflammatory lesions are often absent

**Congenital form**

- Central dysmyelinogenesis, cerebellar hypoplasia, microencephaly, pulmonary hypoplasia, hydrops and other malformations.

The OIE will periodically update the OIE Technical Disease Cards. Please send relevant new references and proposed modifications to the OIE Scientific and Technical Department ([scientific.dept@oie.int](mailto:scientific.dept@oie.int)). Last updated October 2009.