

VACCINE against KOI HERPESVIRUS



In the late 1990s, mass mortalities associated with epidermal lesions, gill necrosis, and nephritis occurred worldwide in the **koi and common carp** aquaculture industries. This **highly contagious and virulent disease** was shown to be caused by a herpesvirus and was called **Koi herpesvirus disease (KHVD)**. Later the virus was designated **Cyprinid herpesvirus 3 (CyHV-3)**. Due to its **economic impact on carp culture and its rapid spread across the world including China**, CyHV 3 was listed as a **notifiable disease by the World Organization for Animal Health (OIE)**.

The **laboratory of Immunology-Vaccinology** of the Veterinary Faculty of the University of Liège developed a **safe and efficacious attenuated vaccine to protect common and koi carp against CyHV-3**. This vaccine is compatible with **mass vaccination** of carp by immersion in water containing the vaccine.

MARKET

- **CyHV-3 affects both common carp and koi carp. The vaccine developed protects both species**
- **Common carp** (*Cyprinus carpio carpio*) is one of the main aquatic species produced for human consumption. It is currently the world's 3rd most produced finfish, accounting for around 8% of the global production. **As of 2016, world annual production of common carp has reached 4.6 million tons with around 70% produced in China.**
- **Koi carp** (*Cyprinus carpio koi*) are grown as a popular ornamental fish, kept in personal ponds by hobbyists, or sometimes submitted to koi competitions and exhibitions. Collectable subjects are very expensive with few record sale of more than 100,000 US dollars per fish.

KEY ACHIEVEMENTS

- Virus seed lineage established
- Production process established
- Vaccine stability and storage conditions assessed
- Vaccination procedure established
- Overdose safety demonstrated
- Absence of reversion demonstrated
- Protection against both European and Asian highly virulent strains demonstrated

KEY COMPETITIVE ADVANTAGES

- Mass vaccination by dipping for only one minute
- Small fish can be vaccinated (2g)
- Same performance against European and Asian virus strains
- No spreading to naïve cohabitants
- Vastly superior safety profile compared to competitor
- Provides "DIVA" (Differentiating Infected from Vaccinated Animals) strategy
- Attenuation process applicable to any strain (giving added value through **future-proofing**)

AWARD

The development of this vaccine was awarded by the GSK Vaccine award in 2016

INTELLECTUAL PROPERTY

Patent portfolio: WO2013098214 A1 – Exp: 30/12/2032

Granted: BD, CN, ID, JP, MD, MX, RU, SG, TW, UA and US

Pending: BR, EG, EP, IL, IN, KH, PH and TH

PARTNERSHIP NEEDED

Licencing or selling of Patent Portfolio for commercialisation.