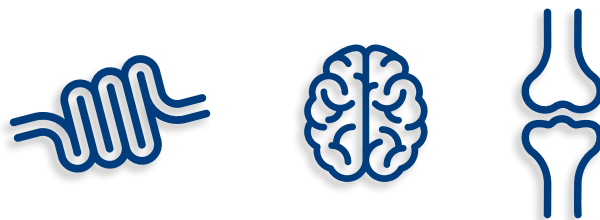


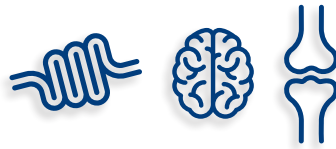


Streptococcus suis & meningitis
Triggering immune stimulation

Cerebra[®] S

Health & Medication Control





Modern industry farming & raising of pigs is suffering due to a number of factors such as overcrowded animals, poor ventilation, climatic conditions, poor hygiene status, high air pollution load, mycotoxins in feed, PRRS virus positive herds, feed anti-nutritional factors, vaccine challenges, bacterial antibiotic resistance, medication failure or restriction, etc. which often lead to loss in performance related to mortality, weak joints and organ failures.

Streptococcus suis: A serious concern for pigs, producers and humans

Although *Streptococcus suis* (*S. suis*) was first reported in 1954 after outbreaks of meningitis, septicemia and purulent arthritis occurring among piglets is still seen as a **major porcine pathogen**. In fact, infection with *S. suis* is one of the **main causes of mortality in post-weaned piglets** between 5 and 10 weeks old in septic shock-like syndrome cases.

Since the first human report there has been an increasing number of reported cases throughout the world. **Most human cases concern sporadic infections**, but in 2015 a severe outbreak was described involving multiple infected people, including several cases of death.

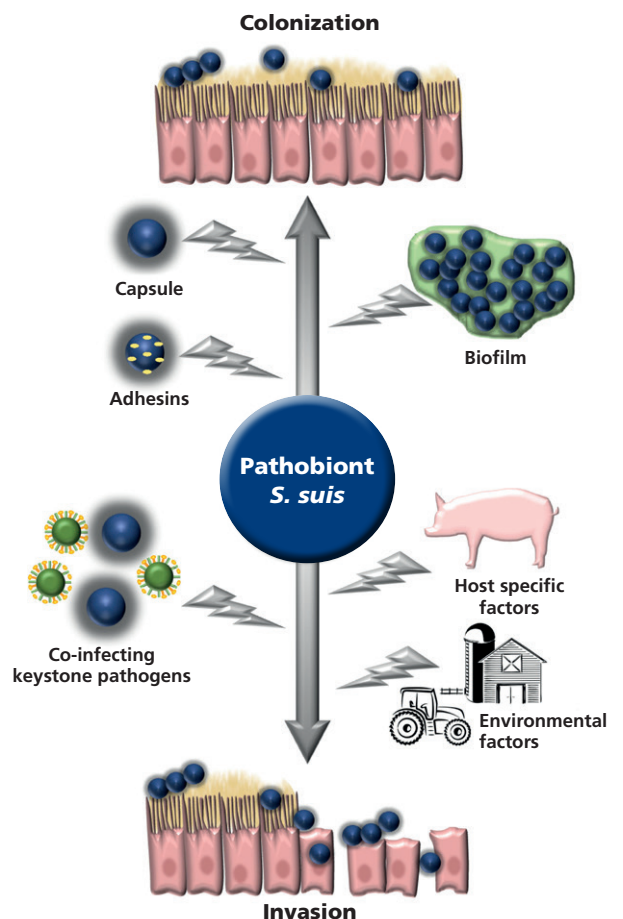
S. suis is responsible for **important financial losses** in the swine industry. These financial losses are not only related to death of piglets but also to high treatment costs with amoxicillin. The burden of high treatment cost with amoxicillin often leads to low usage and thus, inadequate efficacy which creates a **vicious circle**.

Until today **antibiotic treatment** is still considered the most efficient way for controlling *S. suis*, as is the case for many other bacterial infections. However, due to the ever increasing levels of antibiotic resistance, it is crucial to reduce the amount of antibiotics used both in animals and humans.

Therefore it is of high importance to find **alternative treatment options** for *S. suis* infections.

References:

1. Fohse et al, 2016 - doi:10.2527/af.2016-0031
2. Schumann et al, 2005 - doi:10.1152/physiolgenomics.00057.2005
3. Wertheim et al, 2009 - doi: 10.1086/596763
4. Goyette-Desjardins et al, 2014 - doi:10.1038/emi.2014.45
5. Vötsch et al, - doi: 10.3389/fmicb.2018.00480





Cerebra® S mode of action:

1. Enhancing intracellular antioxidant defenses
2. Combatting inflammation
3. Exerting anti-bacterial/anti-pathogenic activity

- **Fucaceae seaweeds** (*Ascophyllum nodosum*) are a valuable source of phlorotannins exhibiting numerous possible therapeutic properties i.e. potent anti-oxidants.
- **Plant polyphenols** and a proprietary blend of plant constituents that have demonstrated in field conditions powerful anti-inflammatory effect, specifically tailored against meningitis in pigs.
- **Monolaurin** inhibits the disease pressure exerted by pathogenic, gram-positive bacteria (e.g. *Streptococcus* species) and fat-enveloped viruses (e.g. arterivirus causing PRRS)

How & when to apply Cerebra® S

In the field, it has been shown that it is possible to suppress *Streptococcus suis* infections when the use of amoxicillin is replaced with Cerebra® S.

Upon appropriate diagnosis and depending on the severity, Cerebra® S should be used in:

- Pigs: 1.5 - 5 kg/T
- Sows (gestation/lactation): 1,5 - 3 kg/T

in combination with Lumance® in cases of high intestinal challenge and in order to remove multiple medication programs either in water or feed. Novion® S L can be part of the program via drinking water.

CONSULT OUR TECHNICAL EXPERT FOR A FULL PROPOSAL

Cerebra® S

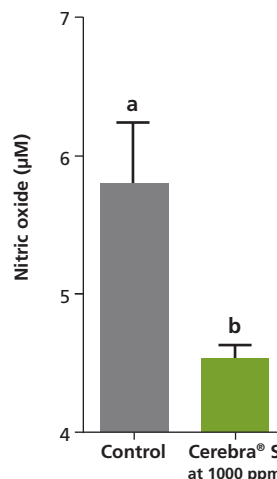
is an effective and powerful tool to:

1. Reduce medication usage
2. Reduce inflammation
3. Support the natural symbiosis between the host and its microbiota under stressful conditions
4. Help combat the impairment of the immune system

Cerebra® S is a proprietary complex technology which incorporates:

1. Seaweed
2. Plant constituents
3. Natural sources of polyphenols
4. Medium chain fatty acids in their esterified form

RAW 264.7 assay (*in vitro*) in murine cells expressing macrophages – Ghent University
Anti-inflammatory effect



Field trials



Replacement of amoxicillin in STARTER FEED in presence of *S. suis*

Commercial farm: BULGARIA

- 700 pigs in the Trial group compared simultaneously with the Control group (all pigs at the same age, at the same time)
- Regular treatment: Amoxicillin throughout the starter feed
- Farm is using **Lumance**® on regular basis since 2017 in order to replace Colistin
- Weaning: D28
- PRRS (-)

Feed	Trial group (Cerebra® S)	Control group
PreStarter 1 (D6 - D25(27))	Lumance® 3 kg/T + Cerebra® S, 2 kg/T	Lumance® 3 kg/T
PreStarter 2 (D28 ~ D38)	Lumance® 1.5 kg/T + Cerebra® S, 3 kg/T	Lumance® 3 kg/T
Starter (D38 ~ D58)	Lumance® 1.5 kg/T + Cerebra® S, 3 kg/T	Lumance® 3 kg/T + Amoxicillin

Results :

Meningitis cases:

- Control group: **Abundant, despite amoxicillin** treatment in the feed
- Trial group: **A few single cases** (~2-4), treated very easily with individual injections
- Negative control group: The remaining of the Control group without amoxicillin treatment served as a **negative control group**. The manager reported **"a disaster"**, due to **severe cases of meningitis** and need for **extra & strong amoxicillin treatment in the water**
- FCR: Very good performance in the Trial group 1.57 (Trial) vs. 1.65 (Control)

Client's Testimonial:

"I did not have much faith in this before the trial but the product works perfectly, actually much better than amoxicillin!"



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Replacement of amoxicillin in FEED in presence of *S. suis*

Commercial farm: SPAIN

- 250 pigs in Trial group compared simultaneously with 250 pigs in Control group (all pigs at the same age, at the same time)
- Regular treatment: Amoxicillin when clinical symptoms started & continued for 5-6 wks. Dose 400 ppm in first week of treatment and in severe cases and thereafter 300 ppm
- Farm is using **Lumance**® on regular basis since 2017 in order to replace Neomycin & ZnO during Starter 1 & 2
- Weaning: D 21
- PRRS (+)

Feed	Trial group (New Product)	Control group
Pre-Starter	Cerebra® S, 3 kg/T	–
Starter 1	Lumance® 3 kg/T + Cerebra® S, 3 kg/T	Lumance® 3 kg/T + Amoxicillin
Starter 2	Lumance® 2 kg/T + Cerebra® S, 3 kg/T	Lumance® 2 kg/T + Amoxicillin

Results :

- Control group: No cases of meningitis
- Trial group: No cases of meningitis.

Successful replacement of amoxicillin

Client's Testimonial:

"Superior protection against Streptococcus related problems without any amoxicillin"

