Pigs commonly suffer from digestive disorders around weaning, but a new plant-based product given before weaning helps the digestive tract to mature and improves weaning success.

Weaning is a problematic time for pigs, especially in intensive production. Piglets commonly become susceptible to bacterial infections including weaning diarrhoea, which restrict their growth rate; and often lead to piglet losses of 10% or more. This sort of infection can significantly increase production costs because the animals need food over a longer production period, and also for veterinary treatment. Similar problems are seen in weaning calves. The antibiotics used routinely for many years to control these rapidly-spreading infections have now fallen out of use, mainly due to the increase in resistant strains of bacteria, and because they also have negative effects on digestive tract and immune system development.

**Speeding up development**

A radical solution has been found by using a lectin obtained from the red kidney bean plant (Phaseolus vulgaris). Lectins are proteins that bind cells together; typically red blood cells, and are therefore known as phytohaemagglutinins. In the early weeks of life, the greatest changes in the digestive tract of young mammals occur in the pancreas, stomach and upper intestine. But, the changes needed for the animal to cope with a non-milk diet are not completed by the time weaning is carried out in production animals. Suddenly introducing a weaned diet frequently causes gastrointestinal disorders, which cause reduced weight gain and poor food utilisation. Calves show particularly rapid changes at the time the stomach adapts to the needs of a vegetable diet.

The EUREKA HEALTHY WEANING project coordinator, Professor Stefan Pierzynowski of Lund University, Sweden, explains: “Giving this new factor, which we call Suilektin®, for a short, specific period before weaning stimulates the digestive tract to reach maturity faster. This helps it to change from the digestive and absorptive needs of milk, to those of an adult diet.” The EUREKA study showed that giving the lectin to piglets at 11-12 days old greatly enhanced successful weaning at 28 days. This result was achieved by accelerating the production of mature intestinal cells, able to cope effectively with the weaning diet. During the project, field trials determined the optimal timing and dose, together with the best consistency and method of application.

“The main idea was to achieve a weaning before weaning. If we apply our product during a specific window of development before weaning, we wean better.”

Prof Stefan Pierzynowski - Lund University, Sweden
administration; and the results analysed
the animals’ performance and the
economic impact of the technique.

A welcome innovation for industry
Current pig production methods
could benefit significantly from this
new Suilektin® product, and hopefully
the studies will prove useful for pigs
and calves as well. Other expensive,
sophisticated weaning foods are
already available on the market, but are
not always an economic proposition
for the farmer, as the profit margin
on pig production is not high. “We are
very interested in finding a producer
for Suilektin®, and it could reach
the market very soon. It will be both
cheap and very effective,” says Prof.
Pierzynowski. Since the project was
completed in October 2005, the project
partners have filed two patents on their
“Although giving any lectin in large
amounts would not be recommended,”
he continues, “we will be explaining to
farmers the advantages of its use in
small, carefully calculated amounts for
this very short period. This very specific
use – as an additive and not as a food -
will stimulate maturing of the digestive
tract without causing any digestive
problems.” How soon Suilektin® reaches
the market will be linked with the full
implementation of the EU legislation.

Animal nutrition studies
The idea for the Suilektin® product
originated in Dept Cell and Organism
Biology(former Dept Animal Physiology)
Lund University, Sweden, but in final
form was developed in collaboration
with other project partners. Dept
AgriculturalBiosystems and Technology,
Agricultural Sciences University at
Alnarp, Sweden studied the effects
of lectin on pig development and
behaviour, and its practical application
and value in Swedish pig production.
The Kielanowski Institute of Physiology
and Animal Nutrition from the Polish
Academy of Science and the Dept
Animal Physiology from Agricultural
University of Lublin, Poland carried out
field studies, examining the effects of
lectin on suckling piglets on a small
and large scale, and determining the
optimal dose.

Studies determined the exact effects
of lectin at the cellular level of the
intestinal lining and on intestinal
enzymes production; others focused
on developing immune cells and gut
bacteria. All above mentioned studies
contributed to developing an economic
process for large-scale production.

At the beginning of the project
Gramineer International AB, an SME
then operating in Sweden, produced and
purified the lectin; and Lund University
tested it in laboratory studies. Another
SME, Mifarmex GmbH in Poland, further
developed the technology for lectin
preparation and actually possess know-
how to produce Suilektin® for big scale
test and for commercial usage.

Our impact will be that we are able to produce
piglets more effectively and more cheaply.

Prof Stefan Pierzynowski - Lund University, Sweden

Project participants:
Sweden, Poland

Budget: 1.75 MEuro
Duration: 36 months

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