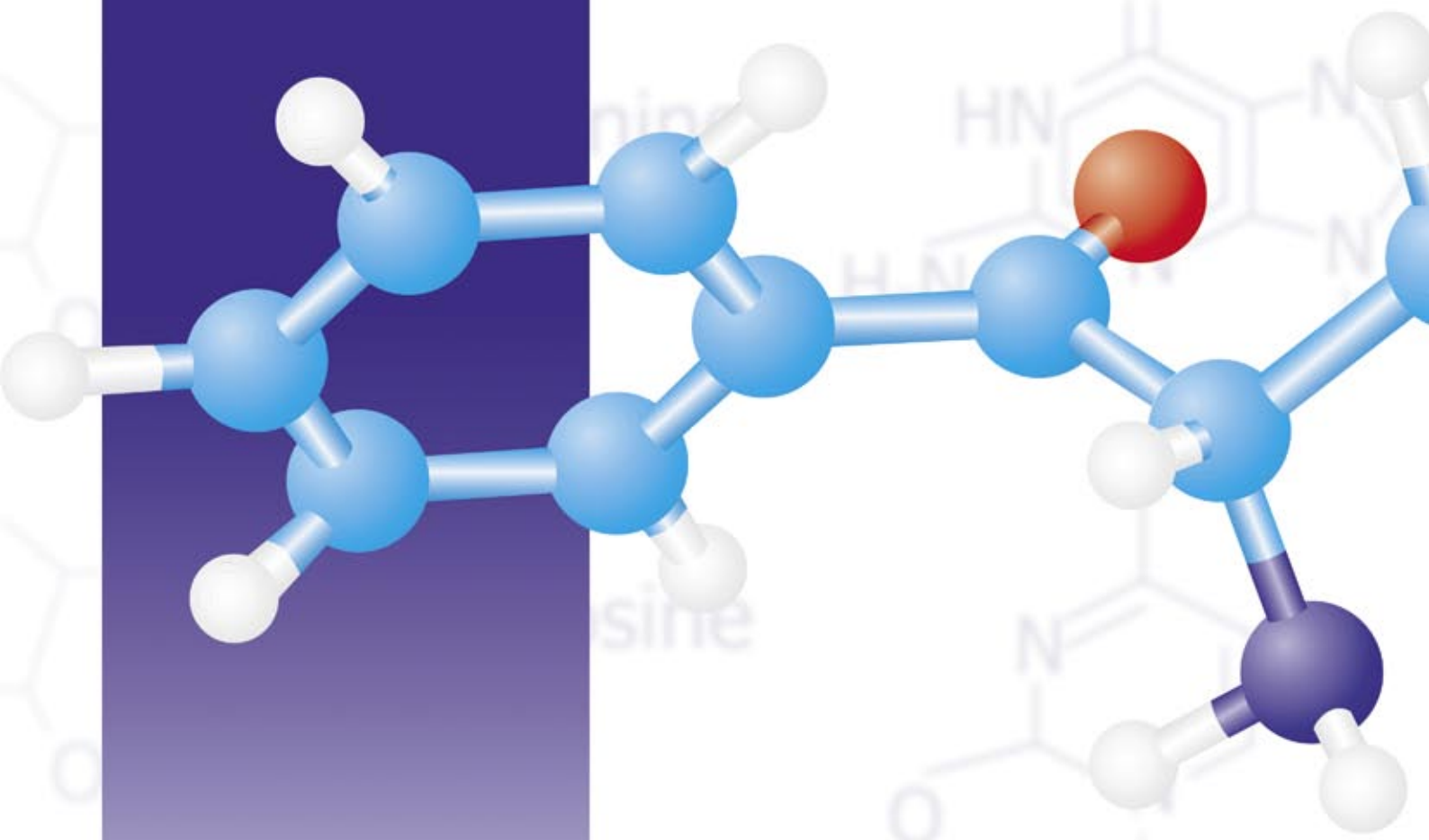

sinus
Biochemistry & Electrophoresis GmbH

ARTIFICIAL INSEMINATION (AI) OF PIGS

Civilizations throughout the world continue to depend on pig meat as an important food source. Approximately 40 million metric tons of pig meat are consumed annually worldwide. Pig numbers (940 million) and consumption have increased consistently with the increasing world population.

In the past 50 years, research-guided genetic selection and nutrition programs have had a major impact on improving carcass composition and efficiency of production in swine. The use of artificial insemination (AI) in Europe has also had a major impact on improvement in the past 35 years.

Semen extenders that permit the use of fresh semen for approx. 3 days post-collection are largely responsible for the success of AI in pigs worldwide. So called long-term extenders, that show stability of the semen for more than 10 days, are becoming more and more significant.

Our products **DiluPorc™ BTS+** and **DiluPorc™ LongTerm** are characterized by outstanding quality, which was demonstrated in several tests and applications from hog farmers, AI stations and independent institutes.

DiluPorc™ LongTerm **boar semen long-term extender**

DiluPorc™ LongTerm is a boar semen extender that Sinus Biochemistry & Electrophoresis GmbH started to produce 2 years ago. This product has been developed by combining high-purity chemicals with a special protein mix, saccharides and phospholipids, which are natural components of swine sperm serum.

The major focus of our work was to replace the widely used bovine serum albumin (BSA) with a superior product that is not isolated from bovine blood. The protein we used is a unique preparation which is guaranteed **free of BSE** (Bovine Spongiform Encephalopathy).

The user of **DiluPorc™ LongTerm** has not only the advantage of a secure chemical formulation, but also the benefit of an unproblematic customs handling. A **BSE-free Certificate** is available on request.

The composition of the product creates an optimal biochemical environment for swine sperm cells to maintain an optimal energy level and full cell integrity.

DiluPorc™ LongTerm is prepared by adding 48 grams of the white powder to 1 l of demineralised water pre-heated to 33-36°C; unused powder may be kept in a refrigerator up to 7 days.

The source of energy of **DiluPorc™ LongTerm** for sperm cells is based on purified glucose, but it contains also a modulator of energy metabolism, allowing the maintenance of motility and maximum performance for a long term.

The buffering action of **DiluPorc™ LongTerm** is due to a strong buffering chemical and to the protein present in the protein mix. This maintains the pH at a level to assure the integrity of sperm cells and that of the extra cellular medium for normal functioning.

Specific ions present in the powder have a chelating action and neutralize ions that can damage cell membrane structure or can start a premature acrosome reaction.

Minerals and other salt components assure an optimal osmotic pressure for sperm cells to maintain membrane integrity and cell function.

DiluPorc™ LongTerm contains the antibiotic gentamycin sulfate, which is highly purified and corresponds to the requirements of the pharmaceutical regulations of USP and E.P.

The most powerful component of DiluPorc™ LongTerm is the **protein mixture**, which has several unique properties:

It helps in maintaining osmotic pressure, it helps in maintaining optimal pH and it binds toxic substances that are secreted by bacteria. Further, the antioxidant properties protect sperm cell membranes against oxidation.

Swine sperm cell membranes contain many phospholipids that are vulnerable to lipid oxidation. This oxidation causes damage to the sperm cell which may lead to leakage of metabolites and enzymes that are essential for proper functioning of the sperm cell and fertilization. Due to its high molecular structure the protein mixture is also able to bind toxic proteins resulting from metabolites of dead sperm cells.

We suspect that binding of toxic metabolites from dead sperm cells and bacteria are an important factor in maintaining good quality sperm and high fertilization rates. This will be subject of further study.

DiluPorc™ BTS+ boar semen extender

DiluPorc™ BTS+ is a boar semen extender for preservation of boar semen. The powder dissolves easily in water and is then ready to use. It shows semen conservation time of approx.

4 days depending on the AI systems that are established by the user. High-active gentamycin sulphate prevents bacterial growth. Selected buffer salts and osmotic-active substances guarantee constant ion strength and conductivity, that are responsible for active metabolism of the sperm cells.

We offer 1-liter bags and several bulk quantities (5 liter, 10 liter and 100 liter). Please ask for other packing sizes if required.

Instructions for use:

Dilute in 1 liter lukewarm (30-36°C) demineralized, sterile water.

Once dissolved use sterile tools and objects only.

Dissolve at least 30 minutes and no more than 24 hours prior to use.

Rate at which sperm is diluted depends on quality and concentration of sperm used.

Rates of dilution of 1:2 (1 part sperm plus 1 part diluent) up to rates of 1:10 (1 part sperm plus 9 parts diluent) are recommended.

Avoid high discrepancies in temperature of sperm and diluent (max. 1°C).

In order to determine the exact concentration of the sperm we recommend carrying out a photometrical measurement with a spermiodensitometer/colorimeter. We recommend storing the diluted sperm in a thermobox at 16-18°C.

Storage:

- Store the DiluPorc™ powder in a dark place at 2-8°C.

Important details:

- Keep product away from children!
- Do not swallow powder!
- Once dissolved in water do not drink or inject!
- After opening, use the content within 1 hour!

Quality:

- Reception and selection of high-quality chemical raw components
- Each lot is tested for pH, osmotic pressure, conductivity and heavy metals
- Finally each lot is tested for appearance and motility of the sperm cells and for the
- Antibacterial impact in an in-vitro application test
- Lot no. and expiry date are printed on each bag

Experimental data

Motility percentage (%)	Day 1	Day 3	Day 5	Day 9
DiluPorc™ LongTerm	85,0	82,9	80,5	69,6
DiluPorc™ BTS+	71,4	70,4	68,4	47,9

Progressive motility percentage (%)	Day 1	Day 3	Day 5	Day 9
DiluPorc™ LongTerm	76,4	73,4	68,5	57,5
DiluPorc™ BTS+	42,3	37,8	36,2	24,3

A.I. experimental data

Month born	**Companies**	**No. of A.I.s**	**Farrowing Rate**	**No. of Pigs**
May 2006	8	890	92,0%	13,8
June 2006	8	930	91,0%	13,5

Ordering Information

Product	**Typ**	**Cat.No.**	**Packing sizes**
DiluPorc™ LongTerm	boar semen long-term extender	95065	1 l, 5 l, 10 l, 100 l, other packing sizes on request
DiluPorc™ BTS+	boar semen extender	95060	1 l, 5 l, 10 l, 100 l, other packing sizes on request

SINUS GmbH
Maaßstraße 28 · D-69123 Heidelberg · Germany
Phone +49 6221 82822-0
Fax +49 6221 82822-20
service@sinus-biochem.de · www.sinus-biochem.de

sinus
Biochemistry & Electrophoresis GmbH