POST-CERVICAL INSEMINATION IN SOWS

What is PC-AI?

Post-cervical artificial insemination (PC-AI) is the insemination of sows with a semen deposition beyond the cervix directly into the uterine body. A regular AI catheter is first introduced into the cervix. This catheter then acts as a guide for a thinner cannula which is pushed through the regular catheter and beyond through the sow's cervix. The semen tube, with usually a smaller volume than normal, is connected to the cannula and the semen is deposited into the uterine body. The whole procedure takes normally less time than a regular AI.

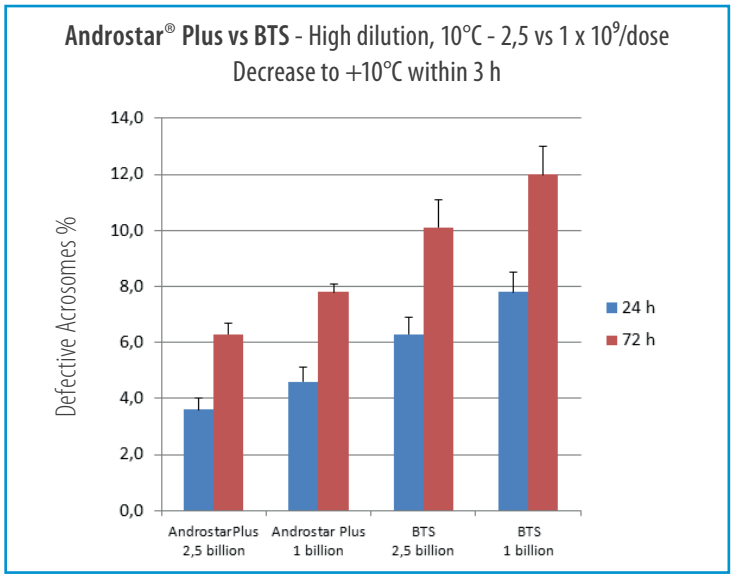
Which pre-conditions are important to respect?

One of the aims of PC-AI is the reduction of sperm numbers and volume of the dose, so the quality of the semen is of major importance. Due to the lower amount of sperm cells in semen doses used for IUI, there is no reserve left to compensate for mistakes in sperm production and impaired semen quality. This makes the evaluation of semen quality crucial in order to assure a high AI success.

In addition, the semen quality must also be maintained on a high level during the transport and storage period. This can be done by using a high quality semen extender, i.e. Androhep® Plus or Androstar® Plus. Both include CSP to preserve the integrity of sperm acrosomes and membranes, especially in high dilution rates and sub-optimal storage conditions.

Several trials have shown that the volume and the number of sperm per dose can be reduced significantly when using PC-AI. In order to not reduce the fertility level in a sow herd, a semen dose for PC-AI should contain a minimum of 50 ml volume and 1 billion of motile sperm cells.

Further, a boar ejaculate does not only contain spermatozoa but also seminal plasma, the latter having a protective effect to the functionality of the sperm membranes and acrosomes as well. If semen is extended at high ratios for preparing doses for PC-AI, a minimum part of seminal plasma should remain in the diluted semen. This can be assured if the whole ejaculate is collected during semen collection and not only the sperm rich fraction, which is poor in seminal plasma content.



Protective effect of Androstar® Plus boar semen extender on sperm acrosomes when compared to BTS. Also temperature stress was applied to the diluted semen.

Catheters for post-cervical insemination (PC-AI): PC Clear and PC Blue

Your benefits

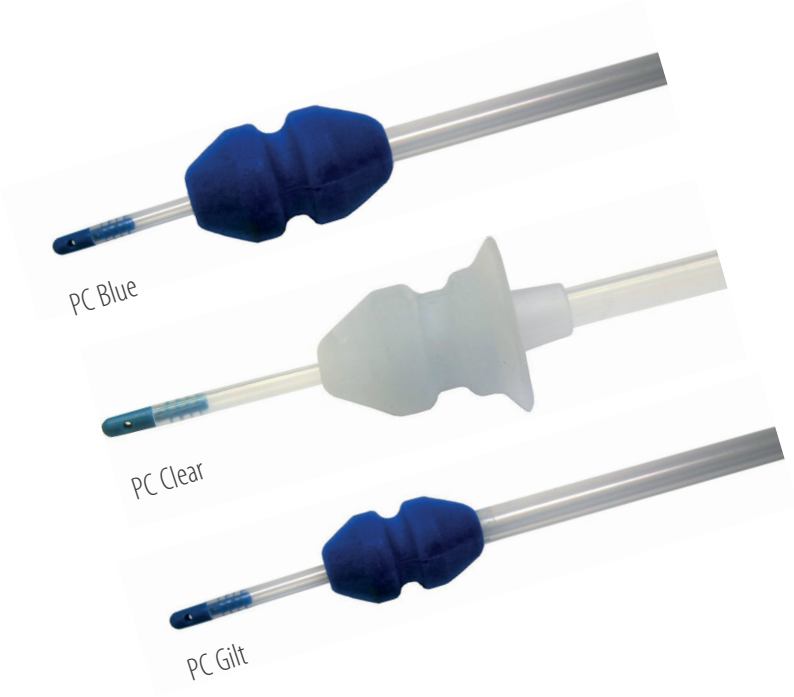
- Ideal for the post-cervical insemination of sows: all sperm cells reach the uterus and can therefore easier be transported to the fallopian tubes by means of the uterus contractions.
- The fertility of the inseminated sow can thus be improved, or can be maintained with a reduced amount of sperm cells.
- The insemination with the PC Cannula does not require more time than the utilization of classic catheters.
- The tip of the outer catheter of the PC Blue and PC Clear is already lubricated; each catheter with an inner Cannula is individually packaged in the hygienic SafeBlue sheath.
- Rounded, atraumatic tip of the PC Cannula: very low risk of injury during the passage through the cervix.
- Side opening: the tip of the cannula cannot be blocked by uterus mucus and the semen can freely flow into the uterus.
- Inner catheter optimized in material design and flexibility to glide along the cervix tissue. No blocking and kinking in cervix cushions.
- Tube adapter provides very secure fixation of the tube to the PC Cannula.
- PC Blue and PC Gilt are sterilised.

PC Clear, PC Cannula with SafeBlue ClearGlide
individually packaged, sterilised, 25/bag REF. : 17112/3000

PC Blue, PC Cannula with SafeBlue Foamtip®
individually packaged, sterilised, 25/bag REF. : 17112/2000

PC Cannula for post-cervical insemination
of pigs, 5/bag REF. : 17112/1010

PC Gilt Catheter for post-cervical insemination
of gilts, 1/bag REF. : 17112/4000

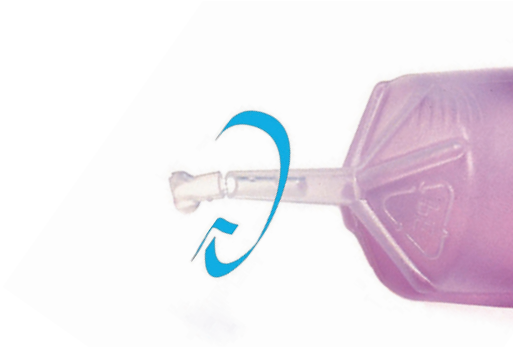


Tips and tricks

- The presence of a boar during PC-AI insemination is not recommended. The stimulation of the sow by the boar causes contractions of the uterus which complicates the introduction of the PC-cannula. Therefore, it is better to do the heat detection separately and not at the same time of the insemination.
- Gilts can mostly be inseminated after the third oestrus with PC-AI. The reproductive tract and thus the cervix of younger animals are not yet sufficiently developed.
- The boar may be driven in the feed alley in front of the sows after the AI. The stimulation by the boar improves the sperm transport in the uterus of the sow.
- A good possibility for training PC-AI is a uterus from the slaughter house. The procedure of this kind of insemination is easier to learn if one can feel the cervix passage and also see it.

Preparation of semen doses for PC-AI

For the production of low volume semen tubes for post-cervical insemination, Minitube offers specialized equipment for filling and sealing small semen tubes.



QuickTip Flexitube® for PC-AI (60 ml)
2300/box REF.: 13451/03501

Tube magazine for 60 ml QuickTip Flexitube®
for 6 tubes REF. : 13204/5006

The magazine holds the short tubes in an elevated position, so that they can be filled and sealed i.e. in the manual filler and the 6-tube sealer without any changes of the equipment between processing of standard and short tubes. The only item to change between filling of long and short tubes is the magazine.

Semiautomatic filling system (Ref. 13203/0000) and 6-tube sealer (Ref. 13225/0000), suitable for standard and short tubes

Androstar® Plus with Gentamicin
1 liter REF. : 13531/1001

- High quality extender that preserves the semen quality even in high dilution rates
- Allows the preservation of boar semen for up to 7 days
- Contains MPI for membrane stabilization. Thus the sperm cells are less susceptible to sub-optimal storage conditions
- Available with 1 or more antibiotics and in many different packaging sizes

Androhep® Plus with Gentamicin
1 liter REF. : 13529/5001

- High quality extender that preserves the semen quality even in high dilution rates
- Allows the preservation of boar semen for up to 9 days.
- Contains MPI, BSA and specially selected molecules to maintain the functionality and reactivity of the spermatic cell membranes and to protect the sperm cells from oxidation caused by free radicals.
- Available with 1 or more antibiotics and in many different packaging sizes

minitube

How to prepare semen doses for PC-AI?

1. Collect the whole boar ejaculate in order to maintain a high level of seminal plasma in the ejaculate.
2. Assure an exact evaluation of the semen quality. Use only ejaculates with minimum 80 % motile and morphologically normal sperm. An exact and objective evaluation with a CASA system is ideal.
3. Choose a high quality extender that preserves the semen quality even in high dilution rates. A negative dilution effect can be alleviated by protective extenders like Androhep® Plus and Androstar® Plus.
4. Prepare semen doses of 50 ml+ total volume, containing around 1 billion viable spermatozoa. To make sure, that each semen dose contains the minimum number of sperm, it is important to maintain the diluted ejaculate well mixed during the filling process of the semen tubes and to prevent sedimentation.
5. The cooling curve and storage conditions are similar to semen doses for regular AI. Bear in mind, that the lower volume tubes are more prone to temperature fluctuations because of the higher surface to volume ratio of the smaller tubes.

How to perform PC-AI?

The heat detection and the PC-AI may be carried out separately The intra-uterine insemination can be performed without the presence of a stimulating boar. The timing of insemination corresponds to the regular insemination.

First, clean the vulva of the sow with a dry paper towel. Insert the PC Blue respectively the PC Clear catheter with its plastic protection bag 5 to 10 cm into the vagina of the sow. Then, push the outer insemination catheter through the protection bag. The tip of the inner PC- cannula must remain completely inside the outer catheter.

Now, push the catheter until it is fixed in the cervix of the sow. Take a break of at least 2 minutes. A longer break helps to relax the cervix for an easier penetration by the cannula. Within these two minutes you can insert the outer catheters in other sows and then go back to the first sow and proceed.

Then, with a slight pressure, start to push the inner cannula through the cervix of the sow into the uterine body, as you may see here on an ex-vivo uterus. You may facilitate the process by slightly pulling the catheter and slightly rotating the PC cannula.

Move the PC cannula through the cervix until the cannula can be moved freely and then a resistance can be felt again. In doing so, the cannula passes freely into the uterine body until it comes across a slight resistance from the uterine walls. Insert the PC cannula at least 8 to 14 cm. Then, connect the semen tube to the PC cannula. Now the semen may be inseminated.

Let the semen flow into the uterine body by exerting a slight pressure on the tube. Normally, emptying the tube takes only a few seconds. The semen should flow freely. If a higher pressure on the tube is necessary, it can be helpful to slightly move the PC cannula in the uterus.

Cannula and catheter may be withdrawn immediately after insemination. First remove the inner cannula completely out of the cervix. Then, remove both catheters from the sow.