Post-cervical insemination in sows



What is PCAI?

Post-cervical artificial insemination (PCAI) is the insemination of sows with a semen deposition beyond the cervix directly into the uterine body. A standard AI catheter is first introduced into the cervix. This catheter then serves as a guide for a thinner cannula that 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 usually takes less time than a regular AI.

How to prepare semen doses for PCAI?

1. Collect the whole boar ejaculate in order to maintain a high level of seminal plasma in the ejaculate.
2. Ensure accurate evaluation of the semen quality. Use only ejaculates with at least 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 at high dilution rates. A negative dilution effect can be alleviated by protective extenders such as Androstar® Plus and Androstar® Premium.
4. Prepare semen doses of 50 ml+ total volume, containing approx. 1 billion viable spermatozoa. To ensure 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 those for regular AI semen doses. Note that the lower volume tubes are more prone to temperature fluctuations due to the higher surface to volume ratio of the smaller tubes.

Tips and tricks

- The presence of a boar during PCAI insemination is not necessary. The stimulation of the sow by the boar causes contractions of the uterus that can make it difficult to insert the PC cannula. Therefore, it is better to do the heat detection separately and not at the same time as the insemination.
- Gilts can usually be inseminated with PCAI after the third estrus. The reproductive tract, and therefore the cervix, is not sufficiently developed in younger animals.
- The boar can be driven to 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 PCAI is a uterus from the slaughter house. The procedure of this type of insemination is easier to learn if you can feel and see the passage of the cervix.

minitube

Catheters for post-cervical insemination

- Ideal for the post-cervical insemination of sows: all semen cells reach the uterus and are more easily transported into the fallopian tube by uterine contractions
- The fertility of the inseminated sow can thus be improved, or can be maintained with a reduced number of sperm cells
- Insemination with the PC cannula does not take more time than the use of standard 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, allowing sperm to flow freely 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
- Stopper allows the fixation of the inner cannula in the catheter, so that it remains in its current position

PC Clear, SafeBlue ClearGlide® with PCAI cannula, individually packed, lubricated, 25/bag [1]	17112/3000
PC Blue, SafeBlue Foamtip® with PCAI cannula (length: 820 mm) [2]	
individually packed, lubricated, 25/bag	17112/2000
with stopper, individually packed, lubricated, 25/bag	17112/2002
EcoFit Foamtip with PCAI cannula and stopper (720 mm), 25/bag [3]	17120/2000
EcoFit SoftGilt with PCAI cannula and stopper (720 mm), 25/bag [4]	17120/3000
PC cannula for post-cervical insemination, length: 820 mm	
5/bag	17112/1015
with stopper, 5/bag	17112/1016









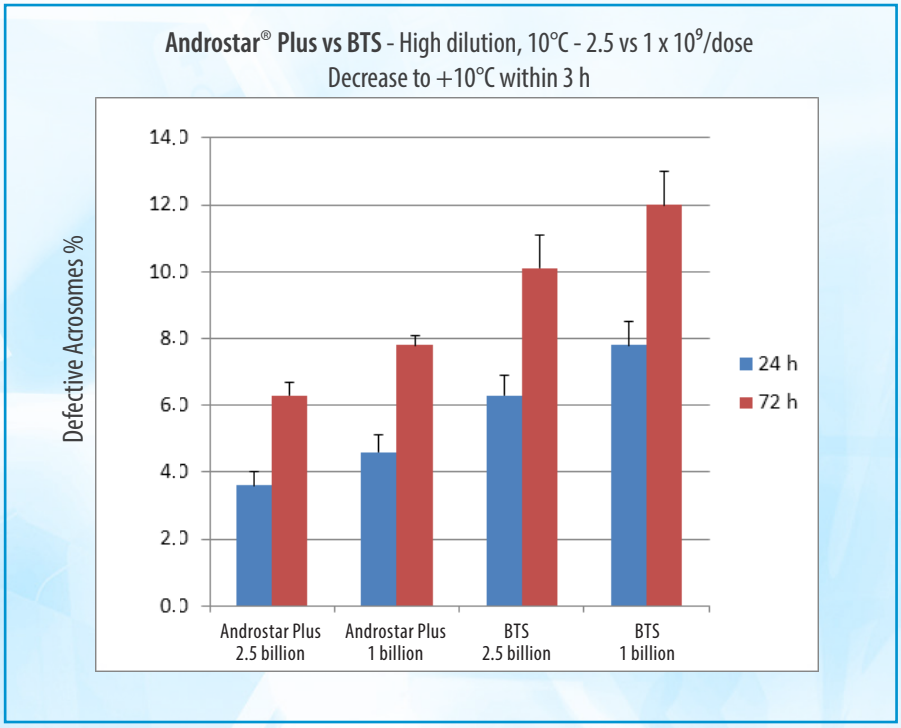
Which pre-conditions are important to respect?

One of the goals of PCAI is to reduce sperm numbers and volume of the dose, so the semen quality is of great importance. Due to the lower number of sperm cells in the semen doses used for PCAI, 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 ensure 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 achieved by using a high-quality semen extender such as Androstar®Plus or Androstar® Premium. Both contain CSP to preserve the integrity of the sperm acrosomes and membranes, especially at high dilution rates and sub-optimal storage conditions.

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

Further, a boar ejaculate contains not only spermatozoa but also seminal plasma, which has a protective effect on the functionality of the sperm membranes and acrosomes as well. When semen is extended at high ratios to prepare doses for PCAI, a minimum part of seminal plasma should remain in the diluted semen. This can be ensured if the whole ejaculate is collected during semen collection and not just the sperm rich fraction with low seminal plasma content.



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

How to perform PCAI?





The heat detection and the PCAI can be performed separately. The intra-uterine insemination can be performed without the presence of a stimulating boar. The timing of insemination is the same as for regular insemination.

1 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.

2 Now, push the catheter until it is fixed in the cervix of the sow. Pause for at least 2 minutes. A longer pause will help relax the cervix for easier penetration by the cannula. The inner cannula can be fixed with the stopper during this time. Within these two minutes, you can insert the outer catheters into other sows and then return to the first sow and proceed.

3 Then, using gentle pressure, release the stopper and start to push the inner cannula through the cervix of the sow into the uterine body, as you can see below on an ex-vivo uterus. You may facilitate the process by slightly pulling the catheter and slightly rotating the PC cannula.

4 Advance the PC cannula through the cervix. At a certain point, the cannula can be advanced freely and then a resistance will be felt again. This is when the cannula passes freely through the uterine body until it meets a slight resistance from the uterine walls. Insert the PC cannula at least 8 to 14 cm. If you use a PC Blue with stopper, you can fix the position of the inner cannula by attaching the stopper to the end of the Foamtip catheter. Then, connect the semen tube to the PC cannula. You are now ready to inseminate.

5 Allow the semen to flow into the uterine body by applying light pressure to the tube.Normally, emptying the tube takes only a few seconds. Semen should flow freely. If more pressure on the tube is necessary, it may be helpful to slightly move the PC cannula in the uterus.

6 The cannula and catheter can be removed immediately after insemination. First remove the inner cannula completely from the cervix. Then, remove both catheters from the sow.





Subject to modifications, errors excepted. Illustrations similar. | 07/2026