Effect of different cooling regimes and extenders on survival of liquid boar semen

Einfluss von Abkühlverfahren und Verdünner auf die Überlebensrate von flüssig konserviertem Ebersamen

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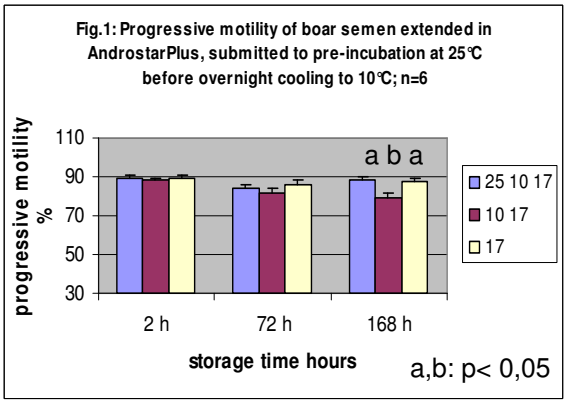
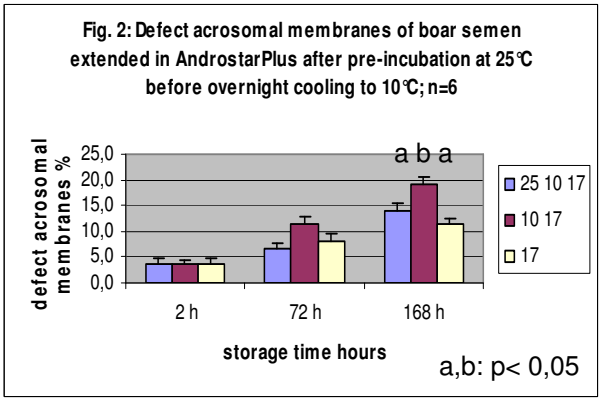
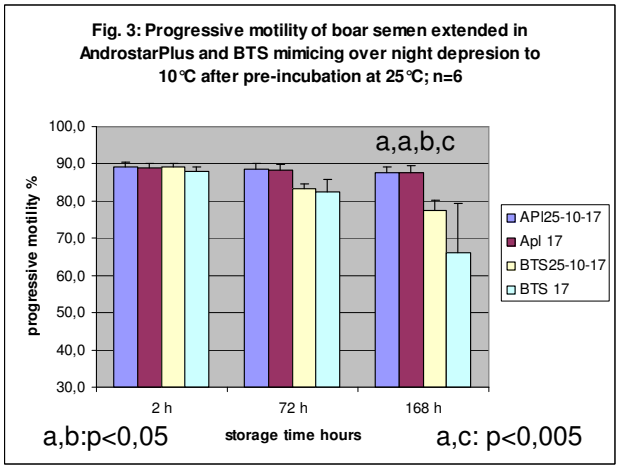
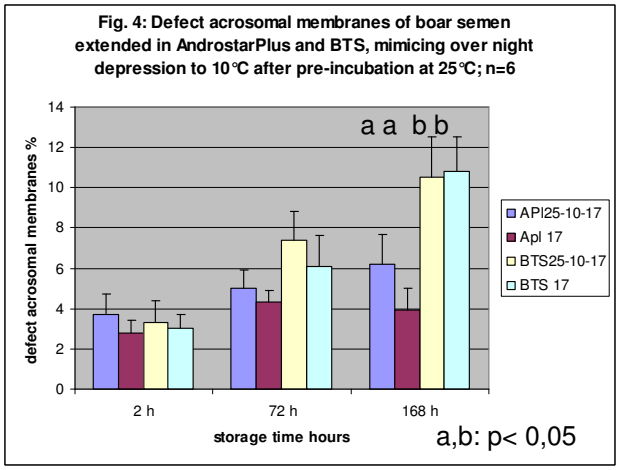
Introduction: Liquid preserved boar semen is highly sensitive against cooling. Especially the first hours after collection and extension represent a critical time, in which dilution and temperature shock are pivotal in maintaining motility and membrane integrity. In the experiments an overnight depression to 10°C is investigated to mimic field conditions.

Material and Methods: Two different media with and without a cold shock protecting substance CSP (AndrostarPlus, BTS) were used. Ejaculates from six boars were extended at + 32°C in split samples to 2,5x10^9 sperm cells per 80 ml and submitted to different cooling procedures: In exp. 1 (Fig. 1,2) The CSP-containing AndrostarPlus extended semen was pre-incubated at 25°C before over night cooling to 10°C; in exp. 2 (Fig.3,4) AndrostarPlus and BTS semen was preserved using pre-incubation at 25°C before overnight cooling to investigate the CSP effect. Progressive motility and status of acrosomal membranes were evaluated at 2, 72 and 168 houres after processing.









Results: Experiment 1 (Fig.1,2) show a significant protecting effect of a 24 h pre-incubation at 25°C before overnight cooling to 10°C: The pre-incubation data show no difference to the control semen stored at 17°C.

Experiment 2 (Fig. 3,4) investigated the hypothetical protecting effect of CSP in AndrostarPlus in comparison to the standard extender BTS. The differences of progressive motility and defect acrosomal membranes between the treatments (AndrostarPlus vs BTS) were significant, indicating the specific protecting effect of CSP. Within the CSP semen no differences was found between control (17°) and cooling (25-10-17).

Discussion: A significant protecting effect of the pre-incubation treatment at 25°C before overnight cooling to 10°C could be seen (Fig.1 &2). The data indicate, that freshly extended boar semen needs a very slow adaptation to lower temperatures before use. A comparison to the control samples, stored at routinely 17°C, showed no difference. The hypothetical protection of CSP could be confirmed in exp. 2 (Fig. 3, 4). It seems that extenders, containing specific cooling protecting substances, can be useful to overcome transport problems of liquid extended boar semen during winter time, when the transport temperature pass below 17°C.