# EFFECT OF CAFFEINE ADDITION ON FROZEN-THAWED BOAR SPERMATOZOA

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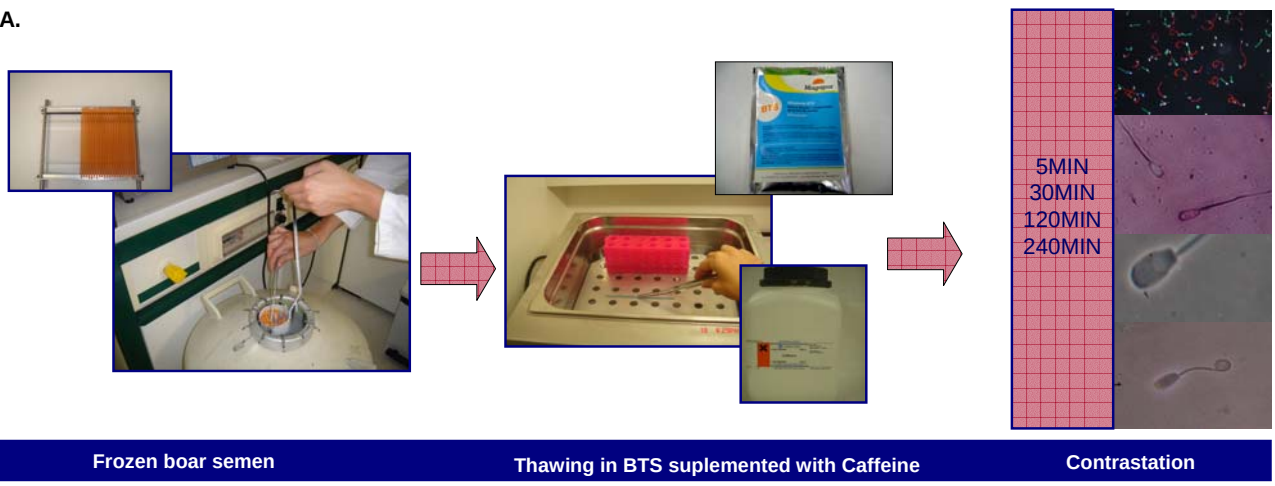
## OBJECTIVE

**Addition of caffeine to a thawing extender in order to improve quality of frozen-thawed boar semen.**

## MATERIAL AND METHODS

**In this experiment, at the moment of semen thawing, caffeine was incorporated in a Beltsville Thawing Solution based extender at different concentrations (0, 2.5, 5 and 10 mM), with the purpose of studying their effects on the sperm functionality. Frozen semen doses (500 x10$^6$ spermatozoa/0.5 ml) from 3 Pietrain boars were used. For each caffeine treatment, six straws from different boars were thawed and pooled. Semen was thawed at 37ºC for 21 sec in water, added to 3 ml BTS supplemented just before thawing with different caffeine concentrations and then diluted with same media to reach a volume of 10 ml. Total motility, progressive motility (CASA), viability, hypoosmotic swelling test and acrosome status were assessed at 5, 30, 120 and 240 min after thawing. Statistical comparison was made by ANOVA.**




## RESULTS

**These results showed that at 5, 30 and 240 min, there were no statistical differences (p>0.05) among treatments for any parameter. However, we found between groups significant differences (p<0.05) in progressive motility (mean±SEM) at 120 min (0mM: 17.4±6.4; 2.5mM: 44.6±6.8; 5mM: 32.9±4.6 and 10mM: 32.9± 4.2), but not for the other parameters.**

| PRUEBAS | TRATAMIENT. | 5 MIN | | 30 MIN | | 120 MIN | | 240 MIN | |
|---|---|---|---|---|---|---|---|---|---|
| | | MEDIA±ES | Signific. | MEDIA±ES | Signific. | MEDIA±ES | Signific. | MEDIA±ES | Signific. |
| MOT | 0 mM | 58,50±5,494 | 0,88 | 58,25±5,709 | 0,44 | 31,75±9,047$^a$ | 0,07 | 21,50±7,290 | 0,46 |
| | 2,5 mM | 63,38±7,081 | | 61,63±5,685 | | 59,63±6,772$^b$ | | 30,75±7,634 | |
| | 5 mM | 62,00±7,023 | | 69,75±5,361 | | 50,25±5,212$^{ab}$ | | 22,13±3,939 | |
| | 10 mM | 65,50±4,881 | | 66,25±4,174 | | 48,38±6,649$^{ab}$ | | 16,25±5,821 | |
| PROG | 0 mM | 36,88±5,601 | 0,78 | 35,38±5,257 | 0,11 | 17,63±6,400$^a$ | 0,02 | 11,13±4,177 | 0,27 |
| | 2,5 mM | 43,50±5,673 | | 44,38±5,729 | | 44,63±6,832$^b$ | | 7,13±2,850 | |
| | 5 mM | 41,50±6,021 | | 52,38±4,769 | | 32,88±4,654$^{ab}$ | | 18,38±6,071 | |
| | 10 mM | 44,38±4,594 | | 45,25±2,102 | | 32,38±4,230$^{ab}$ | | 9,75±2,128 | |
| VM | 0 mM | 79,00±2,507 | 0,27 | 71,38±3,053 | 0,85 | 57,50±5,590 | 0,52 | 60,00±9,769 | 0,79 |
| | 2,5 mM | 74,25±1,532 | | 72,88±2,279 | | 47,75±6,974 | | 56,00±3,684 | |
| | 5 mM | 77,00±2,673 | | 72,75±1,461 | | 54,25±4,131 | | 50,50±6,162 | |
| | 10 mM | 73,00±2,360 | | 70,50±1,842 | | 57,75±3,936 | | 56,50±5,247 | |
| ENDO | 0 mM | 56,25±5,812 | 0,97 | 44,00±5,264 | 0,69 | 24,25±2,343 | 0,91 | 19,50±4,371 | 0,58 |
| | 2,5 mM | 51,75±5,338 | | 42,00±4,811 | | 24,50±3,134 | | 25,00±3,665 | |
| | 5 mM | 54,75±5,291 | | 36,25±3,057 | | 26,00±2,236 | | 25,00±2,673 | |
| | 10 mM | 53,25±8,791 | | 41,00±5,113 | | 22,75±4,225 | | 25,50±3,065 | |
| ACRO | 0 mM | 24,38±3,693 | 0,64 | 21,13±3,270 | 0,16 | 18,88±3,221 | 0,72 | 9,75±2,969 | 0,43 |
| | 2,5 mM | 26,38±3,380 | | 19,25±2,795 | | 18,00±2,353 | | 12,25±1,760 | |
| | 5 mM | 32,00±5,332 | | 31,00±5,441 | | 23,13±3,805 | | 15,75±3,132 | |
| | 10 mM | 25,75±4,978 | | 22,75±3,098 | | 20,13±3,686 | | 11,75±2,144 | |

## CONCLUSION

**In conclusion, the addition of caffeine to the thawing extender had little influence on frozen-thawed sperm functionality.**

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