

## **Alpha-linolenic acid supplementation in Tris extender can improve frozen–thawed bull semen quality**

### **ABSTRACT**

The study was conducted to evaluate the effects of  $\alpha$ -linolenic acid (ALA) on frozen–thawed quality and fatty acid composition of bull sperm. For that, twenty-four ejaculates obtained from three bulls were diluted in a Tris extender containing 0 (control), 3, 5, 10 and 15 ng/ml of ALA. Extended semen was incubated at 37°C for 15 min, to allow absorption of ALA by sperm cell membrane. The sample was chilled for 2 h, packed into 0.25-ml straws and frozen in liquid nitrogen for 24 h. Subsequently, straws were thawed and evaluated for total sperm motility (computer-assisted semen analysis), membrane functional integrity (hypo-osmotic swelling test), viability (eosin-nigrosin), fatty acid composition (gas chromatography) and lipid peroxidation (thiobarbituric acid-reactive substances (TBARS)). A higher ( $p < 0.05$ ) percentage of total sperm motility was observed in ALA groups 5 ng/ml ( $47.74 \pm 07$ ) and 10 ng/ml ( $44.90 \pm 0.7$ ) in comparison with control ( $34.53 \pm 3.0$ ), 3 ng/ml ( $34.40 \pm 2.6$ ) and 15 ng/ml ( $34.60 \pm 2.9$ ). Still, the 5 ng/ml ALA group presented a higher ( $p < 0.05$ ) percentage of viable sperms ( $74.13 \pm 0.8$ ) and sperms with intact membrane ( $74.46 \pm 09$ ) than all other experimental groups. ALA concentration and lipid peroxidation in post-thawed sperm was higher in all treated groups when compared to the control group. As such, the addition of 5 ng/ml of ALA to Tris extender improved quality of frozen–thawed bull spermatozoa.

**Keyword:** ALA; Tris extender; Bull sperm