

## عنوان مقاله:

Effect of methylxanthines on motility, membrane integrity and DNA damage of frozen-thawed buffalo spermatozoa

## محل انتشار:

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## خلاصه مقاله:

Methylxanthine supplementation has resulted in better seminal characteristics in fresh and cryopreserved spermatozoa. The objective of this study was to determine the effect of methylxanthines such as pentoxifylline, theophylline, and caffeine on the post-thaw quality of buffalo bull spermatozoa. The semen was collected from four mature regular donor buffalo bulls. The ejaculates having more than 80% motility were pooled, split into four aliquots, and then diluted in Tris-citric acid-based extender having different concentrations of pentoxifylline (3.5mM), caffeine (10mM), theophylline (25mM), and control (without additives). All semen extenders were cooled to 4°C within 2 hours, equilibrated at 4°C for four then filled in 0.5 ml French straws and frozen in a programmable cell freezer before plunging into liquid nitrogen. Semen was thawed at 37°C for 40 seconds after a week of storage inside liquid nitrogen. Of the three additives, only supplementation of pentoxifylline in cryopreservation extender significantly improved total and progressive semen motility relative to that of untreated control ( $P < 0.05$ ). Pentoxifylline also increased plasma membrane integrity and some motion patterns such as curvilinear velocity (VCL), average path velocity (VAP), and straight-line velocity (VSL) when compared to theophylline, caffeine, or control ( $P < 0.05$ ). No significant differences were observed for acrosomal integrity and DNA damage of frozen-thawed buffalo spermatozoa in an extender containing methylxanthines. The findings of this study showed that supplementation of methylxanthines such as pentoxifylline in semen cryopreservation extender has more potential to elevate motility and membrane integrity of buffalo frozen-thawed spermatozoa.

## کلمات کلیدی:

Methylxanthines, sperm, cryopreservation, motility, Buffalo

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