Title

Thawing of cryopreserved sperm from domestic animals: Impact of temperature, time, and addition of molecules to thawing/insemination medium

Abstract

In recent decades, there has been a growing interest in optimizing the protocols intended to sperm cryopreservation in domestic animals. These protocols include initial cooling, freezing, and thawing. While different attempts have been devised to improve sperm cryopreservation, the efficiency of this reproductive biotechnology is still far from being optimal. Furthermore, while much attention in improving cooling/freezing, less emphasis has been made in how thawing can be ameliorated. Despite this, the conditions through which, upon thawing, sperm return to physiological temperatures are much relevant, given that these cells must travel throughout the female genital tract until they reach the utero-tubal junction. Moreover, the composition of the media used for artificial insemination (AI) may also affect sperm survival, which is again something that one should bear because of the long journey that sperm must make. Furthermore, sperm quality and functionality decrease dramatically during post-thawing incubation time. Added to that, the deposition of the thawed sperm suspension devoid of seminal plasma in some species during an AI is accompanied by a leukocyte migration to the uterine lumen and with it the activation of immune mechanisms. Because few reviews have focused on the evidence gathered after sperm thawing, the present one aims to compile and discuss the available information concerning ruminants, pigs and horses.

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