Accepted Manuscript

Characteristics and fertility of domestic cat epididymal spermatozoa cryopreserved with two different freezing media

Eugeny Brusentsev, Elena Kizilova, Valentina Mokrousova, Valeria Kozhevnikova, Irina Rozhkova, Sergei Amstislavsky

PII: S0093-691X(17)30628-3

DOI: 10.1016/j.theriogenology.2017.12.038

Reference: THE 14408

To appear in: *Theriogenology*

Received Date: 6 July 2017

Revised Date: 27 December 2017

Accepted Date: 27 December 2017

Please cite this article as: Brusentsev E, Kizilova E, Mokrousova V, Kozhevnikova V, Rozhkova I, Amstislavsky S, Characteristics and fertility of domestic cat epididymal spermatozoa cryopreserved with two different freezing media, *Theriogenology* (2018), doi: 10.1016/j.theriogenology.2017.12.038.

Characteristics and fertility of domestic cat epididymal spermatozoa cryopreserved with two different freezing media

Eugeny Brusentsev[1], Elena Kizilova[1,2], Valentina Mokrousova[1,2], Valeria Kozhevnikova[1,2], Irina Rozhkova[1], Sergei Amstislavsky[1,a]

[1]*Institute of Cytology and Genetics, Siberian Branch of the Russian Academy of Sciences, prosp. Lavrent'eva 10, Novosibirsk, 630090 Russia*

[2]*Novosibirsk State University, Pirogova 2, Novosibirsk, 630090 Russia*

Received for publication:

Accepted:

[a]Corresponding author: Sergei Amstislavsky, Phone: +79137535873; Email: amstis@yandex.ru

ABSTRACT

The study represents a comparison of cryopreservation of domestic cat epididymal spermatozoa with two commercially available freezing media: CaniPlus Freeze (CPF) and SpermFreeze (SF). The viability of nonfrozen spermatozoa evaluated by the VitalScreen test was 68.7±3.0%. These figures were lower for the frozen-thawed spermatozoa: 51.2±6.3% for CPF group and 54.4±3.1% for SF group. The motility of nonfrozen spermatozoa was 57.2±4.5%. These figures were reduced in both frozen-thawed groups; however, there was no significant difference in these parameters between CPF (30.8±7.1%) and SF (27.4±8.1%) groups. The percentage of nonprogressively moving motile spermatozoa after freezing-thawing was decreased in both frozen-thawed groups (23.5±5.9 and 12.0±2.4 for CPF and SF frozen correspondingly) as compared with nonfrozen controls (42.1±4.1%). Morphology of spermatozoa was assessed by light microscopy. The mean percentages of normal spermatozoa were 28.5±4.1% for nonfrozen group, 26.0±2.3% for CPF frozen group, and 23.9±1.9% for SF frozen group. The most frequent anomalies in all the three groups were flagella and combined defects. In vitro fertilization (IVF) of domestic cat oocytes with nonfrozen and frozen-thawed spermatozoa produced developing embryos. The percentage of in-vitro-derived embryos was 43.6% after using nonfrozen spermatozoa. Frozen-thawed spermatozoa developed at a similar rate (44.0%) after using SF. However, the rate of embryo development was lower (20.1%) when CPF was used. The in-vitro-derived embryos in the nonfrozen group consisted of 46.9±2.5 cells after 5-day culturing. After cryopreservation with SF and CPF the cell numbers per embryo were 39.9±2.7 and 31.8±3.4 correspondingly. In CPF group these numbers were lower than in nonfrozen controls. Cryopreservation of spermatozoa with either of two freezing media led to a decrease in post-