

Evaluation of quality of grass carp (*Ctenopharyngodon idella*) sperm during short-term storage

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INTRODUCTION

Short-term storage allows for the safe handling of gametes for short periods, ranging from hours to weeks (Yasui et al., 2015). This method eliminates the need for keeping males, facilitates gamete storage, enables sperm selection for breeding programs, and contributes to the creation of gene banks (Gallego and Asturiano, 2019; Yasui et al., 2015). In this regard, the purpose of the current study was to evaluate the sperm quality of grass carp (*Ctenopharyngodon idella*) during chilled storage at 4 °C.

METHOD

This study assessed the motility time and percentage of motile spermatozoa in grass carp at 0, 24, 48, 72, and 96 hours after being stored at a chilled temperature of 4 °C. The semen from eight mature males, with a mean weight of 7837.5 ± 1132.5 g, was used for this purpose. For the sampling process, the fish were anesthetized using clove powder extract. Semen was then collected by applying gentle pressure to the abdominal region. Half a mL of each semen sample was placed in a tube and stored under chilled conditions. The examination of these samples was conducted during storage time.

RESULTS

The results indicate that 48 hours after chilled storage, there was a significant difference in the percentage of motile spermatozoa compared to the initial time ($P < 0.05$, Table 1). Furthermore, significant differences in motility time were noted from 72 hours after chilled storage compared to the initial time ($P < 0.05$).

Table 1. Motility time and percentage of motile sperm (mean \pm SEM) of the grass carp (*Ctenopharyngodon idella*) during chilled storage (+4°C)

Hours after storage	n*	Spermatological parameters	
		Motile sperm (%)	Motility time (second)
0**	8	92.5 ± 2.5^a	43.7 ± 1.1^a
24	8	78.7 ± 4.0^a	40.7 ± 1.7^a
48	8	57.5 ± 3.6^b	36.9 ± 1.1^a
72	6	23.7 ± 6.2^c	23.2 ± 5.2^b
96	3	7.5 ± 4.1^c	7.9 ± 3.9^c

Groups with different alphabetic superscripts in the same column differ significantly at $P < 0.05$; * Number of samples with motile sperm in each time; ** Before chilled storage.

All semen samples remained active for up to 48 hours after being chilled. After 96 hours of storage, the mean activity in the three remaining samples was $7.5 \pm 4.1\%$. According to the results, the best quality of the samples was observed within 24 hours of chilled storage.

CONCLUSION & FUTURE WORK

Our results showed that samples stored under chilled conditions for up to 24 hours could be suitable for fertilization. Therefore, storing grass carp semen in chilled conditions for up to 24 hours can facilitate the artificial insemination process in hatchery centers. Future research could focus on cryopreservation techniques to enhance the storage period of semen in this species.

REFERENCES

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