

Journal of Andrology, Vol. 24, No. 3, May/June 2003  
Copyright © [American Society of Andrology](#)

# Relationship Between the Characteristics of Epididymal Red Deer Spermatozoa and Penetrability Into Zona-Free Hamster Ova

ANA J. SOLER\* AND JOSÉ J. GARDE\*,†

*From the Departments of \* Agroforestry Science and Technology and Game Resources (IDR), Castilla-La Mancha University (UCLM), and † Institute of Research on Game Resources (IREC), UCLM-CSIC-JCCM, Albacete, Spain.*

Correspondence to: Dr José. J. Garde, IDR, Sección de Recursos Cinegéticos y Ganaderos. Campus Universitario, 02071. Albacete, Spain (e-mail: Julian.Garde{at}uclm.es).

A heterologous (zona-free hamster oocytes) in vitro fertilization (IVF) system was used to evaluate the relationship between sperm factors and penetration capacity of epididymal red deer spermatozoa. The sperm parameters evaluated in 36 sperm samples obtained postmortem from stags selectively shot during the rutting season were sperm motility, functional integrity of plasma membrane by means of the hypo-osmotic swelling test (HOST), and, simultaneously, viability and acrosomal status via a triplestain technique. Zona-free hamster oocytes were used to evaluate the capacity of the different sperm assays to predict in vitro penetration. In order to increase the variability in sperm quality, we recovered samples from stags at different intervals between the death of the male and the collection of the genitalia. All measures of sperm quality declined progressively ( $P < .001$ ) with increasing intervals between death and sample collection. In addition, many sperm parameters were related to penetration ability in vitro. Subsequently, sperm samples were rearranged in 2 categories according to the interval that had elapsed between death and the collection of the genitalia (group 1, short interval = 0–12 h; group 2, large interval = 18–40 hours). When samples were grouped, less correlation achieved significance, especially for group 1, than when samples were not divided. Also, correlation between the number of sperm per oocyte and sperm parameters for group 1, which had the highest values of sperm quality, failed to reach significance. It is concluded that the classical parameters accepted in assessing the viability of deer spermatozoa can be good predictors of the penetrating ability of the spermatozoa when satisfactory in vitro conditions are used for the development of the IVF system. Also, this study demonstrates that compatible heterologous gamete interaction allows thorough assessment of sperm function in a wild deer.

Key words: *Cervus elaphus hispanicus*, heterologous IVF, postmortem, sperm function

## This Article

- ▶ [Full Text](#)
- ▶ [Full Text \(PDF\)](#)
- ▶ [Alert me when this article is cited](#)
- ▶ [Alert me if a correction is posted](#)

## Services

- ▶ [Similar articles in this journal](#)
- ▶ [Similar articles in PubMed](#)
- ▶ [Alert me to new issues of the journal](#)
- ▶ [Download to citation manager](#)

## Citing Articles

- ▶ [Citing Articles via HighWire](#)
- ▶ [Citing Articles via Google Scholar](#)

## Google Scholar

- ▶ [Articles by Soler, A. J.](#)
- ▶ [Articles by Garde, J. J.](#)
- ▶ [Search for Related Content](#)

## PubMed

- ▶ [PubMed Citation](#)
- ▶ [Articles by Soler, A. J.](#)
- ▶ [Articles by Garde, J. J.](#)

This article has been cited by other articles:



M. R. Fernandez-Santos, F. Martinez-Pastor, V. Garcia-Macias, M. C. Estesos, A. J. Soler, P. Paz, L. Anel, and J. J. Garde  
Sperm Characteristics and DNA Integrity of Iberian Red Deer (*Cervus elaphus hispanicus*) Epididymal Spermatozoa Frozen in the Presence of Enzymatic and Nonenzymatic Antioxidants  
J Androl, March 1, 2007; 28(2): 294 - 305.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



M. R. Fernandez-Santos, M. C. Estesos, V. Montoro, A. J. Soler, and J. J. Garde  
Influence of Various Permeating Cryoprotectants on Freezability of Iberian Red Deer (*Cervus elaphus hispanicus*) Epididymal Spermatozoa: Effects of Concentration and Temperature of Addition  
J Androl, November 1, 2006; 27(6): 734 - 745.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



S. Shefi, G. Raviv, M. L. Eisenberg, R. Weissenberg, L. Jalalian, J. Levron, G. Band, P. J. Turek, and I. Madgar  
Posthumous sperm retrieval: analysis of time interval to harvest sperm  
Hum. Reprod., November 1, 2006; 21(11): 2890 - 2893.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



M. C. Estesos, A. J. Soler, M. R. Fernandez-Santos, A. A. Quintero-Moreno, and J. J. Garde  
Functional Significance of the Sperm Head Morphometric Size and Shape for Determining Freezability in Iberian Red Deer (*Cervus elaphus hispanicus*) Epididymal Sperm Samples  
J Androl, September 1, 2006; 27(5): 662 - 670.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



A. J. Soler, A. J. Garcia, M. R. Fernandez-Santos, M. C. Estesos, and J. J. Garde  
Effects of Thawing Procedure on Postthawed In Vitro Viability and In Vivo Fertility of Red Deer Epididymal Spermatozoa Cryopreserved at -196{degrees}C  
J Androl, September 1, 2003; 24(5): 746 - 756.

[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)