influence of oviductal fluid (OF), the natural medium into which spermatozoa are released from the reservoir, on sperm motility. Consequently, this study aimed to determine the effects of different soluble fractions of OF on sperm motility and the species specificity of such effects. OF from pigs and cows was collected and selectively filtered to obtain two different fractions with molecular weights higher or lower than 100 kD. Diluted semen samples from 14 different boars were exposed to bicarbonate/CO_2 (to stimulate maximum motility) in the presence or absence of OF fractions. Sperm trajectories were measured using a Hobson Sperm Tracker (Hobson Tracker, Ltd., Sheffield, UK) and analyzed by PATN analysis as described previously to identify subpopulations of high and low motility spermatozoa (Abaigar *et al.* 1999 Biol. Reprod. **60**, 32–41; Satake *et al.* 2006). The results showed that neither of the bovine OF fractions affected the proportions of the fast linear boar sperm subpopulation in the samples, which was similar to that of the control. However, when the high molecular weight fraction of porcine OF was used, a significant suppression of the fast linear sperm subpopulation was observed ($P \leq 0.05$). These data support the hypothesis that species-specific, high molecular weight components in OF are involved in the suppression of sperm motility. Further studies are required to confirm the significance of this finding, although it may not be unreasonable to speculate that the OF, in addition to other sperm selection mechanisms, acts to protect oocytes against fertilization by poor quality spermatozoa (Okada *et al.* 1986 J. Submicrosc. Cytol. **18**, 233–247). In fact, similar results demonstrating that oviductal fluid decreases sperm motility have been obtained in cow (Grippo *et al.* 1995 J. Reprod. Fertil. **105**, 57–64) and rabbit (Overstreet and Cooper 1979 J. Reprod. Fertil. **55**, 53–59).

This work was supported by MEC and FEDER (PR2006-0506 and AGL2006-03495).

223 ENZYMATIC ACTIVITY LEVEL OF DIFFERENT GLYCOSIDASES IN INTACT AND ACROSOME-REACTED PORCINE SPERM

A. De Ondiz[A,B], *M. Avilés*[C], *F. A. Garca-Vázquez*[B], *C. Carrasco*[B,D], *L. Grullón*[B], *and S. Ruiz*[B]

[A]Facultad de Ciencias Veterinarias, Universidad del Zulia, Zulia, Venezuela;
[B]Departamento de Fisiología, Facultad de Veterinaria, Universidad de Murcia, Murcia, Spain;
[C]Departamento de Biología Celular, Facultad de Medicina, Universidad de Murcia, Murcia, Spain;
[D]Departamento de Biología, Universidad de Pamplona, Pamplona, Colombia

The sperm–egg interactions are species-specific forms of cell recognition and the binding event which are a necessary prerequisite for fertilization (Park *et al*. 2002 Anim. Reprod. Sci. **72**, 83–94). Glycosidase enzymes that remove carbohydrates could play an important role in the reproductive tract, modulating decisive physiological events mediated by carbohydrates, which play a key role in sperm–oocyte recognition. The aim of this study was to analyze the presence of the glycosidases α-D-mannosidase, α-L-fucosidase, β-D-glucosaminidase, and β-D-galactosaminidase in intact and acrosome-reacted sperm from fertile matured boars. Sperm were washed three times in PBS by centrifugation at 800*g* for 10 min. The pelleted sperm were resuspended in the same buffer to obtain a final concentration of 250×10^6 spermatozoa mL^{-1}. The acrosome reaction was induced by incubation of the sperm with 10 μM of calcium ionophore A23187 at 37°C for 30 min. Different enzymes were detected by incubating 8 μL (for α-D-mannosidase) or 80 μL (for the rest of the enzymes) of sperm sample with the corresponding substrate conjugated to 4-methylumbelliferil for 2 h at 37°C in PBS at pH 7.3. Fluorescences were read on a Fluostar Galaxy fluorimeter (BMG LabTech GmbH, Offenburg, Germany), using wavelengths of 340 and 450 nm for excitation and emission, respectively, and were corrected by subtracting tissue and substrate blanks. The results were analyzed using a one way ANOVA. An average of fluorescence units of 9685.86 ± 1081.75, 7394.63 ± 874.29, 3154.17 ± 514.10, and 1666.40 ± 117.86 was detected in the intact sperm sample for the α-D-mannosidase, α-L-fucosidase, β-D-glucosaminidase, and β-D-galactosaminidase, respectively. For the acrosome-reacted sperm sample (60–65% acrosome-reacted sperm in the samples measured by fluorescence microscope), an average of 9756.14 ± 1011.45, 7026.93 ± 771.48, 1185.70 ± 277.51, and 1111.60 ± 176.70 for α-D-mannosidase, α-L-fucosidase, β-D-glucosaminidase, and β-D-galactosaminidase, respectively. Statistically significant differences ($P < 0.05$) between intact and acrosome-reacted sperm were detected only for the β-D-glucosaminidase and β-D-galactosaminidase. These results suggest that the four different enzymes detected are mainly present in the sperm plasma membrane. Under the conditions used in this study, α-D-mannosidase is the main enzyme activity present in the sperm. Importantly, β-D-glucosaminidase and β-D-galactosaminidase activity detected in the intact sperm is decreased after the induction of the acrosome reaction.

This work was supported by grants from MEC and FEDER (AGL2006-03495 and BFU2004-05568/BFI) and CARM 03018/P1/05.

224 A COMPARATIVE STUDY BETWEEN WOOD AND PLAINS BISON

C. Lessard[A,B], *J. Danielson*[A], *J. Thundatil*[C], *M. Woodbury*[B], *and R. McCorkell*[B]

[A]Agriculture and Agri-Food Canada, Saskatoon, SK, Canada;
[B]University of Saskatchewan, Saskatoon, SK, Canada;
[C]University of Calgary, Calgary, AB, Canada

In Canada, brucellosis and tuberculosis threaten an estimated 4500 wood bison (*Bison bison athabascae*), a species considered at risk by the Committee on the Status of Endangered Wildlife In Canada (COSEWIC). To help rescue this species, our Wood Bison Reproductive Research group proposes to employ advanced reproductive technologies. Unfortunately, little is known about the reproductive physiology of the wood bison, which hinders the application of these reproductive technologies. In order to modify advanced reproductive techniques developed in cattle for use in wood bison, the large amounts of semen, embryos, and oocytes from wood bison required are not available. The purpose of this study was to compare semen collected from the more abundant and closely related plains bison (*Bison bison bison*) with that of wood bison. Semen from 3 wood and