62. SPERM PROACROSIN/ACROSIN SYSTEM IN TWO MARSUPIAL SPECIES, THE BRUSHTAIL POSSUM (*TRICHOSURUS VULPECULA*) AND THE TAMMAR WALLABY (M*ACROPUS EUGENII*)

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A zymographic procedure using gelatin-sodium dodecylsulphate polyacrylamide gel electrophoresis (gelatin-SDS PAGE) has been optimized to study proacrosin/acrosin system in two species of marsupial, the brushtail possum (*Trichosurus vulpecula*) and the tammar wallaby (*Macropus eugenii*). One major protease digestion band at 50 kDa was detected on a gelatin-SDS PAGE for epididymal brushtail possum sperm acid extract compared to three major bands, 46, 38 and 32 kDa approximate weight for epididymal and ejaculated tammar wallaby sperm acid extract. A minor protease band of digestion at 66 kDa was also present in both these species. Preincubating the gels with 50-mM benzamidine completely inhibited the protease digestion, indicating that these are trypsin-like proteases. A zymogen form of acrosin, proacrosin, was detectable using a spectrophotometric assay to study the activation profile of the acid extracts in both species. Proacrosin activation to acrosin occurs maximally within 30 min and at pH 8.0. The total acrosin activity of sperm present in both species was found to be several-folds the activity found in eutherian sperm. No differences were found in proacrosin activation profile or total acrosin activity isolated from either epididymal or ejaculated spermatozoa in both these species. The importance of the study in relation to fertilization process in these species is discussed.

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