

ABSTRACTS: 34TH ANNUAL MEETING OF THE BRAZILIAN EMBRYO TECHNOLOGY SOCIETY (SBTE)

Physiology of reproduction in male and semen technology

Prediction of *in vitro* embryo production after analysis of cryopreserved semen from Senepol bulls - Part I: Logistic regression

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To obtain more accurate prediction of ejaculate fertility in cattle, different sperm attributes should be evaluated, associated to the knowledge about sperm subpopulation, which is heterogeneous in ejaculate. Therefore, the aims of the present study were to derive data on sperm subpopulations of Senepol cryopreserved bull semen, employed for *in vitro* fertilization protocol, and to determine a model to predict *in vitro* embryo production (IVEP) based on sperm subpopulations analyzed with other sperm quality parameters. Thirty-eight Senepol bull semen batches, chosen from 386 retrospective IVEP routines, were used. Samples were thawed in a 37 °C water bath for 45 seconds and, after thawing, the concentration was adjusted to 25 x 10⁶ sperm/mL. All samples were submitted to a semen washing protocol, based in two semen washes at low centrifugation force. Afterwards, all samples were evaluated by the Computer-Assisted Sperm Analysis system for identification and characterization of sperm subpopulations, by flow cytometry for evaluation of plasma and acrosomal membranes integrity, mitochondrial potential, oxidative status and chromatin resistance, and analysis of sperm morphology by wet preparation. Because of the dependency structure contained in the variables, multivariate statistical techniques of grouping and main components were applied to obtain sperm subpopulations. After categorization of IVEP in high, medium and low embryo yield rate (30 to 60%, 20 to 29.99% and 19.99% to 0, respectively), logistic regression analysis was applied to associate the sperm subpopulations and the other variables of sperm quality with IVEP. Three subpopulations of spermatozoa were characterized: SBP1 (fast and progressive movement), SBP2 (hyperactivated movement) and SBP3 (slow and non-progressive movement). An equation was generated: Embryo yield = 0,1563 + 0,0328(SBP1) + 0,0173(SBP2), where SBP1 and SBP2 represents the absolute value of the percentage of subpopulations in semen. If the calculated value (by this equation) is close to 1, the embryo yield is low; if is close to 2, is medium; if is close to 3, is high. It was concluded that, in our experimental conditions, SBP1 and SBP2 variables had effect on IVEP with cryopreserved semen from Senepol bulls. Acknowledgements: FAPESP (2016/24107-7).