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Determining the gender of a preimplantation embryo is a challenging procedure. Pregnancy diagnostics are used for human embryos however, these procedures are invasive, expensive and have not been utilized in domestic animal reproductive management. In cattle, shifting the offspring gender ratio (50:50) might have high economic merit because it reduces the proportion of unwanted genders. Sex-sorted semen can be used to increase the desired embryo gender; however, sorted semen found to reduce the pregnancy rate by 5-8%. Therefore, other approaches are required. In the current work we tried to characterized weather parameter, such progressive motility can be used to distinct between semen with a higher male/female ratio. Unfortunately, we found that progressive motility is not suitable parameter. Next, we examined whether the morphokinetics of the developing embryo is associated with its gender. We used sorted semen for X and for Y and produced bovine embryo in-vitro: oocytes were aspirated from ovaries, in-vitro matured (22 h), fertilized and cultured for 8 days in incubator equipped with a time-lapse system. A continuous record of morphokinetic parameters have been conducted. The parameters included the time of embryo development into the different embryonic stages, the morphology of the embryos and their cleavage pattern (normal or abnormal). The cleavage and blastocyst formation rates were also recorded. The developed blastocysts were collected for DNA extraction. The DNA was subjected to PCR using two Y-linked genes (BOV97M and TSPY) in order to identify the gender of the embryo. The finding revealed that the kinetic of the male embryos into the 8-cell stage, morula and early blastocyst was rapid than the female counterpart ($P<0.05$), suggesting that kinetic parameters can be used to predict the gender of the embryo. To confirm this assumption a second experiment was performed in which we used unsorted semen. In-vitro production of embryos was performed, as described above, and a gender prediction of the developing blastocyst was performed by two approaches: (1) a discriminant correlation analysis between the DNA-validated blastocysts and their kinetic parameters; (2) prediction analysis based on three kinetics parameters (the time from fertilization into the 8-cell, morula and early blastocyst) that were found in the first experiments. Based on the two approaches, the chance for predicting a male embryo was higher from that of female embryo. For instance, a correlation of 78% was found between the time of division into 4- and 6-cell stage and the male embryos (1^{st} approach). Using the three kinetic parameters, maintained above (2^{nd} approach), a prediction rate of 70% for the favor of male was found for the division timing into the 8-cell and timing of development to the early blastocyst, and when the three kinetic timing were combined.

We concluded that kinetic parameters can be used to select a preferred gender of *in-vitro*-derived embryos before transferring them, with a higher probability to identify males than females' embryos.