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<https://doi.org/10.1016/j.jevs.2020.103049>The usefulness of anti-Müllerian hormone in predicting oocyte recovery and *in vitro* production of equine embryos

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Anti-Müllerian hormone (AMH), a granulosa cell derived glycoprotein, has been used in other species to predict the outcome of *in vitro* fertilization but its usefulness in a clinical *in vitro* embryo production (IVEP) program in mares is unknown. Circulating AMH concentrations were measured using an ELISA (AMH Gen II Beckman Coulter) in 200 different Warmblood mares of different ages presented year round for IVEP by ovum pick-up (OPU) of antral follicles and intracytoplasmic sperm injection. Embryos were cultured to the blastocyst stage for 7 to 8 days. Mares were classified as mares with low (<0.41 µg/L), medium (0.41 – 0.94 µg/L) or high AMH (>0.94 µg/L) based on the interquartile ranges. A mixed model was used to assess the relationship between AMH and the number of aspirated follicles, the number of recovered oocytes, *in vitro* maturation, cleavage and blastocyst rate. The relationship between circulating AMH concentrations and the success of IVEP was examined using a nominal logistic regression. On average, 26.6 follicles were aspirated, yielding a mean of 14.4 oocytes per OPU session. The

overall *in vitro* maturation, cleavage, and blastocyst rate was 57%, 69%, and 12%, respectively. IVEP was successful in 56% of mares with a mean of 1.0 embryo per OPU and 1.8 embryos per success. The number of punctured follicles and recovered oocytes was significantly lower in mares with low AMH than those with medium or high AMH, whereas *in vitro* maturation and cleavage rate did not differ between AMH groups. The blastocyst rate was significantly lower in mares with low AMH than in mares with medium AMH. Finally, the success of IVEP was related to circulating AMH concentrations. The probability of obtaining an *in vitro* blastocyst was lower in mares with low AMH (32%) than in mares with medium (65%) or high (61%) AMH, and the likelihood of producing multiple *in vitro* embryos (≥ 2) was lower in mares with low AMH (12%) than in mares with medium (34%) or high (37%) AMH. Mares with medium or high AMH appear to be better candidates for IVEP as the probability of producing an *in vitro* embryo, and indeed multiple embryos is higher primarily due to a higher number of recovered oocytes.