Supplementation of injectable trace minerals is often used to combat the malabsorption of microminerals due to antagonists in feed and water. One such supplement, MultiMin®TM, containing copper, zinc, manganese, and selenium, has recently been shown to have a positive impact on reproductive efficiency and pregnancy rates. The objective of this study was to determine how the supplementation of MultiMin®TM impacts embryo quality. We hypothesized that MultiMin®TM would improve embryo quality, as determined by the assessment of embryos recovered from ovarian superstimulated donor heifers seven days post-artificial insemination. Seventeen dairy heifers from the Iowa State University Dairy Teaching Farm were randomly assigned to receive a saline control (CON) or MultiMin®TM (MM), given at label dose of 1 ml/100 lbs of body weight. All heifers were then put on an industry standard ovarian superovulation protocol, with embryos recovered on day 7 after artificial insemination. Embryos were graded for quality and developmental stage, and data were analyzed using SAS. On average, the proportion of nonfertilized embryos tended to be greater in CON heifers (P = 0.15), and the average proportion of Stage 4 (P = 0.11) and Stage 5 (P = 0.11) embryos tended to be greater in MM heifers. No differences were noted in total embryos recovered as a result of total treatment (P = 0.51). This concludes that our hypothesis was partially correct. Though MM did decrease the overall average proportion of nonfertilized embryos, there was not a significant trend towards increased embryo quality across the board. However, the results do point towards a biologically relevant trend towards fewer total nonfertilized embryos and more total transferrable embryos produced when treated with MM.

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**OBJECTIVE & HYPOTHESIS**

The objective of this study was to determine if supplementation of an injectable trace mineral product would improve embryo quality. We hypothesized that MultiMin®TM would improve embryo quality, as determined by the assessment of embryos recovered from ovarian superstimulated dairy heifers seven days post-artificial insemination.

**RESULTS AND DISCUSSION**

- There was no effect of treatment on total number of embryos, number of transferrable embryos, or number of freezeable embryos (P ≥ 0.14; Table 4).
- MM heifers had no differences in the number of Quality 1 embryos (P = 0.32), but did have greater numbers of Quality Grade 2 (P = 0.08) and Quality Grade 3 (P = 0.15) embryos compared to CON (Table 5).
- On average, the proportion of nonfertilized embryos tended to be greater in CON heifers than MM heifers (P = 0.15; Table 2).
- MM heifers tended to have an increased number of Stage 4 embryos (P = 0.09; Table 6). On average, the proportion of Stage 4 (P = 0.01) and Stage 5 (P = 0.11) embryos tended to be greater in MM. This could indicate a synchronous ovulation pattern and embryo development pattern.

**CONCLUSIONS**

- Our hypothesis was partially correct. Though MM treatment did decrease the average proportion of nonfertilized embryos, there is not a significant trend towards increased embryo quality overall. However, embryos were more uniform in their development.
- Although not statistically significant, the numerical increase in transferrable embryos likely has major economic benefit at the producer level.

**FUTURE IMPLICATIONS**

- More heifers need to be added to the dataset to strengthen the conclusions and to better understand the impact of MM treatment on embryos.
- Once the impact of MM on embryos is understood, further research should study which of the four micronutrients in MultiMin®TM is the cause of this impact. Future research should also study the timing of the injections to determine if there is an appropriate time frame for treatment with MM in a superovulation program.