



Study Objectives

Evaluate the impact of replacing inorganic trace minerals with Availa®Plus on ovum recovery and *in vitro* embryo production in lactating beef cows.

Study Duration

97 days



Animals

Thirty-eight Angus cow-calf pairs

Treatments

Availa-Plus: Zn, Cu, Mn from amino acid complexes, Co glucoheptonate and potassium iodide

Control: Zn, Cu, Mn, Co and I from inorganic sources fed at iso-levels to Availa-Plus

Experimental Procedures

- Cows maintained on fescue and clover mix pastures
- Treatment supplements fed free-choice, in weekly allotments, with a target intake of 4 oz supplement per cow per day
- Supplements formulated to provide 60 ppm Zn, 20 ppm Mn, 10 ppm Cu, 1 ppm Co and 1.3 ppm I on a total dietary basis, based on estimated forage intake
- Follicle stimulating hormone was not administered to cows
- **Day 0:** Cows stratified by body weight, BCS, days post-partum and age and assigned to Availa-Plus or Control treatments
- **Day 30:** Following a 7 d CO-Synch+CIDR protocol cows inseminated via fixed time AI to a single sire in order to maintain a normal breeding season
- **Day 58:** Cows diagnosed pregnant (n = 38) via ultrasound remained on their respective mineral supplementation treatments; non-pregnant cows removed from experiment
- **Day 82 and 97:** Cows subjected to oocyte pickup. All follicles greater than 5 mm were aspirated to recover cumulus-oocyte complexes (COC). After washing, COC's evaluated and graded (A to D). Within pen, COC's graded A through C were pooled and fertilized for *in vitro* embryo production. Eight days after fertilization, the embryos progressing to blastocyst stage were assessed and graded (1 to 4) prior to freezing
- **Day 97:** Backfat measurements and liver biopsy samples collected from each cow

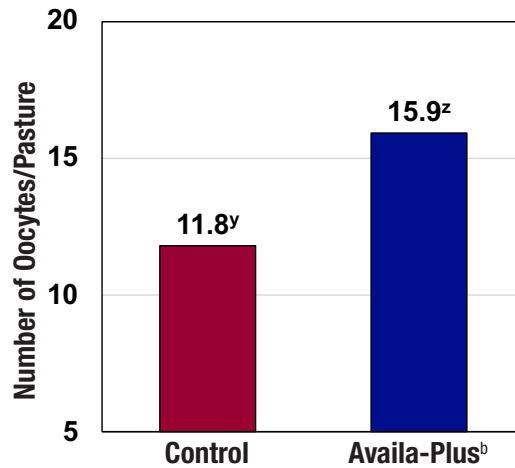
Research Brief

Effect of Availa®Plus on Oocyte and Embryo Production In Lactating Beef Cows

Results

- Cows fed Availa-Plus produced more total oocytes, culturable oocytes, transferable embryos, and freezable embryos
- Feeding Availa-Plus improved oocyte to embryo efficiency as evidenced by the smaller oocyte to embryo ratio for cows fed Availa-Plus

Culturable Oocytes Categories A to C^a

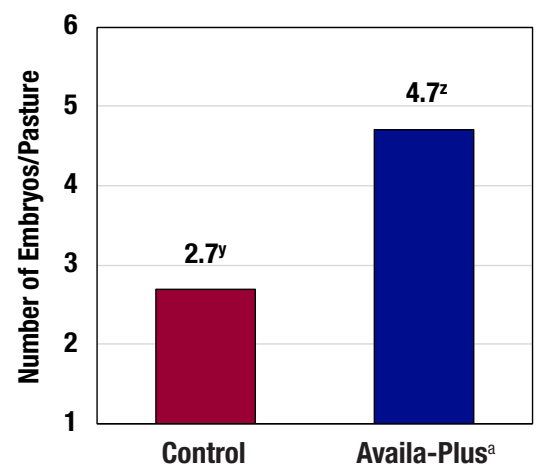


^a Oocyte categorization: A, homogenous, evenly granulated cytoplasm and numerous layers of compact, non-expanded cumulus cells; B, similar to A, but fewer layers of cumulus cells; C, ooplasmic irregularities, very few cumulus or expanding cumulus cells; D, atretic, too small (< ~100 µm), denuded, lysed, and/or morphologically abnormal

^b Availa-Plus: Availa®Zn zinc amino acid complex, Availa®Mn manganese amino acid complex, Availa®Cu copper amino acid complex, COPRO® cobalt glucoheptonate, and potassium iodide

^y Means lacking a common superscript letter differ, P = 0.05

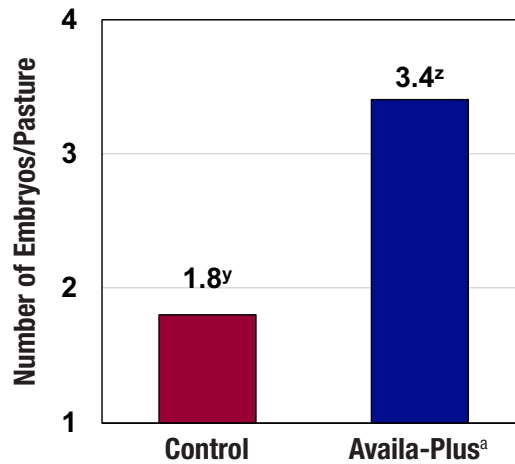
Transferable Embryos Grades 1 to 3



^a Availa-Plus: Availa-Zn zinc amino acid complex, Availa-Mn manganese amino acid complex, Availa-Cu copper amino acid complex, COPRO cobalt glucoheptonate, and potassium iodide

^y Means lacking a common superscript letter differ, P = 0.06

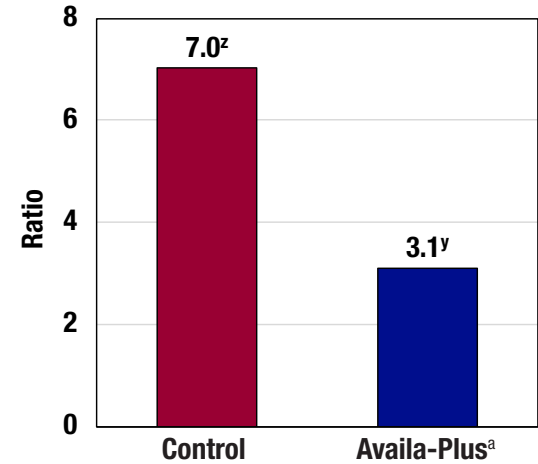
Freezable Embryos Grades 1 and 2



^a Availa-Plus: Availa-Zn zinc amino acid complex, Availa-Mn manganese amino acid complex, Availa-Cu copper amino acid complex, COPRO cobalt glucoheptonate, and potassium iodide

^y Means lacking a common superscript letter differ, P = 0.03

Ratio of Culturable Oocytes to Transferable Embryo



^a Availa-Plus: Availa-Zn zinc amino acid complex, Availa-Mn manganese amino acid complex, Availa-Cu copper amino acid complex, COPRO cobalt glucoheptonate, and potassium iodide

^y Means lacking a common superscript letter differ, P = 0.06

Conclusions

- Feeding Availa-Plus resulted in a greater quantity of high quality, transferable embryos
- Results agree with previous research showing beneficial impacts of Zinpro Performance Minerals on bovine reproduction