Young beef calves preferentially consume supplements fortified with hydroxy vs. organic and sulfate sources of Cu, Zn, and Mn. L. S. Caramalac*, H. J. Fernandes†, and J. D. Arthington‡, †UF/IFAS Range Cattle Research and Education Center, Ona, FL, ‡State University of Mato Grosso do Sul. Aquidauana, Brazil.

Our objective was to evaluate the preferential intake of supplements fortified with Cu, Zn, and Mn from; (I) hydroxy, (2) organic, and (3) sulfate-sources. This was achieved in 4 individual feeding studies involving 8 pens of early-weaned calves (2 calves/pen; average age = 120 d; average BW = 115 kg). Each pen was provided free-choice access to a mixed concentrate ration and ground grass hay. On each study day at 10:00, all feed was withdrawn and calves were offered 3 different mineral fortified supplements, for a 4 h period, provided in three separate feeding containers. Supplements were created using a base mixture containing 52, 46, and 2% cottonseed meal, ground corn, and salt Supplements were fortified with 2,000 mg/kg Zn (Exp. 1), 750 mg/kg Cu (Exp. 2), 3,000 mg/kg Mn (Exp. 3), and all 3 elements (Exp. 4). Preferential intake was measured over 7- (Exp. 1, 2, and 3) and 14-d (Exp. 4) evaluation periods. In Exp. 1 and 2, calves consumed more (P < 0.001) of the supplement offer containing hydroxy Cu (Exp. 1) and hydroxy Zn (Exp. 2) than sulfate and organic sources, while consumption of sulfate sources was greater (P ≤ 0.04) than organic sources (81.9, 72.2, and 45.5%, and 48.1, 35.1, and 9.5% consumption of supplement offer for hydroxy, sulfate, and organic sources of Cu and Zn, respectively; SEM = 3.94 and 7.93). In Exp. 3, calves consumed more (P < 0.001) of the supplement offer containing hydroxy Mn than sulfate and organic sources, while there were no differences (P = 0.97) in preferential intake of supplements containing Mn sulfate or organic Mn. In Exp. 4, when all 3 elements were combined within a single supplement, calves almost exclusively selected (P < 0.001) the supplements containing hydroxy source elements vs. supplements containing sulfate or organic sources (70.0, 12.5, and 8.0% consumption of supplement offer for hydroxy, sulfate, and organic sources, respectively; SEM = 3.16. When offered to young calves, these results reveal a lesser preferential intake of trace mineral concentrated supplements fortified with organic and sulfate sources of Cu, Zn, and Mn compared to the same supplements fortified with hydroxy sources of these elements.

Key Words: trace minerals, supplementation, calves