BMC, of 0.05 vs. 0.23% for soft tissue, and of 0.78 vs. 2.75% for fat. In conclusion, repeatability and reproducibility were considered high for custom and arm ROI, except for BMC from custom ROI in reproducibility condition.

Key Words: DXA, repeatability, reproducibility

298 **Effect of dietary zinc and Ractopamine-HCl on pork chop tenderness and shelf-life characteristics.** C. B. Paulk[1,*], M. D. Tokach[1], J. L. Nelssen[1], D. D. Burnett[1], K. J. Phelps[1], M. A. Vaughn[1], S. S. Dritz[1], J. M. DeRouchey[1], R. D. Goodband[1], T. A. Houser[1], K. D. Haydon[2], J. M. Gonzalez[1], *[1]Kansas State University, Manhattan, [2]Elanco Animal Health, Greenfield, IN.*

Finishing pigs (n = 160; PIC 327 × 1050; initially 98 kg) were used to determine the effects of adding Zn to diets containing ractopamine HCl (RAC; Elanco Animal Health, Greenfield, IN) on muscle fiber type distribution, chop color, and cooked meat characteristics. Eight dietary treatments were fed for approximately 35 d and consisted of: a corn-soybean meal control (0.66% SID Lys), a diet (0.92% SID Lys) with 10 ppm RAC, the RAC diet plus 75, 150, and 225 ppm added Zn from ZnO or Availa-Zn (Zinpro, Eden Prairie, MN). All diets contained 55 ppm Zn from ZnSO4. No Zn source effects or Zn source × level interactions were observed. Pigs fed RAC had increased ($P < 0.02$) percentage type IIX and a tendency for increased ($P < 0.10$) percentage type IIB muscle fibers compared to pigs not fed RAC. Increasing added Zn decreased (linear, $P = 0.01$) type IIA and tended to increase ($P = 0.09$) IIX muscle fibers. On d 1, 2, 3, 4, and 5 of display, pork chops from pigs fed the RAC treatment had greater ($P < 0.03$) L* values (lighter) compared with those fed the control diet. On d 0 and 3 of display, increasing Zn tended to decrease (quadratic, $P = 0.10$) L* values and decreased (quadratic, $P < 0.03$) L* values on d 1, 2, 4, and 5. Pigs fed RAC had decreased ($P < 0.05$) a* values (less red) on d 1 and 4 of display and tended to have decreased ($P < 0.10$) a* values on d 0 and 2 compared with control pork chops. RAC decreased ($P < 0.001$) metmyoglobin reducing ability (MRA) of pork chops on d 5 compared to chops from pigs fed the control diet. Chops from pigs fed added Zn had increased (quadratic, $P < 0.03$) MRA on d 3 and 5 of display. There were no differences in chop pH, cooking loss, or shear force. There was a trend for increased (linear, $P = 0.07$) cooking loss as Zn increased in RAC diets, but no difference in pH or shear force. In conclusion, RAC diets produced chops that were lighter and less red. At the end of the display period, RAC reduced MRA, but adding Zn to RAC diets mitigated this reduction in MRA.

Key Words: Ractopamine HCl, shelf-life, zinc

Table 298.

Fiber Type,%	Control	RAC	ppm Zn 75	ppm Zn 150	ppm Zn 225	SEM
I	8.89	8.77	8.40	8.24	8.49	0.77
IIA	12.37	14.74	14.14	12.93	11.05	1.48
IIX	32.57	25.51	26.23	29.13	29.24	2.36
IIB	46.12	50.94	51.18	49.65	51.14	2.56

299 **Effects of source and level of added zinc on muscle fiber diameter and skeletal muscle protein turnover of finishing pigs fed ractopamine hcl.** C. B. Paulk[1,*], M. D. Tokach[1], J. L. Nelssen[1], D. D. Burnett[1], M. A. Vaughn[1], K. J. Phelps[1], S. S. Dritz[1], J. M. DeRouchey[1], R. D. Goodband[1], T. A. Houser[1], K. D. Haydon[2], J. M. Gonzalez[1], *[1]Kansas State University, Manhattan, [2]Elanco Animal Health, Greenfield, IN.*

A total of 320 pigs (PIC 327 × 1050, 98 kg BW) were used in a 35-d study to determine the effects of supplemental Zn on muscle fiber cross-sectional area (CSA) and muscle specific relative gene expression of finishing pigs fed ractopamine-HCl (RAC; Elanco Animal Health, Greenfield, IN). Pens were randomly allotted to diets with 2 pigs per pen. Treatments (n = 8) were a corn-soybean meal control diet (0.66% SID Lys), a diet (0.92% SID Lys) with 10 ppm RAC, the RAC diet plus 75, 150, and 225 ppm added Zn from ZnO or Availa-Zn (Zinpro, Eden Prairie, MN). All diets contained 55 ppm Zn from ZnSO4. One pig was randomly selected from 16 pens per treatment for collection of *Longissimus lumborum* muscle biopsies on d 0, 8, 18, and 32. Pigs fed the RAC diets had increased ($P = 0.05$) CSA of type IIA fibers and a trend for increased ($P = 0.10$) type IIX CSA. Pigs fed RAC diets with added Zn tended to have increased (quadratic, $P = 0.10$) type IIB fiber CSA. There were no treatment effects on number of fiber associated nuclei ($P > 0.10$). Pigs fed RAC diets had increased ($P = 0.06$) relative expression of *IGF-1* on d 8 compared to those fed the control diet, but there were no differences on d 18 and 32 ($P > 0.10$). Relative expression of *IGF-1* decreased (quadratic, $P < 0.04$) with increasing levels of Zn on d 8 and 18. There was no difference in IGF-1 receptor (*IGF-1R)* expression ($P > 0.10$) between pigs fed the control and RAC diets. Pigs fed diets with increasing levels of Zn had a tendency for decreased (quadratic, $P < 0.08$) relative expression of *IGF-1R* on d 18. Pigs fed RAC diets had increased relative expression of *Pax7* on d18 ($P < 0.04$) and a tendency for increased ($P < 0.08$) expression on d 8 and 32; however, there was no response in the relative expression of *Myf5, MyoD,* and *Myogenin*. Pigs fed increasing levels of added Zn had a tendency for increased (linear, $P < 0.10$) relative expression of *Pax7* on d 8 and 18; however, there was no response in the relative expression of *Myf5, MyoD,* and *Myogenin.* Therefore, RAC-stimulated hypertrophy occurred independent of satellite differentiation. Additional Zn did not dramatically increase muscle fiber CSA, possibly due to a reduction of muscle *IGF-1* and *IGF-1R* mRNA expression caused by the Zn.

Key Words: IGF-1, ractopamine-HCl, zinc