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EFFECTS OF STRESS ON SEVERAL IMMUNE AND HEALTH RESPONSES OF
WEANLING CALVES

Abstract

The effects of weaning stressors on several immune and health responses were measured in three experiments. Sixty-four beef calves from 2 sources were bled on d -7 (pre-weaning), 0 (weaning), 7, 14, and 21 (post-weaning). Serum selenium (Se), neutrophil and lymphocyte counts, and glutathione peroxidase (GSH-Px) activity for erythrocytes and leukocytes were measured for each calf at each date. Erythrocyte GSH-Px activity remained constant over time, while leukocyte GSH-Px and serum Se increased on d 7 ($P<0.0001$). Effects of single mineral vs. multi-mineral supplementation were measured for several immune and health responses in 2 trials. Trial 1: 36 heifers weaned on-site at SVAREC were randomly assigned 1 of 2 dietary supplements: 1) no supplement; 2) 15% CP at 0.5% BW; and 1 of 3 injection treatments: 1) no treatment (control); 2) Mu-Se injection; 3) Multi-Min injection. Whole blood Se and serum Cu increased post-weaning and serum Zn decreased post-weaning. Mu-Se-supplemented heifers gained weight faster between d 14-28 vs. Multi-Min-supplemented ($P=0.01$) or control heifers ($P=0.02$). Trial 2: 48 steers purchased at auction and transported to SVAREC were randomly assigned to 1 of 4 pasture management systems: 1) control (no treatment); 2) litter fed; 3) litter applied; 4) inorganic fertilizer; and 1 of 3 injection treatments (same as Trial 1). Whole blood Se and serum Cu increased post-stress and serum Zn decreased post-stress. Oxidative burst activity decreased in Mu-Se and Multi-min supplemented steers between d 0-4 vs. control steers ($P<0.01$). Multi-min-supplemented steers had higher phagocytic activity vs. steers in either Mu-Se or control groups ($P=0.04$).

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TABLE OF CONTENTS

Abstract	ii
Acknowledgements	iii
List of Tables	vi
List of Figures	viii
List of Appendices	ix
Chapter	page
I. Introduction	1
II. Literature Review	3
The Bovine Immune System	3
Acquired vs. innate immunity	3
Effects of stress on mineral status and immune function	4
Selenium	7
Discovery and significance	7
Determination of Se status in cattle	8
Methods of supplementation	8
Effects of Se deficiency on immune function	10
Effects of Se supplementation in cattle	12
Interactions of Se with other micronutrients	13
Glutathione peroxidase	16
Origin and importance in immune function	16
Distribution of GSH-Px in tissues and blood components	16

Determination of GSH-Px activity	17
Effect of Se deficiency and supplementation on GSH-Px activity and immune function	18
III. Effects of weaning stressors on erythrocyte vs. leukocyte glutathione peroxidase activity	21
Abstract	21
Introduction	22
Materials and Methods	24
Results	28
Discussion	29
IV. Effects of single mineral vs. multi-mineral supplementation on immune and health responses of weanling calves.	34
Abstract	34
Introduction	35
Trial 1. SVAREC heifers	36
Materials and Methods	36
Results	41
Discussion	43
Trial 2. SVAREC nutrient management steers	54
Materials and Methods	54
Results	56
Discussion	58
V. Conclusion	68
Literature Cited	69
Appendices	74
A. Glutathione peroxidase assay - Cell isolation and preparation	74
B. Protein analysis via Bio-Rad protein assay	75
C. Phagocytosis assay and oxidative burst cell preparation	75
D. Phagocytosis assay	76
E. Oxidative burst assay	76
Vita	77

List of Tables	page
Chapter II.	
Table 1. Bovine serum and whole blood Se concentrations	8
Chapter III.	
Table 1. Mean serum Se concentrations (ppm) for Bland and Kentland calves	33
Chapter IV.	
Trial 1. SVAREC heifers	
Table 1. Guaranteed analysis of the mineral supplement given to the SVAREC heifers	47
Table 2. Normal bovine hematology values	47
Table 3. Criteria for morbidity scores	48
Table 4. <i>P</i> -values for test of contrasts for dietary supplement x date interaction effect on weight, serum Cu, and serum Zn for SVAREC heifers	48
Table 5. Least square means, standard errors, and <i>P</i> -values for the date effect for all responses	49
Table 6. Adjusted <i>P</i> -values for the Tukey-Kramer Differences of LS means test of date effect for all responses	50
Table 7. Average morbidity scores and number of animals treated for SVAREC heifers, grouped by days post-stress and injection treatment	50
Table 8. Results of forage analysis for the SVAREC heifers (averaged across 4 pastures)	51
Trial 2. SVAREC nutrient management steers	
Table 1. Nutrient management steers-assignment of pasture and injection treatments	61
Table 2. <i>P</i> -values for main effects on health and immune responses measured in the SVAREC nutrient management steers	62
Table 3. Least square means and SE for date effect on health and immune responses measured in the SVAREC nutrient management steers	63

Table 4. Adjusted <i>P</i> -values for the Tukey-Kramer differences of LS means test for date effect on health and immune responses in the SVAREC nutrient management steers	63
Table 5. Least square means of phagocytosis and whole blood Se concentration in the SVAREC nutrient management steers, grouped by injection treatment	64
Table 6. Adjusted <i>P</i> -values for the Tukey-Kramer differences of LS means test for injection treatment effect on phagocytosis and whole blood Se concentration in the SVAREC nutrient management steers	64
Table 7. Average morbidity scores and number of animals treated for the SVAREC nutrient management steers, grouped by days post-stress and injection treatment	65
Table 8. Forage and hay analysis for the SVAREC nutrient management steers	65

List of Figures	page
Chapter III.	
Figure 1. Leukocyte and erythrocyte glutathione peroxidase activity in weaned calves	32
Figure 2. Neutrophil and lymphocyte counts of calves during the weaning period	32
Figure 3. Kentland and Bland calves' lymphocyte counts during the weaning period	33
Chapter IV.	
Trial 1. SVAREC heifers	
Figure 1. Body weight of supplemented and unsupplemented heifers by days post-weaning	51
Figure 2. Serum Cu concentration in supplemented and unsupplemented weanling heifers	52
Figure 3. Serum Zn concentration in supplemented and unsupplemented weanling heifers	52
Figure 4. Weight gain in weanling heifers, grouped by injection treatment	53
Trial 2. SVAREC nutrient management steers	
Figure 1. Oxidative burst in weanling steers, grouped by injection treatment	66
Figure 2. Serum Zn concentrations in weanling steers, grouped by injection treatment	66
Figure 3. Serum Zn concentrations in weanling steers, grouped by pasture management system	67

List of Appendices

Appendix A. Glutathione peroxidase assay - Cell isolation and preparation.

Appendix B. Protein analysis via Bio-Rad Protein Assay

Appendix C. Phagocytosis assay and oxidative burst cell preparation

Appendix D. Phagocytosis assay

Appendix E: Oxidative burst assay