

TECHNICAL BULLETIN

BIOAVAILABILITY OF B-TRAXIM 2C AND B-TRAXIM TEC ORGANIC TRACE MINERALS IN DOGS



INTRODUCTION

Most organic sources of trace minerals are more bioavailable than inorganic sources in livestock species and are considered a valuable nutritional additive. In pets, bioavailability of organic trace minerals has been demonstrated in cats. The objective of this feeding study was to demonstrate the bioavailability of B-Traxim 2C and B-Traxim TEC organic trace minerals in adult dogs fed a nutritionally complete diet.

MATERIALS AND METHODS

Trial Location

Summit Ridge Farms (Pennsylvania, United States).

Animals

12 beagle dogs, 2 to 5 years, 9.9 kg average initial body weight.

Experimental Design

14 days of diet acclimation was followed by a replicated 4 x 4 Latin square design. Each experimental period consisted of 7 days during which each dog received a commercial dry dog food for 6 days. On the last day, after 12h of fasting, each dog received 200 g of a wet dog food including a capsule containing the mineral supplement treatment, followed by collection of serial blood samples.

Diet and Treatments

Mineral supplements were formulated, based on body weight, estimated daily energy requirement, and the values in the “AAFCO Dog Food Nutrient Profiles Based on Calorie Content” table to provide: iron 43 mg, copper 8 mg, manganese 5 mg, and zinc 85 mg. All dogs received the 4 treatments: NC (negative control, maltodextrin placebo), PC (positive control, inorganic sulfates), BT2C (declared in US as amino acid complex, declared in EU as metal chelates of glycine hydrate, B-Traxim 2C), and BTEC (proteinates, B-Traxim TEC).

Parameters Measured

- Plasma collection: samples collected at baseline (pre-dose), and 0.5, 1, 2, 4 and 6 h post-dose
- Weekly body weights
- Daily food consumption

Statistical Analysis

Data analysis was performed using JMP Pro v17. For each mineral in plasma, the incremental area under the curve (I-AUC) was calculated to evaluate and compare bioavailability profiles.

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RESULTS & DISCUSSION

As shown in Table 1, mineral supplementation resulted in numerically higher values for I-AUC compared to NC for all minerals. For zinc, manganese and iron, BT2C and BTEC I-AUC values were higher than PC, but without significant differences.

CONCLUSION

B-Traxim 2C and B-Traxim TEC supplementation appears to improve mineral bioavailability compared to inorganic minerals.

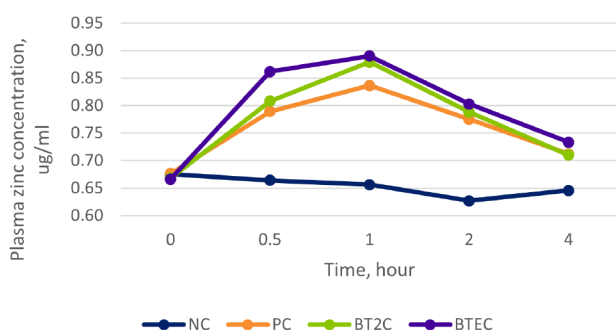
Table 1. Effect of treatment on plasma mineral absorption in beagle dogs presented as I-AUC

I-AUC	NC	PC	BTEC	BT2C
Zinc (µg/ml·min)	2.30 ^a	26.1 ^b	33.3 ^b	39.7 ^b
Copper (µg/ml·min)	3.35	5.64	5.29	4.79
Manganese (ng/ml·min)	30.6 ^a	48.6 ^{a,b}	93.0 ^b	68.0 ^{a,b}
Iron (µg/dL·min)	13,900 ^a	30,020 ^{a,b}	34,400 ^b	32,900 ^{a,b}

^{a,b} Values in a row without a common superscript are significantly different ($p \leq 0.05$)

Mineral concentration peaked at one hour after feeding and then decreased, as shown in Figure 1.

Figure 1. Plasma zinc concentration after mineral supplementation over time



NC did not peak, which is consistent with no mineral supplementation. The highest peak concentration at one hour was 0.84 µg/mL for PC, 0.88 µg/mL for BTEC and 0.89 µg/mL for BT2C.

A fast and high absorption indicates a higher bioavailability of B-Traxim products compared to inorganic minerals.

SUMMARY

B-Traxim 2C and B-Traxim TEC minerals are a high-quality source of organic trace minerals for adult dogs. Diet supplementation with organic trace minerals offers equivalent or improved mineral bioavailability compared with inorganic trace minerals.