

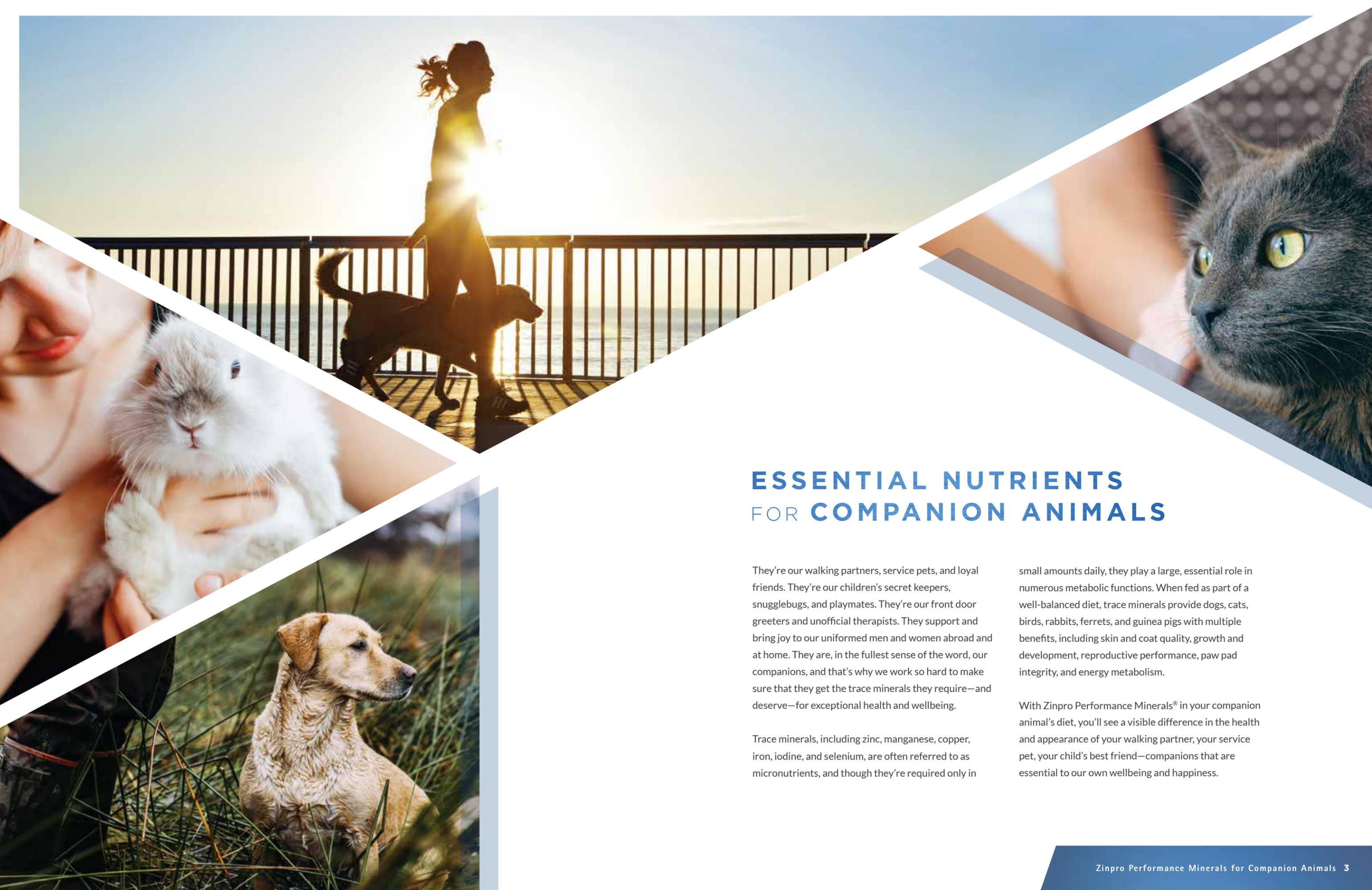


WHEN IT'S
ESSENTIAL
TO BE
EXCEPTIONAL™

Zinpro Performance Minerals
for Companion Animals



PERFORMANCE MINERALS®



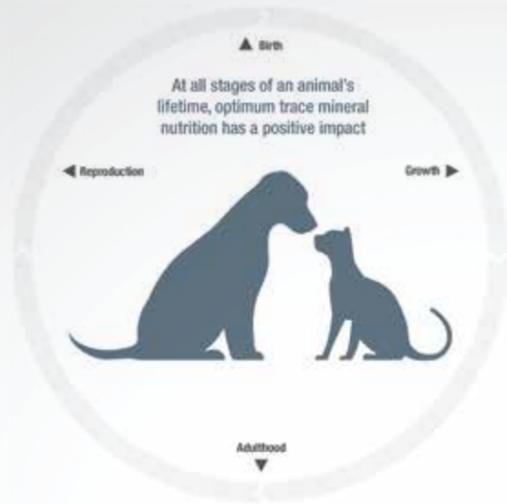
ESSENTIAL NUTRIENTS FOR COMPANION ANIMALS

They're our walking partners, service pets, and loyal friends. They're our children's secret keepers, snugglebugs, and playmates. They're our front door greeters and unofficial therapists. They support and bring joy to our uniformed men and women abroad and at home. They are, in the fullest sense of the word, our companions, and that's why we work so hard to make sure that they get the trace minerals they require—and deserve—for exceptional health and wellbeing.

Trace minerals, including zinc, manganese, copper, iron, iodine, and selenium, are often referred to as micronutrients, and though they're required only in

small amounts daily, they play a large, essential role in numerous metabolic functions. When fed as part of a well-balanced diet, trace minerals provide dogs, cats, birds, rabbits, ferrets, and guinea pigs with multiple benefits, including skin and coat quality, growth and development, reproductive performance, paw pad integrity, and energy metabolism.

With Zinpro Performance Minerals® in your companion animal's diet, you'll see a visible difference in the health and appearance of your walking partner, your service pet, your child's best friend—companions that are essential to our own wellbeing and happiness.



Performance Minerals for Lifetime Companions

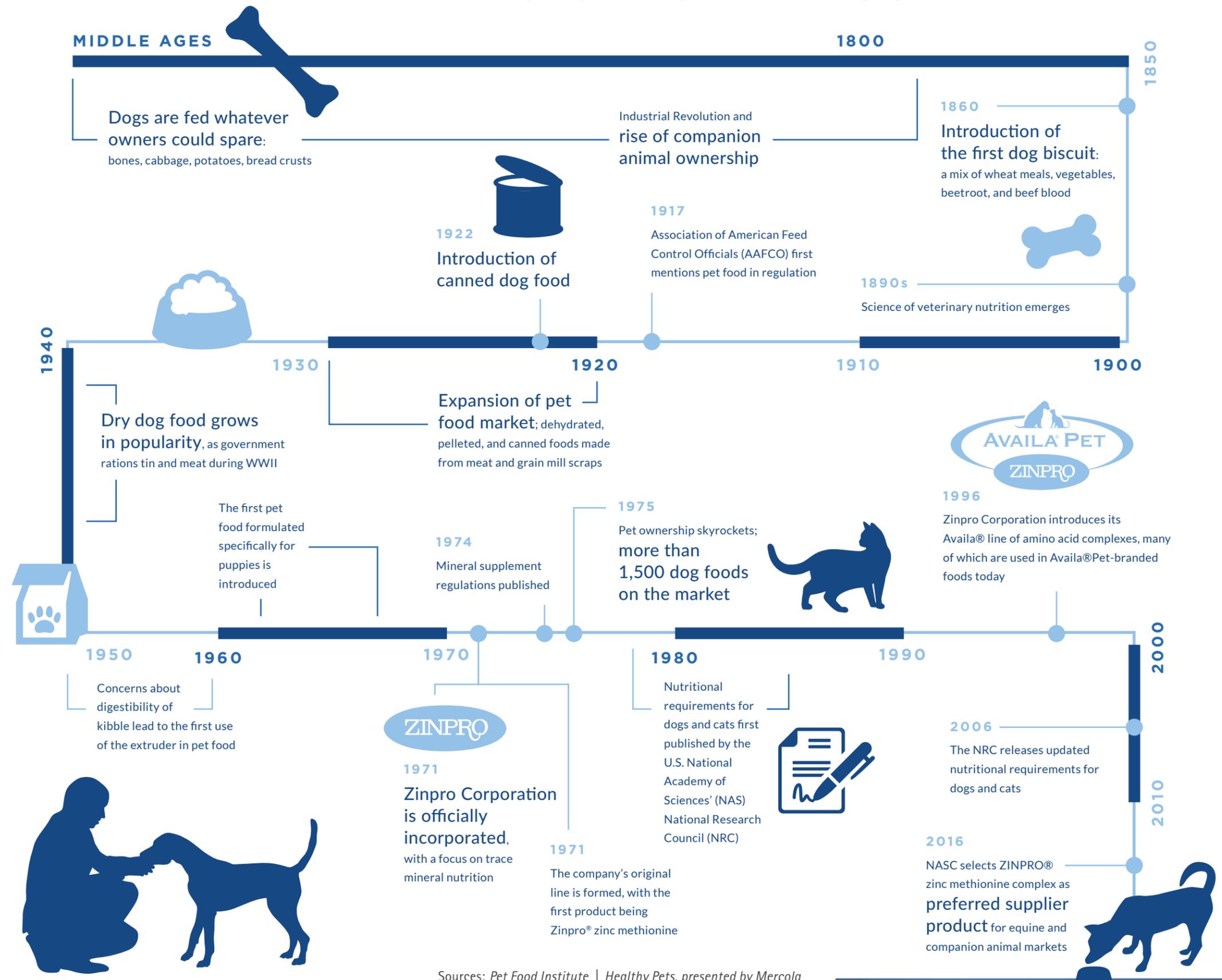
While required only in small amounts each day, trace minerals provide the essential nutrients animals need for metabolic functions such as growth and development, immunity, and reproduction. At Zinpro, we believe that animals, to truly thrive, must receive optimum trace mineral nutrition throughout their life stages. It's what we call Lifetime Performance®.

For 45 years, Zinpro has been devoted to the research and the development of world-leading products and solutions to support Lifetime Performance for companion animals. Zinpro's products are designed to support animal health and wellness from birth through growth and during performance and reproduction.

When put to the test, Zinpro Performance Minerals® rise above all other trace minerals on the market. Zinpro products are uniquely designed and manufactured to achieve the highest bioavailability—how well a mineral is absorbed and utilized in an animal—and are therefore performance minerals by nature.

To determine if a trace mineral is a performance mineral, there are five essential criteria, known as the 5-Rs, that must be met: **Response, Return, Repeatability, Research,** and **Reassurance.** Not only do Zinpro Performance Minerals meet these criteria, they are manufactured to ensure that every product is of the highest and most consistent quality to support a lifetime of health and wellness for your beloved companion animals.

A HISTORY OF PET FOOD



Sources: *Pet Food Institute* | *Healthy Pets*, presented by *Mercola* | "Kibble Me This: The History of Dog Food"

THE DIFFERENCE IS NOTICEABLE

The most bioavailable trace minerals on the market, Zinpro Performance Minerals® allow companion animals to absorb more of these trace minerals and receive their full benefit. With the addition of Zinpro Performance Minerals to food, treat, and supplement formulations, you'll see a noticeable difference in the health and appearance of companion animals, such as:

Health & Wellbeing

Zinc, manganese, copper, and selenium have been shown to enhance and support immune function, including antioxidant activity to remove free radicals and protect cell membranes

Growth & Development

Zinc is shown to improve skeletal soundness, manganese plays a vital role in bone matrix development and joint maintenance and repair, and iron contributes to overall growth and development

Energy Metabolism

Zinc, manganese, and iron all contribute to energy metabolism, including carbohydrate, lipid, protein, and nucleic acid metabolism

Skin & Coat Quality

Zinc and manganese facilitate wound healing and skin integrity through improved epithelial production and repair, and they, in addition to iron, are important factors in optimal coat, hair length, and shine

Reproductive Performance

Manganese has been shown to aid reproductive hormone production, while research shows zinc to improve reproductive performance in both males and females

Paw Pad Integrity & Healing

Zinc and manganese have been shown to aid in keratin synthesis for toenail hardness, antioxidant activity to protect cell membranes, and cell division for paw pad growth and repair



A KEY ROLE IN COMPANION ANIMAL DIETS

When incorporated as part of a well-balanced nutrition plan, essential trace minerals deliver important benefits:

Benefit	Trace Minerals	Benefit Description
Immune Response	Zinc, Manganese, Copper, Selenium, and Iron	<ul style="list-style-type: none"> • Humoral immunity; antibody titers in response to vaccination • Cell-mediated immunity • Non-specific immunity • Antioxidant activity to remove free radicals and protect cell membranes
Joint and Skeleton	Manganese	<ul style="list-style-type: none"> • Chondroitin sulfate synthesis, which is important for formulation, maintenance, and repair of joint cartilage • Bone matrix development and maintenance
	Zinc	<ul style="list-style-type: none"> • Cell division and protein synthesis for skeletal growth and repair
Pad Condition	Manganese	<ul style="list-style-type: none"> • Antioxidant activity to protect cell membranes
	Zinc and Copper	<ul style="list-style-type: none"> • Cell division to support paw pad growth and repair • Paw pad protein synthesis; collagen, keratins, cell envelope proteins, and intercellular cementing substance
Reproduction	Iron and Copper	<ul style="list-style-type: none"> • Reproductive hormone synthesis: steroidogenesis • Helps avoid or reduce nutritional anemia
	Manganese	<ul style="list-style-type: none"> • Male libido • Fetal skeletal development
	Zinc	<ul style="list-style-type: none"> • Reproductive tract tissue integrity • Conception rates • Sperm maturation and quality
	Selenium	<ul style="list-style-type: none"> • Key to normal ovarian function • Reproductive tract repair and immune function
Skin and Coat	Zinc, Manganese, and Iron	<ul style="list-style-type: none"> • Epidermal (skin) cell maintenance through cell division, protein synthesis, and antioxidant activity to remove superoxide radicals • Facilitates wound healing • Helps avoid or reduce nutritional anemia • Development of a longer, fuller coat
Energy	Zinc, Manganese, Copper, Iron, Selenium, and Iodine	<ul style="list-style-type: none"> • Improved health leaves more energy for activities • Wellbeing enhanced, as health problems are minimized or reduced in severity

Additional companion species info on trace minerals available upon request.
 Product availability varies by country. Contact your Zinpro representative for product availability in your market.



MEETING STRICT STANDARDS AT EVERY STEP

The unique molecular structure of Zinpro Performance Minerals® provides a distinct advantage in stability, bioavailability, and animal performance over ordinary trace mineral sources. Before being approved for sale, each product is analyzed for:

Mineral Content

All finished products are verified for the correct mineral concentration.

Percent Complexed

Consistency begins at the molecular level, and product variability is not an option. Zinpro guarantees the percentage of product that is complexed, and this is the **highest percentage in the industry.**

MicroTracer® Technology

Enables Zinpro to examine samples and indicate if Zinpro products were formulated into the food. It's your assurance that we will stand behind our product.



STABILITY THROUGH EXTRUSION

Extrusion technologies are commonly used in the manufacture of pet foods to improve ingredient digestibility, enhance palatability, and give products shape, texture, and structure while ensuring biosecurity. To reinforce our product's quality and efficacy assurance, Zinpro Corporation has conducted an extrusion study to demonstrate product stability.

Study Objective

Evaluate the stability of Zinpro Performance Minerals® when subjected to extrusion conditions in the presence of starch and protein components (antagonists) typically found in companion animal diets.

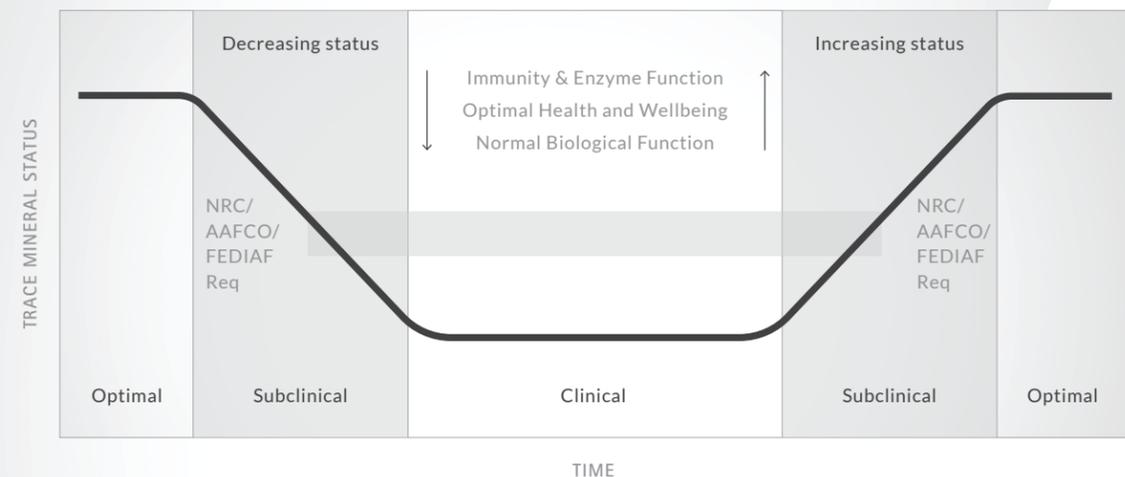
Study Conclusion

Zinpro Performance Minerals **remain highly complexed and stable through the extrusion and drying processes.** Zinpro products **consistently provide improved animal performance benefits** even after the challenging **extrusion conditions**, including moisture, temperature, pressure, and shear forces.

Important facts to consider

- Trace minerals are an integral part of daily companion animal nutrition
- Nutrient requirements must be met to ensure normal metabolism, growth, and immune function
- Supplementation with Zinpro Performance Minerals can help improve the health and wellbeing of companion animals and enhance the efficacy of other dietary components

IMPACT OF TRACE MINERAL STATUS ON BIOLOGICAL FUNCTION



PERFORMANCE BY DESIGN

Since our founding, Zinpro Corporation has focused solely on one thing: trace mineral nutrition. In 1971, founder Dean Anderson discovered and pioneered the patented process to bind a single zinc ion to an amino acid molecule. Called a “complex,” this discovery was significant because this simple and highly stable complex was easily absorbed and utilized by animals.

Since then, Zinpro has remained steadfast to our core principle of research and development. Now considered the most research-proven organic trace mineral products in the industry, Zinpro Performance Minerals® have been shown to be the only true performance minerals on the market. Every bag—each molecule, in fact—exceeds the highest industry standards. Designed and manufactured to be the most bioavailable trace minerals on the market, Zinpro Performance Minerals benefit animals through high absorption and utilization while benefiting manufacturers with higher production and greater profitability.

Availa Line

Highly bioavailable trace minerals



Availa®4

zinc, manganese, copper, and cobalt amino acid complexes



Availa®Cu

copper amino acid complex



Availa®Fe

iron amino acid complex



Availa®Mn

manganese amino acid complex



Availa®Se

zinc-L-selenomethionine



Availa®ZMC

zinc, manganese, and copper amino acid complex



Availa®Zn

zinc amino acid complex

Original Line

Specific amino acids for targeted benefits



4-Plex®C

combination product containing ZINPRO®, CuPLEX®, MANPRO®, and COPRO®



COPRO®

cobalt glucoheptonate



CuPLEX®

copper lysine complex



MANPRO®

manganese methionine complex



ZINPRO®

zinc methionine complex



ZINPRO® 180

zinc methionine complex (soluble powder)

Eco Line

Certified organic, OMRI approved



4-Plex®E

listed by the Organic Materials Review Institute (OMRI) for use in production of organic food and fiber



ZINPRO®E

listed by the Organic Materials Review Institute (OMRI) for use in production of organic food and fiber

Product availability varies by country. Contact your Zinpro representative for product availability in your market.

SEEING IS BELIEVING

Effects of Zinpro Performance Minerals®

on Paw Pad Integrity

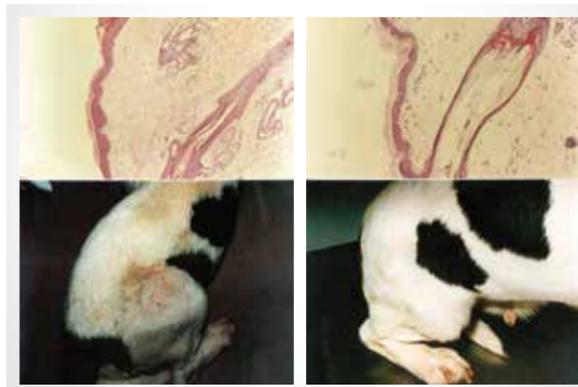


Dog presented with hepatocutaneous syndrome resulting in footpad hyperkeratosis saw significant improvement in paw pad health after 12 weeks

on Skin and Coat Health



Significant improvement in skin and coat health after 12 weeks of supplementation



Elimination of dermatosis and improvement to coat

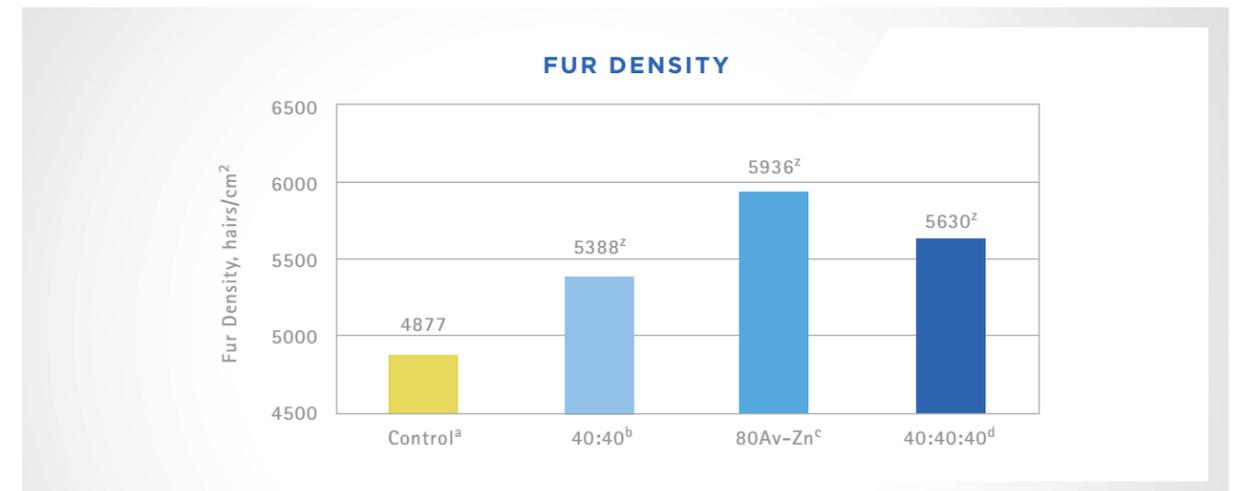


Dramatic resolution of lesions after 10 weeks, with subsequent hair return

LOOKING GOOD. FEELING GOOD.

Zinpro products have shown consistent results in supporting improved skin condition, hair coat quality, and immune function in multiple species. Testimonials indicate positive results observed by pet parents and multiple dermatology veterinarians.

Recent studies show that animals receiving highly available forms of trace minerals—such as those found in Availa®Pet formulations—respond with greater fur density and silkier coats than those receiving ordinary trace minerals.



FUR QUALITY

Score	Dietary Treatments			
	Control ^a	40:40 ^b	80Av-Zn ^c	40:40:40 ^d
5 (Silky), %	13.79	46.67	62.07	51.72
4 (Less Silky), %	65.52	40.00	30.03	41.38
3 (Medium), %	20.69	13.33	6.90	6.90
Mean Score	3.93	4.33	4.55 ^z	4.55 ^z

^a Control: 80 ppm Zn from ZnSO₄ | ^b 40 ppm Zn from ZnSO₄ + 40 ppm Zn from Availa®Zn zinc amino acid complex | ^c 80 ppm Zn from Availa®Zn
^d 40 ppm Zn from ZnSO₄ + 40 ppm Zn from Availa®Zn + 40 ppm Fe from Availa®Fe iron amino acid complex | ^z Means differ from Control (P < 0.04)



QUALITY, SAFETY, AND TRACEABILITY



In 2016, Zinpro was named a Preferred Supplier by the National Animal Supplement Council. As a NASC Preferred Supplier, we're trusted to provide raw materials that meet and even exceed the most rigorous quality standards, and we're looked to as a supplier recognized for responsible and transparent practices across the supply chain. This acceptance by NASC is another in a long line of validations from industry associations, further evidence of our commitment to leading the industry with the highest quality trace minerals for companion animals.



In addition, Zinpro proudly participates in other industry programs and certification standards, including:



ISO 9001:2008: Signifies we have put in place critical process controls for products in three vital areas: identification, traceability, and analysis and approval

OMRI (Organic Materials Review Institute): Ensures the suitability of products for certified organic production, handling, and processing



AFIA Safe Feed/Safe Food: American Feed Industry Association program designed to demonstrate and ensure continuous improvement in the delivery of a safe and wholesome feed supply for the growth and care of animals

HACCP (Hazard Analysis and Critical Control Point): A food safety management system administered by the FDA



FAMI-QS (Feed Additives and PreMixtures Quality System): A code of practices covering feed additives and premixtures in Europe

Canine Trace Mineral Recommendations

Life Stage		AAFCO ^a Total TM PPM ^a	FEDIAF ^b PPM	Zinpro Rec'd Total TM PPM	Zinpro Products	Expected Benefits
Puppy, Starter, Grower, Adult	Zn	100	100	100	ZINPRO, [®] ZINPRO [®] E, or Availa [®] Zn	Skin and coat development, growth and skeletal soundness, immune response, epithelial tissue, development, etc.
	Cu	7.3	11	7	CuPlex [®] or Availa [®] Cu	Immune response, skeletal development, improved enzyme activity, reduced anemia, and role in bone, lipid, and glucose metabolism
	Mn	7.2	5.6	25	MANPRO [®] or Availa [®] Mn	Aid in skeletal development, wound healing, and enzyme activity
	Fe	88	88	90	Availa [®] Fe	Avoid anemia, improve immune response, and energy metabolism
	I	1.0	1.5	1.0		Improved cellular metabolism, growth, metabolic rate
	Se	0.35	0.4	0.35	Availa [®] Se ^c	Improved immune response and cellular integrity
	Cr	600		600 ppb	MiCroPlex ^{®c}	Improved carbohydrate, protein, and lipid metabolism resulting in faster, more efficient growth

^a AAFCO dog food nutrient profiles based on dry matter; AAFCO, 2016: pp. 154; presumes an energy density of 4000 kcal ME/kg

^b FEDIAF 2016 recommendations ^c Products not currently approved for use in the United States of America

Feline Trace Mineral Recommendations

Life Stage		AAFCO ^a Total TM PPM ^a	FEDIAF ^b PPM	Zinpro Rec'd Total TM PPM	Zinpro Products	Expected Benefits
Kittens, Queens	Zn	75	100	75	ZINPRO, [®] ZINPRO [®] E, or Availa [®] Zn	Skin and coat development, growth and skeletal soundness, immune response, epithelial tissue, development, etc.
	Cu- Extr	15	10	12	CuPlex [®] or Availa [®] Cu	Immune response, skeletal development, improved enzyme activity, reduced anemia, and role in bone, lipid, and glucose metabolism
	Cu- Can	8.4		7	CuPlex [®] or Availa [®] Cu	Immune response, skeletal development, improved enzyme activity, reduced anemia, and role in bone, lipid, and glucose metabolism
	Mn	7.6	10	15	MANPRO [®] or Availa [®] Mn	Aid in skeletal development, wound healing, and enzyme activity
	Fe	80	80	80	Availa [®] Fe	Avoid anemia, improve immune response, and energy metabolism
	I	1.8	1.8	1.8		Improved cellular metabolism, growth, metabolic rate
	Se	0.3	0.3	0.3	Availa [®] Se ^c	Improved immune response and cellular integrity
	Cr			600 ppb	MiCroPlex ^{®c}	Improved carbohydrate, protein, and lipid metabolism resulting in faster, more efficient growth

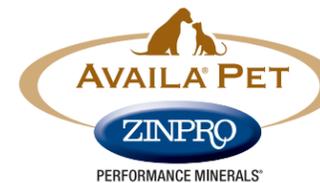
^a AAFCO cat food nutrient profiles based on dry matter; AAFCO, 2016: pp. 164; presumes an energy density of 4000 kcal ME/kg ^b FEDIAF 2016 recommendations

^c Products not currently approved for use in the United States of America

Additional companion species info and recommendations available upon request.



MARKS OF EXCELLENCE



Availa®Pet has been specially branded for companion animal diets and includes, but is not limited to, three trace mineral complexes: Availa®Zn (zinc amino acid complex), Availa®Mn (manganese amino acid complex), and Availa®Fe (iron amino acid complex). Customers using these performance minerals—along with our other Zinpro product line offerings—at their full recommended rates qualify to use and proudly display the Availa®Pet logo on their products.

Availa-Pet is backed by a commitment to quality, and we take every precaution where product safety and traceability are concerned. With the addition of Availa-Pet from Zinpro in pet food, treat, and supplement formulations, you'll see a visible difference in the health and appearance of your companion animals.



Zinpro Performance Minerals are backed by an unmatched portfolio of science-based animal performance data: we invest far more in animal performance studies than all other organic trace mineral companies combined, we direct multiple studies to support our performance minerals criteria, and we have more peer-reviewed publications than any other trace mineral company.

When trace minerals from Zinpro Performance Minerals are fed as part of a well-balanced companion animal diet, they can help improve the health and performance of companion animals, with benefits including immunity, coat and skin health, growth and development, reproduction, paw integrity, and energy metabolism.

Over 315 dog years of experience

With nearly five decades of experience in supplying superior trace mineral nutrition, Zinpro Corporation understands the unique nutritional needs of companion animals. Talk with your supplier to discuss the benefits of including Zinpro Performance Minerals in your pet food, treat, and supplement products.



Learn more about Zinpro Performance Minerals®
and our Availa®Pet brand at

ZINPRO.COM/COMPANION