

September 2006

Petfood Industry

WATT

www.petfoodindustry.com

Food for pets & people

p. 18

Dick Van Patten's Natural Balance Eatables

New palatability test

FDA on rosemary & raw diets

Global growth trends



Digital version at www.petfoodindustry-digital.com

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Improving obesity warnings

Messages emphasizing prevalence are less effective

The following warnings are all too typical:

•“The RSPCA, citing rampant pet obesity in the land down under, is warning Australians to stop overfeeding their dogs and cats,” proclaimed *The Guardian*. “Overweight pets are at greater risk of developing health problems such as diabetes, mobility problems, difficulty breathing and increased pressures on the heart. Overweight cats often develop skin problems from not being able to groom properly.”

•“The latest in a recent flood of warnings about the obesity of pets in Britain comes from pet insurer Saga Pet Insurance. The company is warning Britain’s animal lovers to monitor their pets’ weight following research that finds that a third of dogs and one in 10 cats in the UK are clinically obese.”

What’s wrong with these warnings? Messages that point out the prevalence of pet obesity are likely to be less effective in preventing it.

Testing messages

Psychologist Robert B. Cialdini, in *Current Directions in Psychological Science* (August 2003), offers evidence that it is a serious error to focus on the prevalence of a negative behavior.



It is a serious error to focus on the prevalence of a negative behavior.

— Tim Phillips



Instead, messages should focus on what is approved or disapproved.

Cialdini gives an example from Arizona’s Petrified Forest National Park, which suffers from the estimated theft of more than a ton of wood per month by visitors. He tested two different signs:

•Sign one—“Many past visitors have removed petrified wood from the Park, changing the natural state of the Petrified Forest.”

•Sign two—“Please don’t remove the petrified wood from the Park, in order to preserve the natural state of the Petrified Forest.”

As predicted, the first sign resulted in significantly more theft than the second (7.92% vs. 1.67%).

The lesson

Within the statement, “many people are doing this undesirable thing,” lurks the powerful and undercutting message, “many people are doing this.”

How does Cialdini’s work apply to pet obesity warnings? In my opinion, petfood companies should not talk about how common pet obesity is, but rather focus on how owners can determine if their pets are overweight and give practical advice. Acquainting owners with how to score their pets’ body condition is a good first step.

The American Animal Hospital Association 2000 Pet Owner Survey

reported that 17% of pet owners rated their pets as overweight. Veterinarians estimate 44% of their patients are overweight. This discrepancy illustrates pet owners’ lack of awareness of an appropriate body condition for their pets. Without awareness, they do not take the necessary steps to correct the problem.

Industry’s role

Veterinary nutritionist Sean Delaney’s advice for petfood companies includes:

•Address pet owners’ lack of awareness that their pets have a problem.

•Give specific exercise recommendations.

•Supply clear feeding guidelines for treats, including recommendations for decreasing regular meal amounts.

•Encourage pet owners to adjust food intake so their pets maintain an ideal body condition. Stress that recommended feeding amounts are only starting points and will likely need to be changed.

In facing the daunting challenge of pet obesity, we need all the tools we can get. ➔

Dr. Phillips is the editor of Petfood Industry magazine. He can be reached at Tel: +1.815.734.5644, E-mail: phillips@wattmm.com.



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Industry News

Mars anticipates Romanian market

Masterfoods Romania, an arm of Mars, Inc., has reportedly expressed interest in opening a production facility in Romania once the petfood market has sufficiently developed to guarantee the profitability of the business. The segment is expected to witness considerable growth the next few years.

The petfood market in Romania is made up of imports for the very reason that it's under development. Data released by the National Statistics Institute show a 700% increase in the petfood market during the 1999-2005 period in Romania.

The first plant manufacturing petfood in Romania is now under construction in Buftea by the Nordic group. Investments in this project are estimated at more than 5 million Euros, and the production facility will encompass approximately 1,600 square meters.

USDA halts lifting ban on Canadian beef

Another case of BSE in a Canadian cow has prompted the US Department of Agriculture (USDA) to hold expanding cattle and beef imports from Canada. The USDA had proposed lifting its ban on Canadian cattle, as well as beef from cattle more than 30 months old, but the latest infected cow was born in 2002—well after Canada imposed feed restrictions. USDA said there will be no decision on expanding beef and cattle trade with Canada until the conclusion of a joint investigation into that nation's latest case of BSE.

USDA spokesman Ed Loyd said the department has withdrawn a proposal that had been under review by the White House Office of Management and Budget. Loyd said the US wants to know how the latest infected animal in Canada acquired the disease.

"We believe it is prudent to hold the rule until the joint investigation into how the animal may have been infected is completed," Loyd said. "It is important to confirm that Canada's regulatory system designed to protect consumers and livestock is working."

Petfood Industry adds editor-in-chief

Debbie Phillips-Donaldson joined WATT Publishing Co. on July 31, 2006, as editor-in-chief of *Petfood Industry* magazine. She will lead strategic planning and development of content for the magazine, digital media, Petfood Forums and all other products within the *Petfood Industry* brand.

Prior to joining WATT, Phillips-Donaldson served as editor of *Quality Progress* magazine and manager of editorial management for the American Society for Quality in Milwaukee. Her previous experience includes 13 years at Fancy Publications in Irvine, California, USA,



where she held the successive positions of editor of *Cat Fancy* magazine, manager of new product development and vice president of editorial and manufacturing.

Petco agrees to US\$1.8 billion buyout

Petco Animal Supplies has agreed to be taken over by Leonard Green & Partners and Texas Pacific Group for US\$1.8 billion in cash and assumed debt. The deal is the latest in a string of leveraged buyouts of specialty retailers and marks the second time this private equity group has taken the pet supplies company private in the past six years.

Leonard Green and Texas Pacific agreed to buy the pet store chain for US\$29 a share. The buyers will also assume about US\$140 million in debt. The deal is expected to close by the fourth calendar quarter of 2006, subject to the approval of Petco shareholders and regulators. Until August 10, Petco was allowed to solicit other bids under certain conditions.

Petco and its major pet store chain rival, PetSmart, flourished early this decade. CIBC analyst Vivian Ma said the price looked high, given what she sees as tough times for the pet supplies specialists. "I think there's been struggling with customer traffic with competition intensifying," Ma said. She said discounters like Wal-Mart Stores, and particularly Target, were "doing very well, encroaching on the market."

The last time Leonard Green and Texas Pacific led a buyout of Petco, in 2000, the deal was worth US\$624 million. The return on investment was substantial: They raised US\$275 million when Petco went public. For more information, see p. 50.

Petfood Forum changes announced

The 2007 Petfood Forum at the Hyatt Regency O'Hare in Chicago, Illinois, USA, will feature a new format. April 18, the final day of the event, will offer three general sessions: large pet retailers on what pet owners want; petfood company CEOs in an informative roundtable; and in-depth, exclusive market research. The Forum will kick off April 16 with a reception; April 17 will feature concurrent sessions. For information, E-mail Marcia Riddle at riddle@wattmm.com (attendees) or Dee Henson at henson@wattmm.com (exhibitors).

The *Petfood Industry* Focus on Treats will follow immediately on April 18 and 19 at the same location. For information, E-mail riddle@wattmm.com.

Petfood Forum Europe 2007 will be held May 8 in conjunction with Victam International at Jaarbeurs Halls, Utrecht, Netherlands. Petfood Forum Europe exhibitors will be located within the Victam trade show. For details, E-mail riddle@wattmm.com or go to www.victam.com.

Hampshire Pet Products promotes Larson

Julie Larson has been promoted to general manager of Hampshire Pet Products, LLC. Larson's responsibilities will

include leading the development and review of the company's strategic plans and execution of the company's initiatives. Larson has more than 25 years of experience in the petfood industry and has been with Hampshire Pet Products since 2000.

Kemin receives Superior rating for safety

The American Institute of Baking (AIB International) recently awarded Kemin Industries, Inc. a Superior rating during an audit. This rating, AIB International's highest, assures that Kemin products meet or exceed stringent industry standards for food safety. Efforts by every member of the manufacturing, maintenance, shipping and quality groups allowed Kemin to score 920 points out of a possible 1,000.

Sergeant's promotes Stichler

Sergeant's Pet Care Products has announced the promotion of Caryn Stichler to vice president of marketing. Stichler previously served as director of marketing. In her new position, Stichler is responsible for product management and marketing services. Stichler has been with Sergeant's since 1997.

Lamb joins AFIA as director

The American Feed Industry Association (AFIA) recently announced that Kathy Lamb has joined the staff as director, membership & services. Lamb has seven years of leadership experience in membership, marketing and event management with several associations. Most recently, she served as director, membership and marketing, for the Coalition of Government Procurement, and previously worked for CompTel as well as several packaging associations. At AFIA, she will also be heading the Feed Expo, as well as sponsorship and advertising efforts for publications and major events.

Skyberg elected to SANA Board

Aaron Skyberg of SK Food International has recently been elected to the Soyfoods Association of North America (SANA) Board of Directors. The Board of Directors is made up of 11 SANA members. Skyberg has been with SK Food International for five years. He is responsible for providing sales and marketing support in all areas relating to certified organic and conventional non-GMO agricultural commodities. Skyberg has played an active role in the soybean industry in many areas including the purchasing and marketing of soybeans.

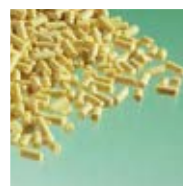
Süd Chemie AG sells H. von Gimborn GmbH

H. von Gimborn GmbH was recently sold to the German private equity firm capiton AG. The transaction, valued at 28 million Euros, closed on June 20, 2006. H. von Gimborn GmbH, based in Emmerich, Germany, is a provider of premium pet care and petfood products in Western Europe. Gimborn manufactures and distributes more than 400 different branded



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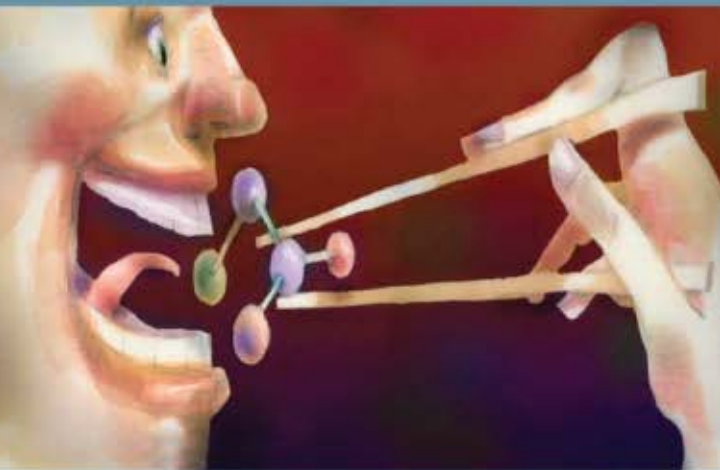
- Poultry Meal, Standard and Low Ash, Meat and Bone Meal, Turkey Meal, Duck Meal
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- Turkey Fat
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Industry News >

cat, dog and small animal products throughout Europe, including ShinyCat and Gimpet Super Premium (cat food), Shiny Dog (dog food), Biokat's and Eurokat's (cat litter), Käse Rollis (cat snacks) and PetCenter (retail outlets in Prague).

capiton AG is a Berlin-based private equity group that invests in middle-market companies in Austria, Germany and Switzerland with an emphasis on the consumer goods, capital goods, services and health care sectors. Süd-Chemie is a leading chemicals producer focused on catalysts, adsorbents and additives. The divestiture of Gimborn is a result of Süd-Chemie's announced decision to concentrate on core activities including catalysts, food and feed additives, foundry products and performance packaging.

Baker wins Animal Nutrition Award

David H. Baker, professor emeritus of Nutrition and University Scholar, Department of Animal Sciences, University of Illinois, was named the third annual winner of the FASS-AFIA New Frontiers in Animal Nutrition Award. The award, jointly presented by the Federation of Animal Science Societies (FASS) and the American Feed Industry Association (AFIA), was designed to stimulate, acknowledge and reward pioneering and innovative research relevant to the nutrition of animals that benefits mankind and the nutritional value of foods from animals.

Tyson names chief executive

Tyson Foods, Inc. recently named president Richard Bond its new chief executive. The Springdale, Arkansas, USA-based company said that Bond's appointment was in keeping with plans for succession of its senior management. John Tyson, previously CEO, will continue to serve as chairman of the board.

Gold Line expands dry petfood exports

A UK animal feeds manufacturer is increasing its exports into the European dry petfood market with the help of an Enterprise Award from Home Grown Cereals Authority (HGCA). Gold Line Feeds (Dodson & Horrell) has been awarded £10,000 for a three-year project involving the export of dry petfood made using wheat, barley and linseed to Europe. Organized twice a year by HGCA, the awards offer support toward the development and marketing of products using UK-grown grain.

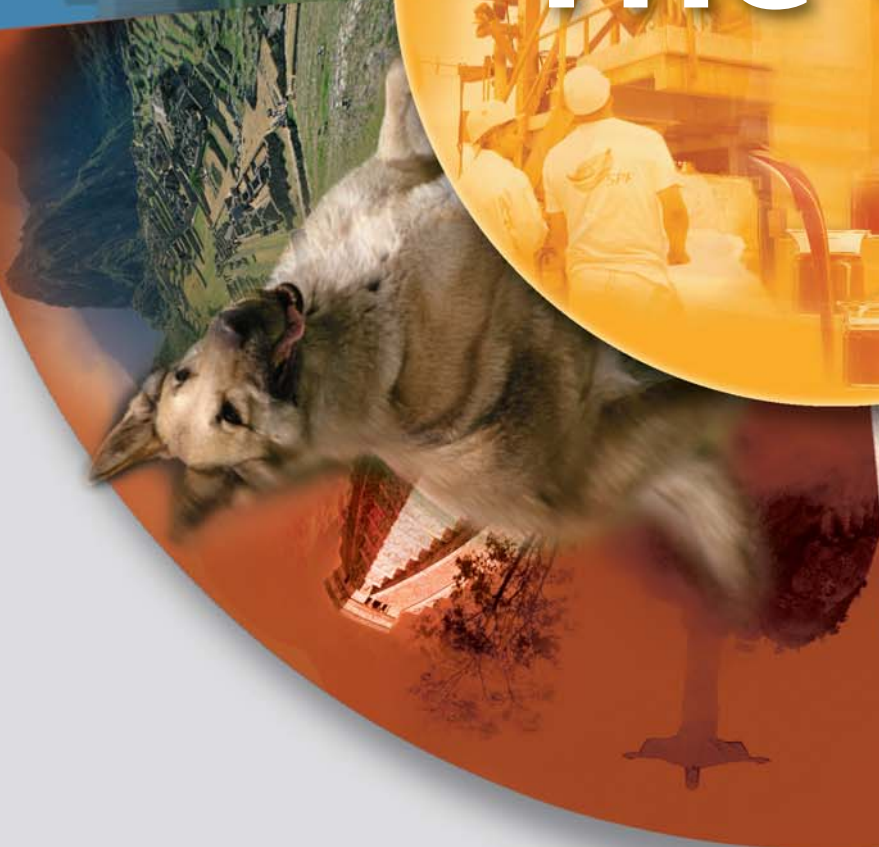
Gold Line Feeds currently exports its Gusto brand of dry dog food to France and Italy. With the help of funding from HGCA, it is looking to break into the German, Danish and Swedish markets. The HGCA Enterprise Award will also be used for promotional material, the website and new product development. It is anticipated the project will use a substantial amount of additional grain over its three-year duration.

Ameri-Pac gains recognition

DiversityBusiness.com, a leading multicultural B2B Internet portal, recently named Ameri-Pac Inc. as one of the top 100 diversity-owned businesses in the United States (Div100). The Div100 represents the top 100 diversity-owned businesses in the US, in sectors such as technology, manufacturing, food service and professional services.



The Closer



New on the Shelves

Editor's note: Submissions and feedback are welcome. Contact: Tim Phillips, Watt Publishing Co., Tel: +1.815.734.5644, Fax: +1.815.734.5649, E-mail: phillips@wattmm.com. Thanks to Mintel for its contributions. The Mintel Global New Products Database (GNPD) tracks new product launches, trends and innovations internationally. For additional information, visit www.gnpd.com or call Mintel International at 312-932-0600.



« Snausages Fortune Snookies

Del Monte Pet Products recently introduced Snausages Fortune Snookies. The treats have a chicken flavor and are said to be a new dog treat always full of surprises. The treats feature messages printed with safe and edible ink. Messages include doggie fortunes, witty dog sayings and wise advice for pets.

www.snausages.com

Flavored water for cats »»

Mollibrands has introduced a new way to hydrate cats with Molli's Choice Flavored Water for Cats. Molli's Choice is a chlorine-free, non-carbonated, purified drinking water with vitamins, minerals and taurine. It comes in five flavors: Roasted Turkey; Original; Beef Tenderloin; Bacon Delight; and Roasted Chicken.

www.mollibrands.com



« Pegetables vegetable treats

Pegetables Dog Treats are organic and scientifically formulated using real vegetables, said to help support dogs' immune systems. Adding to the health benefits, Pegetables contain antioxidants, vitamins, minerals and essential fatty acids.

www.pegetables.com

Yogurt light Crossys »»

This light yogurt snack is a natural and balanced mix of ingredients. Outside is a crispy coating of cereal, and when the cat bites on it, its light filling—low-fat yogurt with no more than 3% fat—simply melts on the cat's tongue. The zip-lock package can easily be resealed.

www.vitakraft.com



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Now available from American Health Kennels is the Bark Bar. Resembling a candy bar for humans, this treat offers a Luscious Carob Cookie-flavored treat made of natural ingredients and containing no



chocolate. Other flavors in the range include

Peanut Butter, Carob Chip, Creamy Peanut Butter and Honey & Oat. This bar, packaged very much like a Hershey bar, follows the trend of the humanization of products in this industry.

www.just4pooches.com

Royal Canin Intense Hairball cat food >>

Royal Canin has extended its line of cat food to provide a new variety called Intense Hairball. This extension provides hairball control through a combination that works to eliminate swallowed hair from the intestines. Ingredients nourish the coat while making digestion safe. In addition to hair nutrition, this cat food provides good dental hygiene as well as calorie control.



www.royalcanin.com


Couch Potato Lite biscuits for dogs >>

Old Mother Hubbard provides a natural dog biscuit that contains oatmeal, sweet potato, eggs, apples and carrots. These ingredients are relatively unique to dog food and treats, showing the recent humanization of petfood products. The small-size biscuits are old-fashioned and simple, reminiscent of a grandmother's cookies but offering the label of "lite" for dogs on a diet.



www.oldmotherhubbard.com

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« Hartz replacer milk for kittens

A new line for the Hartz Mountain brand is Milk Replacement for Kittens. The can provides a ready-to-use liquid formula for kittens up to 35 days old. Providing advanced care, this product is ideal for orphaned kittens. Since normal cow's milk does not provide the protein and oils a kitten needs, this formula gives a balance of oils, vitamins and minerals essential to growth.

www.hartz.com



« Castor & Pollux Natural Ultramix cat food

This Natural Ultramix appeals to the health-conscious cat owner, providing a cat food that is not only fortified

with vitamins and minerals but also full of natural chicken and wholesome fruits and vegetables. The product is completely free of wheat, corn or by-products as well as growth hormones, artificial colors, preservatives and flavors.

www.castorpolluxpet.com

Diamond introduces 10 natural formulas

Diamond Petfoods has introduced Diamond Naturals, a product line of 10 naturally preserved petfood formulations without corn, soy or by-products. The Diamond Naturals product line offers general products and formulas specialized for age and breed.

www.diamondpet.com

Frozen treats for felines

Pet Specialties has introduced Cool Claws, an ice cream-style treat for cats. The company calls the product a healthy new frozen indulgence for cats, and notes that it's now available regionally in grocers' frozen food



aisles. The treat was designed for a cat's digestive system, with premium ingredients, vitamins and minerals. Pet Specialties developed Frosty Paws dog treats, which Nestle now owns.

www.coolclaws.com

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Food for pets & people

Natural Balance makes some of the industry's most innovative products

BY MIKE PEHANICH

Van Patten owns a successful petfood company, but he will probably always be best known for his starring role in the TV series *Eight is Enough*.



The bark of a yellow Labrador Retriever rings out as actor Dick Van Patten, chairman of Natural Balance Petfoods, reviews a sales chart on the upward swing. The company invites employees to bring their dogs to work. In fact, the company even puts them to work at times. The personal pets of company employees are the first to sample product prototypes.

Business basics

Company: Natural Balance Pet Foods, Inc., 12924 Pierce St., Pacoima, CA 91331

Contact: Tel +1.818.897.2521 or +1.800.829.4493; Fax +1.818.897.4740; E-mail info@naturalbalanceinc.com; Website www.naturalbalance.net

Officers: Chairman of the Board Dick Van Patten, CEO Joey Herrick and Executive Vice President Frank Koch

Annual sales: US\$72 million

Processing plant: 25,000-sq.-ft. (plus 11,000-sq.-ft. expansion)

Distribution center: 54,000-sq.-ft.

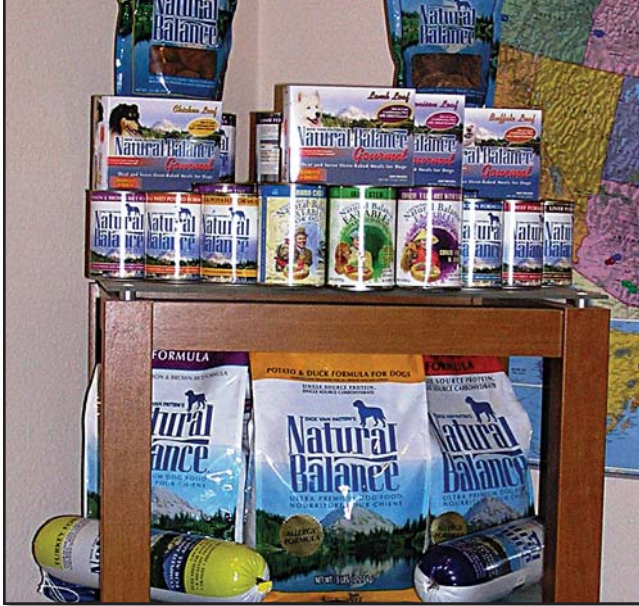


Sales of US\$72 million

Conceived in 1989, Natural Balance (www.naturalbalanceinc.com) is now a US\$72-million operation providing products for pets and zoo animals. Dog and cat foods range from dry product to canned food, frozen cubes, microwaveable loaves and meat rolls and treats.

New products and creativity

New products are often the best measure of a company's creative powers. At Natural Balance, the creative machine is pumping on all cylinders. "We are all part of the new product team here," says CEO Joey Herrick, who joins Frank Koch, executive vice president, and chairman Dick Van Patten in creative sessions. Nutrition consultants and zoo expert Marty Dinnes, DVM, also play critical roles. The company's zoo business has put a charge into its petfood operations, inspiring



The company's zoo business has stoked the creative fires and enabled Natural Balance to unleash a plethora of new products.

All Natural Balance petfoods are made in a USDA-inspected plant suitable for people food, which the company believes sets an industry benchmark.

crossover products like Crunch-E-Bones for dogs, a product originally designed for zoo bears.

All new products must comply with the company's high standards of nutrition and safety. Viable new product recipes undergo extensive analytical tests. Test batches are run in the plant. "For our meat rolls, it took 17 test batches to get them right," says Herrick.

Eatables for dogs and people

Dick Van Patten's Natural Balance Eatables for Dogs products contain eight ingredients ("Eight is enough!" quips Van Patten) including fresh vegetables, high-quality meats, a special blend of nutrients, vitamins and minerals and other premium ingredients. Varieties include Irish Stew, Chinese Take-out and chicken-based Hobo Chili. Van Patten asserts, "You can't tell the difference between my Eatables and a home-cooked meal." He emphasizes that the product is human food, fortified with the nutrients dogs need.

"We're the first national petfood company to have a canned dog food made in a USDA-inspected plant suitable for people food, not a petfood plant," says Koch. He believes the practice establishes a new industry benchmark, and a marketable one at that.

Underscoring the company's "human-grade" quality commitment, Herrick also hired Lloyd Parks, a ConAgra alumnus, to be his manager and director of quality assurance at the Pacoima, California, USA plant. "Our mentality is in human food," emphasizes Parks. "I want our plant run like a USDA food plant."

Breakthrough products

Avid pet owners are apt to express personal wants and needs in the care of their pets. While petfood marketing has long driven

this anthropomorphic principle to profits, Natural Balance has drawn equally from its sister truth: Great taste and nutrition may be easier to sell on the petfood shelves than in the human food aisles. Humans tend to preach more about "eating well to be well" than they practice. Natural Balance gives them a chance to practice what they preach in their choice of petfoods.

"In the old days, petfood manufacturers went to 'least-cost' formulation. They bought the lowest cost ingredients in the commodities market, and that's what went into petfoods," explains Koch, whose 35-year petfood career includes a stint with Hill's Pet Nutrition. "We wanted high quality."

Natural Balance has stuck with safe, proven ingredients in its animal food. "Some companies are throwing in herbs and other ingredients they don't know anything about," says Herrick. "We stay away from that."

Cash infusion

A badly needed infusion of capital in 1999 from Dr. Greg Kay, a top heart surgeon, roughly coincided with the roll-out of the landmark Ultra Premium Dog and Cat Food canned and dry foods. The addition of taurine to the formulation made the introduction a watershed event in the history of petfood. Studies have since linked dogs with dilated cardiomyopathy (DCM) to low plasma taurine levels. "Ultra was ahead of its time," says Koch. "It was unusual then to add taurine to a dog food formulation. Cat food? Yes. But not for dogs."

More breakthrough products have followed since. Most chisel away at the quality and even perceptual barriers between human and petfoods. Natural Balance Gourmet, for example, is a line of frozen microwaveable meat loaves for dogs. Popular as the product has been, it has suffered from the difficulties of distributing a pet product through distribution channels for frozen foods.

New products are often the best measure of a company's creative powers.

Allergy formulations

No doubt, pet owners overestimate pet allergies. “About 80% of owners think their dogs have allergies,” says Herrick. “Veterinarians estimate that actual number at more like 15-20%.” But processors like Natural Balance are hardly sneezing at the potential of allergy-aimed formulations—even 15% amounts to a formidable sum in the US\$34.8 billion global dog food market.

Natural Balance Ultra Premium Allergy Formulas for dogs and puppies come in three varieties: Potato & Duck; Sweet Potato & Fish; and Venison & Brown Rice. Joining the potato and duck dry formula are a duck and potato canned food and a potato and duck treat. The line also includes a venison and green pea formula for felines.

“The basis of allergy formulas is a single-source protein coupled with a single-source carbohydrate, both of which the animal has not been previously exposed to,” explains Dinnes. Copycat products add ingredients that may compromise the effectiveness of the *Single-source x 2* concept. “Our duck and potato is only duck and potato,” says Dinnes. “And it is one of our best selling products.”

Happenings at the zoo

Five years ago, Natural Balance contracted with the San Diego Zoo to feed its key carnivores. “Dr. Mark Edwards headed the operation then. He wanted to take zoo nutrition to a new level,” explains Herrick. “Zoo animals all used to be in cages. Today we place them in some semblance of a natural habitat. But zoo

nutrition is still in cages.”

Make that “was” in cages. At an estimated 55 zoos, Natural Balance Zoological Formulas today feed a wide array of zoo carnivores including lions, tigers, cheetahs, bears, snakes and meat-eating birds ranging from condors and eagles to crows and magpies.

The zoo business has stoked the company’s creative fires and enabled it to unleash a plethora of new products. “I saw the zoo business as prestigious for us,” says Herrick. “Consumers think, ‘If zoos are going to trust Natural Balance with endangered species, we can trust them with our pets!’”

Natural Balance has parlayed its expertise from Zoological Formulas for Carnivores to Natural Balance Canine RAW Food Diet, a frozen dog food line manufactured at the headquarters plant. RAW products approximate the nutritional content of food a meat-eating animal would consume in the wild and have favorable protein-to-fat ratios.

Growing internationally

While Dick Van Patten’s familiar man-you-can-trust image has bred confidence in the American market, quality and concept have generated acceptance of Natural Balance overseas. The company has had success in Japan, Singapore and Hong Kong, and it recently launched product in the Australian market as well. Trade restrictions in the European Union have limited broad expansion on the Continent. Still, the company has managed inroads into the markets of Germany, Italy, Belgium, Switzerland and Austria.

“EU restrictions are greater every year,” notes Koch. “It may be easier for us to manufacture in Europe than to export.”

The hardest part

Natural Balance is adding an 11,000-sq.-ft. expansion to its 25,000-sq.-ft. Pacoima plant, where it manufactures some of the petfood industry’s most innovative products including Roll-a-Rounds and the RAW line of frozen petfoods.

The bustling new 54,000-sq.-ft. distribution center nearby offers further evidence that Natural Balance is, indeed, on a roll. The seven-year-old plant will add two lines for its popular roll products next year. The company also has plans for a new plant in Georgia, USA. Moreover, it is building a new testing laboratory, expected to open this fall.

The company continues to grow at a pace that poses formidable production challenges. “Keeping up with growth is the hardest part of our business,” says Koch. ➔

Mike Pehanich is a freelance writer based in Westchester, Illinois, USA.

“About 80% of owners think their dogs have allergies.”

RAW to the bone

Our dogs had wild ancestors that fed off nature’s bounty and did quite well, thank you. Natural Balance Canine RAW Food Diets emulate the mix of bones and raw food that meat-eating animals thrive upon in the wild. The RAW product line, descended from the company’s Zoological Formulas for Carnivores, includes a chicken and a beef formula, each cut into cubes and frozen at -50°F.

RAW products have favorable protein-to-fat ratios, asserts Marty Dinnes, the veterinary nutritionist who came to Natural Balance from the San Diego Zoo. What they don’t contain are dangerous microbes that can plague pets and captive animals that have not developed the typical immunity of animals in the wild.

“Our RAW diets are free of *Listeria* and other potentially deadly germs,” says Dinnes. “We employ a polymerase chain reaction test, a DNA technique, to test all our products. You can’t take chances with exotic animals.” Nor do pet owners want to with their pets.



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Alternative approach

Examining the cognitive method for measuring food preference

BY JOSEPH A. ARAUJO, *ET AL.*

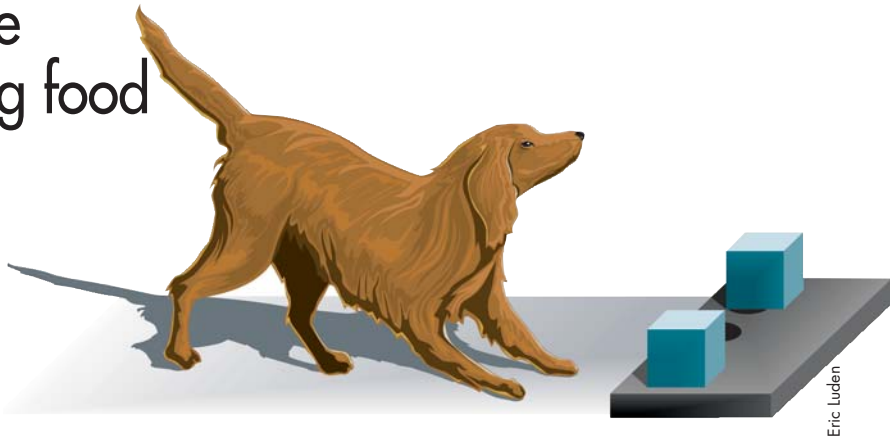


Figure 1. In this example of the apparatus used in a typical test, a tray in the response area contains food wells with objects covering them. The dog displaces one of the objects with its nose. The correct object conceals a food reward.

In the companion animal field, palatability assessment is critical for developing foods, treats and medications that pets will willingly consume. Because animals can't declare their preferences, we must use other means to find out what foods they like. Ultimately, any method must enable us to objectively rank an animal's preference between two (or more) foods. CanCog Technologies has developed an alternative approach, the cognitive palatability assessment protocol (CPAP).

Advantages over standard two-pan tests

The standard two-pan method of assessing food preference in pets compares how much of two foods are eaten in a specific amount of time. The test offers several advantages: It generally agrees with owners' reported opinion of their pets' enjoyment of a food, it is low in cost and can be done quickly in terms of data acquisition.

The two-pan test also has inherent limitations. First, the data show significant variability—particularly within individuals. Second, the test has difficulty detecting subtle differences in formulation. Third, the two-pan test doesn't afford control for how different foods may affect the palatability of each other, or demonstrate the long-term effects of caloric intake and nutritional value.

Instead of relying on quantity consumed, CPAP helps the animal indicate which food it prefers without actually eating the food. CanCog uses a unique cognitive procedure based on associative learning that is similar to how consumers select food at a supermarket—i.e., based on packaging.

Cognitive testing procedure in dogs

We have examined cognition in dogs for several years with an emphasis on age-related cognitive changes (Adams, *et al.*, 2000).

An example of the testing apparatus we use is shown in Figure 1. In a typical test, the dog enters the apparatus and a technician slides a tray into the response area. The tray contains food wells with objects covering the wells. As with most of our tests, there is only one correct choice. If the dog selects the correct object, it finds a food reward in the well underneath it.

One of our tasks, an object-discrimination learning task, can be solved by using an associative learning strategy. One of two objects is always placed above the food reward. The dog simply has to learn the association between a particular object and the presence of a reward. Once that happens, we reverse the reward-object association. We have found during this reversal test, aged dogs have impaired responses compared to young dogs (Tapp, *et al.*, 2003).

We use a similar procedure to examine palatability, but in these tests there are two objects that could be correct. Each of the two objects is associated with a different food. To ensure the animals have actually used associative learning, we include a third object that has no reward associated with it.

Initial CPAP development

In the initial development of the task, we used a four-phase procedure to compare palatability of a moist food with dry kibble (Araujo and Milgram, 2004). The first phase determined a preferred object out of three. In the subsequent phase, we presented a single, nonpreferred object in association with one of the test foods.

The third phase was used to assess palatability. The dog was

The two-pan test data show significant variability—particularly within individuals.

to pal assessment

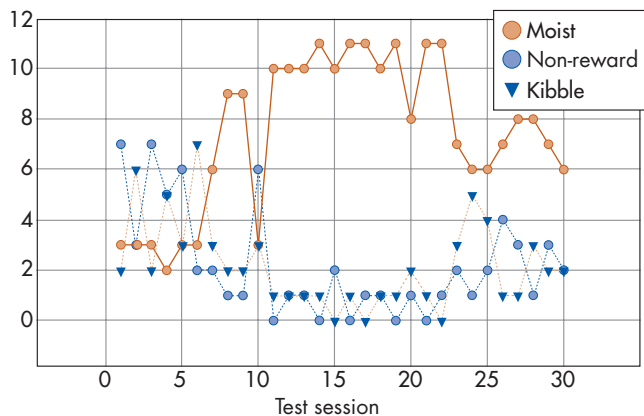


Figure 2. Dogs were presented with objects. The originally preferred object was not associated with food. Initially, each dog picked its preferred object but rapidly learned to avoid it. Eventually every dog selected the moist food object.

presented with three objects, one of which (its originally preferred object) was not associated with any food. Initially, dogs picked their preferred object, but they rapidly learned to avoid it, and with repeated testing every one of the dogs selected the object associated with the wet food (see Figure 2). In the fourth phase, we switched the food-object associations, so the preferred food was now under a new object. The animals accordingly switched their choices to the new object associated with the wet food.

Comparison with the two-pan test

To further validate the CPAP, we compared two foods that were identical in composition, except for the protein source (one was chicken and one was lamb; Araujo, *et al.*, 2004). Based on previous work, we expected the two to be similar in palatability, but that was not the case.

We used six Beagles and found that they all showed a strong preference for the chicken-based food. We then used the same six dogs and an additional seven dogs that were naïve to the diet. We found a similar, but smaller, preference using the two-pan test over the CPAP, but this was mainly driven by the dogs with experience. The dogs that were naïve to the two foods showed no difference in preference.

To compare stability of the two tests, we looked at preference over several days and also following feeding of various diets. Dogs showed the same preference on the CPAP for the entire test period. By contrast, preference according to the two-pan test was highly variable—even in dogs that had previous experience with the food. Similarly, feeding prior to two-pan testing resulted in reduced food consumption during testing, and reduced the ability to detect a difference. No difference in the ability to detect a preference was noted in the CPAP under identical conditions.

Conflict with a satiety-suppressing food

In a final test of the CPAP protocol, we examined the palatability of a specially formulated, appetite-suppressing food. The food was effective, in so far as animals would eat very little, but it also convincingly failed the two-pan test. Was this because the food suppressed appetite, or because of decreased palatability? When we used the standard two-pan test to compare the food with another, the appetite-suppressant diet lost, but again there was considerable variability.

The CPAP procedure, however, told another story; several of the animals showed a consistent preference for the appetite-suppressing food over the standard. There was substantial group variability, but much less individual variability—which is what we would expect if the foods were similar in palatability.

Future directions for CPAP

Like people, dogs can show their preference based on packaging, as demonstrated by the CPAP protocol in which they select an object rather than a food. Food preferences established by CPAP are robust, stable and not influenced by confounding effects of other foods—including those intended to reduce food consumption. The disadvantage of CPAP is that it requires more time than the standard two-pan test and, thus, is more costly.

Because the CPAP requires only small quantities of food and is a robust test, it may be the best for preference assessment of slight changes in food formulations, pharmaceutical formulations and treats. With the industry pushing toward improved health, while still providing highly palatable foods, CPAP may be considered a compelling adjunct to standard palatability tests. ➔

Mr. Araujo is one of the principals of CanCog Technologies, Inc. and an inventor of the CPAP procedure. For more information, contact josepha@cancog.com.

Pros and cons of CPAP

Advantages

- Reduced individual variability;
- Increased ability to detect subtle formulation differences;
- Doesn't rely on consumption of food;
- Food preferences established are robust, stable and are not influenced by confounding effects of other foods—including those intended to reduce food consumption.

Disadvantages

- Requires more time than the standard two-pan test and, in this sense, is more costly.



Beneful's Prepared Meals are available in eight varieties made with beef, chicken, turkey, pork and lamb along with such ingredients as wild rice, barley and pasta and vegetables like spinach, carrots, peas and green beans.

The humanization of cats and dogs has driven growth in products that cater toward specific ailments, breeds and age segments. This differentiation in products has allowed prices to vary widely and is most evident in the global US\$42 billion dollar a year dog and cat food industry. Dog food represents 61.5% of value sales.

Value-added advances

The growing value-added segment is due to petfood manufacturers spending recent years introducing a variety of premium and superpremium products. The accelerated premium trend can be attributed to the success of the Iams brand introduction in 2002 into the hypermarket and supermarket retail channels. In the premium dog food segment, 80% of sales are in the dry category. In the premium cat food segment, 40% of sales are in dry products.

Owners have had no problem purchasing products with a premium price, resulting in an increased number of value-added products introduced into the market. This consumer demand has also convinced supermarkets, hypermarkets and mass merchandisers to include the new products in their petfood range, increasing distribution and growth. Euromonitor International expects the upward trend in pricing to continue as owners increasingly provide products to dogs and cats that address individual pets' needs.

Value-added products, more expensive than economy or mid-priced brands, are doing booming business in maturing and mature markets alike. In Western Europe, premium cat food's average price is US\$5.20 per kg compared to US\$2.20 for mid-priced cat food and US\$1.40 for economy. Consumer's preference for these more expensive products has taken a toll on economy and mid-priced brands. In the mature market of the UK, standard premium wet dog food experienced a nearly 12% compound annual growth rate (CAGR)

Global growth trends

Sales in the premium segments are outpacing the mid-priced and economy segments

BY ELIZABETH HIGGINS

Natural Balance Eatables for Dogs products, proclaims the company, contain eight ingredients including fresh vegetables, high-quality meats, a special blend of nutrients, vitamins and minerals and other premium ingredients.



between 1998 and 2005 compared to a 13% drop for economy wet dog food.

High-quality petfood is becoming increasingly important to UK owners and is considered key to the care of a dog's health. Premium products with high prices are well suited to achieve this for the consumer.



Beneful's Prepared Meals are packaged in a clear, ready-to-serve, resealable container.

Phenomenal movement

In comparison, emerging markets such as Latin America and Eastern Europe have seen phenomenal movement in petfood over recent years among all price points. Economy wet dog food in Romania, for example, had a 41% CAGR during the review period, leading the globe in increases. Premium cat food in Brazil experienced a gain of 28.4% CAGR. In contrast, it is important to note that growth in premium products is primarily limited to brands. Private label sales continue to be strong in the mid-priced and economy dog food segments.

The Asian petfood market is also on the increase and, adding pet care products, is expected to reach US\$10 billion by 2010. Japan still dominates the market with a 75% share, but China has been coming on strong. In general, changing lifestyles, new products and communication programs will foster good petfood sales growth in Asia.

France's pedigreed pooches

With 80% of French dogs considered to be pedigree status, owners in the country are willing to go the extra mile and spend more to please their purebred pooches with products that contain additional benefits. Superpremium dog food in France had a 7% CAGR in the review period with sales of US\$106 million in 1998 and US\$170 million in 2005. Value-added products that clean teeth, shine coats and are marketed toward specific age groups have replicated their global success in France. Consumers are also leaning toward superpremium

products not only for their added benefits, but also because of luxury packaging. With easy-to-open pouches that maintain freshness, French owners make sure their pets are actually enjoying the fresh taste of their food.

and cat food as well as raised the amounts owners are willing to spend. Additionally, the development of value-added food has helped de-emphasize price competition in branded products and bring new focus on product development, raising quality overall. Euromonitor expects product development to slowly have an effect on mid-priced and economy segments where these brands will have to reinvent themselves to stay competitive through 2010.

Product development focus

Pet owners will continue to seek high-priced functional food products that treat their pets that have ailments they might be suffering themselves. Greater availability, increased functionality and the growing variety of food for different life stages have positively impacted growth in dog

Elizabeth Higgins is a research analyst for the Pet Food and Pet Care Market at Euromonitor International, where she focuses on emerging trends and forecasts in the industry. For more information on Euromonitor's reports, go to www.petfoodindustry.com and click the Euromonitor icon.

Global petfood sales				
	2005 US\$ bil	2005 vs. 2004 %	2010 US\$ bil	2010 vs. 2005 %
Dog food total	\$25.90	7.3%	\$29.92	15.5%
Premium dog food	8.91	8.8	10.84	21.6
Mid-priced dog food	9.2	6.2	10.08	9.8
Economy dog food	3.8	7.4	4.21	10.5
Dog treats and mixers	3.99	6.7	4.78	19.8
Cat food total	\$16.20	6.9%	\$18.10	11.9%
Premium cat food	6.69	8.6	7.91	18.2
Mid-priced cat food	6.55	6.1	7.09	8.3
Economy cat food	2.31	4.2	2.34	1.5
Cat treats and mixers	0.63	8.6	0.76	20.1
Dog and cat food total	\$42.10	7.1%	\$48.02	14.1%

Table 1. Worldwide dog and cat food sales (US\$ billion) in 2005 and forecasted sales in 2010. The greatest growth has been, and will continue to be, in the premium and treats segments. Copyright and database rights Euromonitor 2006.

The biggest and best ideas are the product of collaborative thinking.

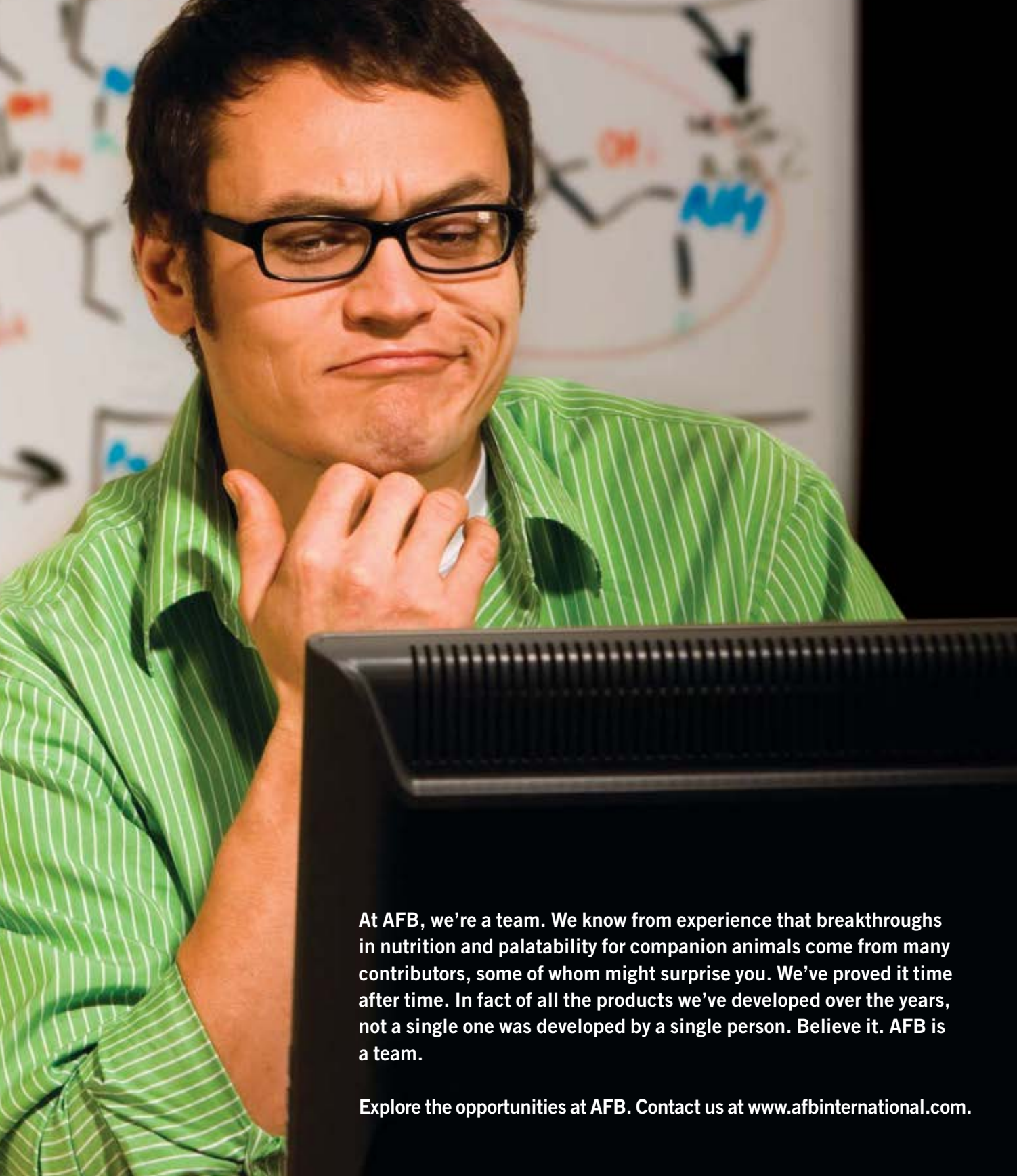


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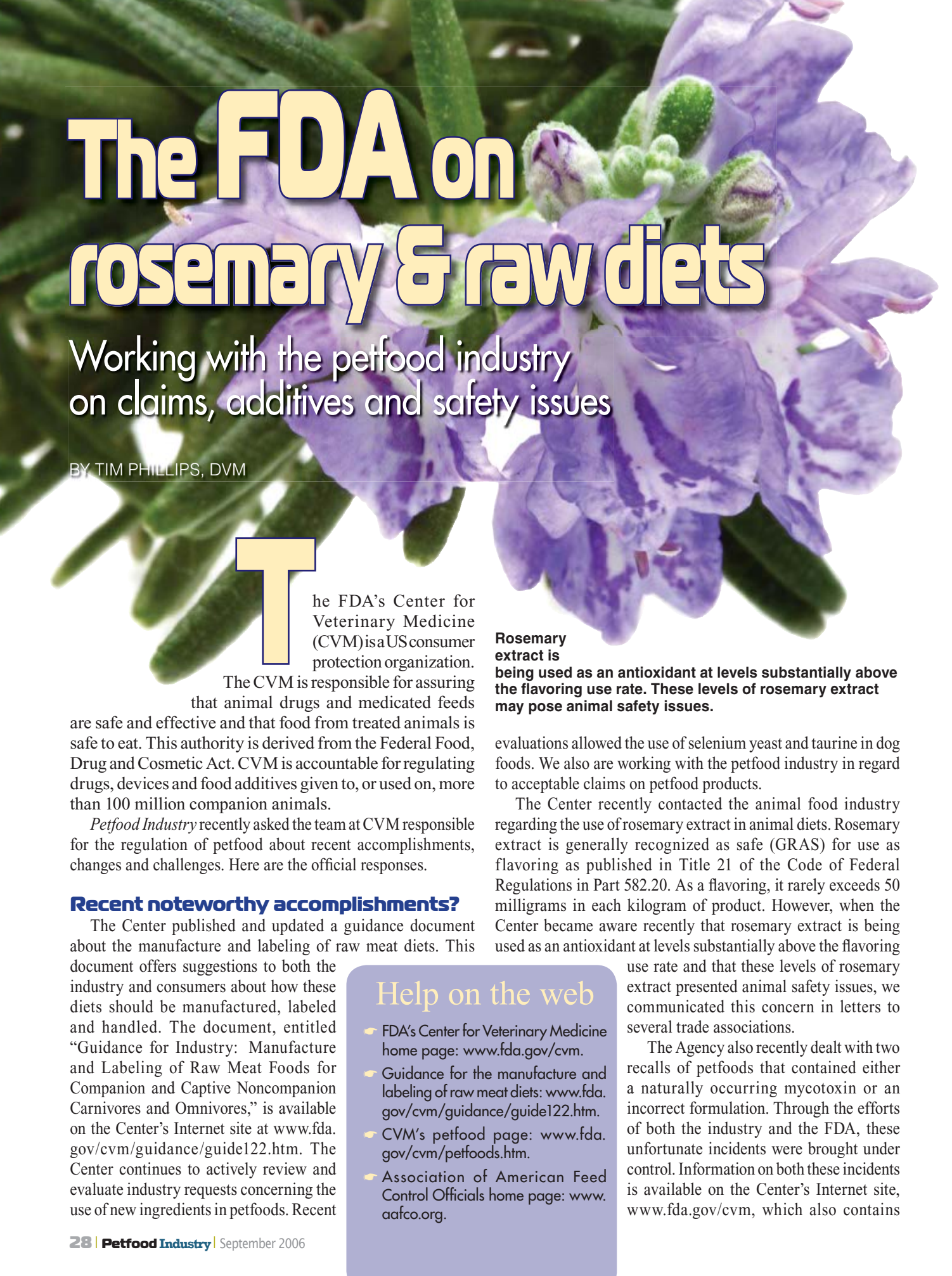


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A Passion For Pets™





The FDA on rosemary & raw diets

Working with the petfood industry
on claims, additives and safety issues

BY TIM PHILLIPS, DVM

T

he FDA's Center for Veterinary Medicine (CVM) is a US consumer protection organization.

The CVM is responsible for assuring that animal drugs and medicated feeds are safe and effective and that food from treated animals is safe to eat. This authority is derived from the Federal Food, Drug and Cosmetic Act. CVM is accountable for regulating drugs, devices and food additives given to, or used on, more than 100 million companion animals.

Petfood Industry recently asked the team at CVM responsible for the regulation of petfood about recent accomplishments, changes and challenges. Here are the official responses.

Recent noteworthy accomplishments?

The Center published and updated a guidance document about the manufacture and labeling of raw meat diets. This document offers suggestions to both the industry and consumers about how these diets should be manufactured, labeled and handled. The document, entitled "Guidance for Industry: Manufacture and Labeling of Raw Meat Foods for Companion and Captive Noncompanion Carnivores and Omnivores," is available on the Center's Internet site at www.fda.gov/cvm/guidance/guide122.htm. The Center continues to actively review and evaluate industry requests concerning the use of new ingredients in petfoods. Recent

Rosemary extract is

being used as an antioxidant at levels substantially above the flavoring use rate. These levels of rosemary extract may pose animal safety issues.

evaluations allowed the use of selenium yeast and taurine in dog foods. We also are working with the petfood industry in regard to acceptable claims on petfood products.

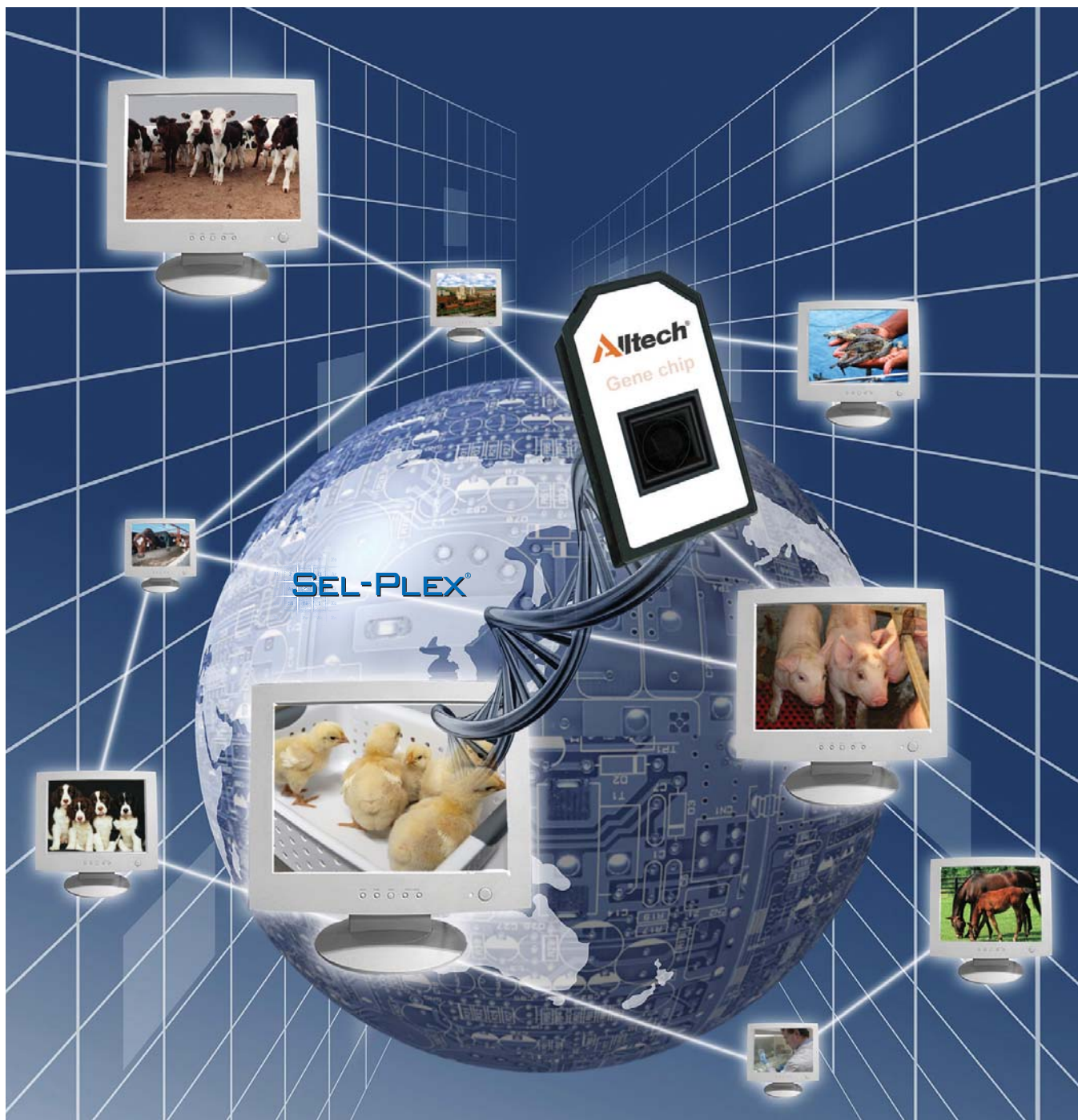
The Center recently contacted the animal food industry regarding the use of rosemary extract in animal diets. Rosemary extract is generally recognized as safe (GRAS) for use as flavoring as published in Title 21 of the Code of Federal Regulations in Part 582.20. As a flavoring, it rarely exceeds 50 milligrams in each kilogram of product. However, when the Center became aware recently that rosemary extract is being used as an antioxidant at levels substantially above the flavoring

use rate and that these levels of rosemary extract presented animal safety issues, we communicated this concern in letters to several trade associations.

The Agency also recently dealt with two recalls of petfoods that contained either a naturally occurring mycotoxin or an incorrect formulation. Through the efforts of both the industry and the FDA, these unfortunate incidents were brought under control. Information on both these incidents is available on the Center's Internet site, www.fda.gov/cvm, which also contains

Help on the web

- FDA's Center for Veterinary Medicine home page: www.fda.gov/cvm.
- Guidance for the manufacture and labeling of raw meat diets: www.fda.gov/cvm/guidance/guide122.htm.
- CVM's petfood page: www.fda.gov/cvm/petfoods.htm.
- Association of American Feed Control Officials home page: www.aafco.org.



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- 12 Antioxidant function trials
- 35 Performance trials
- 55 Meat, milk and egg quality trials
- 29 Efficacy/Stability trials
- 15 Bioavailability trials



articles and information that may be of interest to both the industry and consumers. The address for CVM's petfood page is www.fda.gov/cvm/petfoods.htm.

Most difficult challenges?

Identifying the means to enforce the Federal Food, Drug and Cosmetic Act and the Public Health Service Act for the protection of animal and human safety is a constant challenge for CVM. The Center is also responsible for ensuring that inappropriate or misleading claims on petfood products are either prevented or removed from labeling. We have seen claims on petfoods for healthy blood pressure and cholesterol even though these are not typical problems in pets as they are for humans. Likewise, the evaluation of novel ingredients also poses challenges as the industry moves beyond the simple provision of nutrients.

How has your agency changed?

As the profile of the petfood industry has changed, the Center has responded by devoting more resources to petfood issues. For example, the Division of Animal Feeds in the Center has two

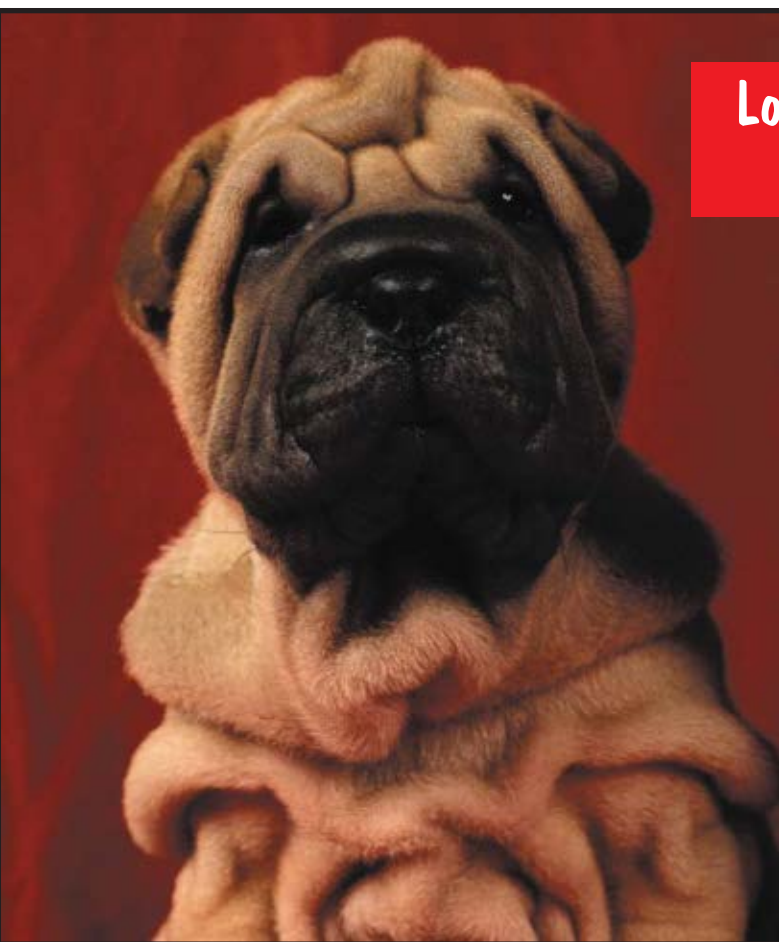
“The evaluation of novel ingredients also poses challenges as the industry moves beyond the simple provision of nutrients.”

establishment of definitions to describe new feed ingredients. Each year AAFCO publishes its Official Publication, which includes a model feed bill for states to adopt in regulating feed products and a list of accepted feed ingredients. Most states have adopted all or part of the model feed bill and allow feed ingredients listed in the publication to be used in their respective territories.

staff members who deal with petfood issues on a daily basis. However, the number and complexity of the issues that the Center must address for petfood products have also increased, and the Center has responded by using additional resources as deemed necessary.

AAFCO's role?

The Association of American Feed Control Officials (AAFCO) is composed of state, federal and international regulatory officials responsible for the enforcement of state laws regulating the safe production and labeling of animal feed, including petfood. FDA and AAFCO work together in the area of feed regulation, particularly in the



Looking for a new wrinkle in your product line?

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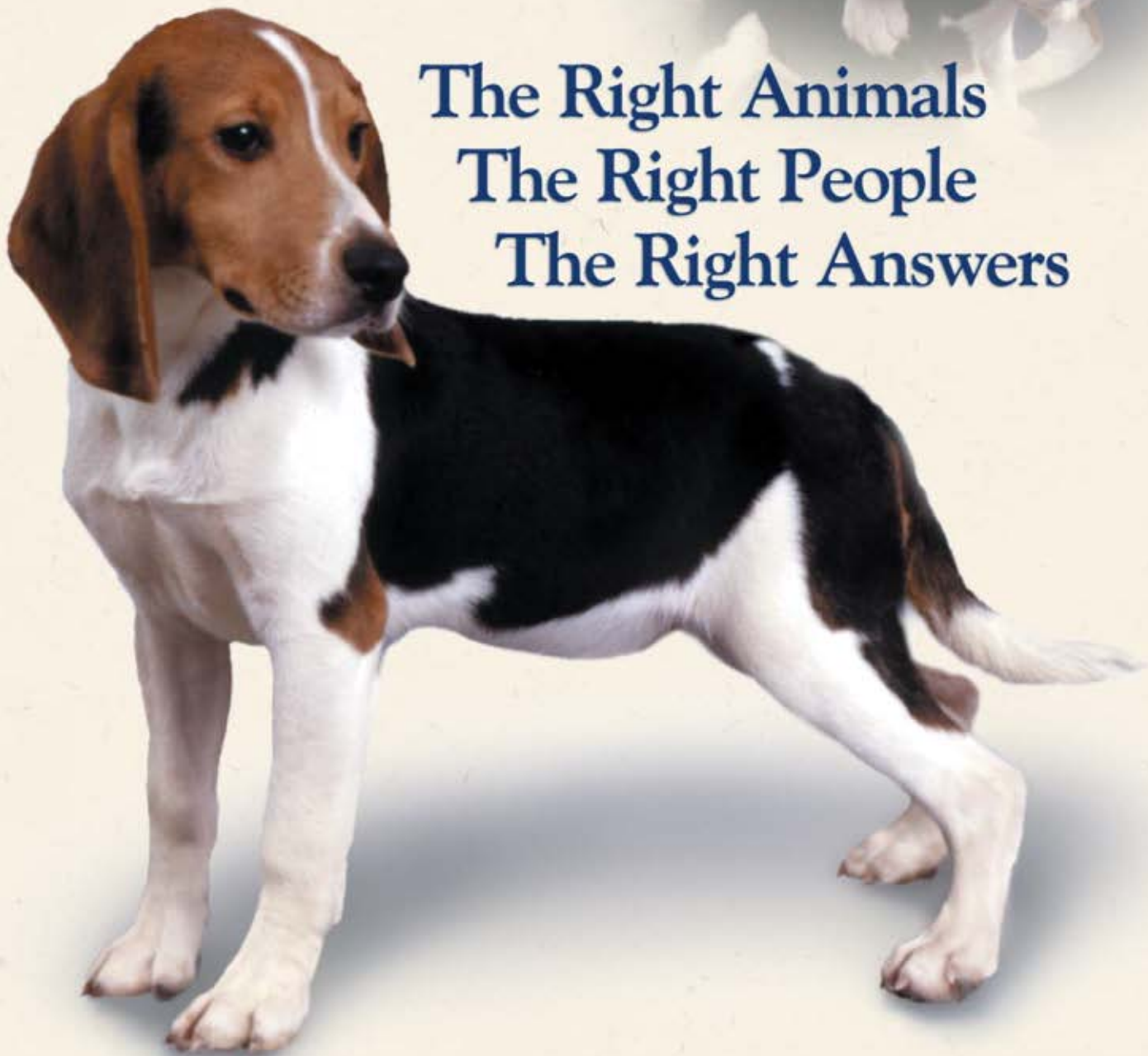
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Global Pet Expo highlights

Bringing petfood companies and retailers together

Although I haven't mentioned it through this venue before, many readers are aware that the American Pet Products Manufacturers Association (APPMA) has recently retained me as its pet nutrition consultant. One of my duties in that role is to attend the Global Pet Expo, an annual event put on in conjunction with the Pet Industry Distributors Association (PIDA).

I had attended the Expo for the first time a few years ago, so what I saw at this year's event at the San Diego Convention Center (San Diego, California, USA) didn't come as too much of a shock. Still, I admit at times the sheer scale of the show was overwhelming for me.

Exhibits, exhibits, exhibits

I may not be the worldliest person, but the Global Pet Expo is not like any other convention I've ever attended. Most meetings I go to, whether industry, government or veterinary-focused, are either educational or business in nature—i.e., most of your time is spent sitting in a conference room listening to people speak. Admittedly, many of these meetings do have exhibit booths to visit when you're not in a seminar or session. Some may have only a few exhibits, others up to a hundred and, on rare occasion, maybe even 200 booths. In any event, the exhibits are never the primary purpose for the meeting itself.

At the Global Pet Expo, the exhibit hall IS the raison-d'être for the meeting. There are a few seminars over the three days, and

A highlight of the Expo is the New Products Showcase.

— David Dzanis



maybe a committee meeting or other event, but there's no mistaking that the people are there to visit the exhibits. Those who do attend are not disappointed in that regard. This year there were more than 700 exhibiting companies.

Some of these companies' exhibits occupied space equivalent to 100 "booths" each, so the net result was that, from one end of the hall, I could not clearly discern the other end. Just walking up and down all the aisles (without stopping to talk) took me several hours. I wish I had been wearing a pedometer! In any event, it's clear to see why you need three days just to get through it all.

A highlight of the Expo, and separate from the booths themselves, is the New Products Showcase. Attendees view the displays and vote for their favorites in various categories (e.g., dog, cat, bird, aquarium, pond). Some of the top winners this year included a "3-in-1" pet stroller and a bow-front cage for large birds. Beyond the potential notoriety of winning an award, a display in the Showcase has the side benefit of sparking interest by

buyers who otherwise might not be inclined to stop by your booth.

Who's at the Expo?

At the industry meetings I typically attend, the exhibitors are primarily suppliers to the industry, such as manufacturers of ingredients and equipment and various other service providers. In this case, it is the final consumer product manufacturer who is exhibiting to buyers for distributors and retailers. Although exhibitors represent all aspects of the pet product industry (from aquariums to dog leashes to cat laser toys to reptile supplies), there was a decent showing of pet and specialty petfood, treat and supplement companies. In fact, I was able to meet a number of my clients during the show, in some cases for the first time in person.

The exhibits at the Expo are not unlike many of those at veterinary meetings, in that their purpose is to entice visitors to purchase products with the intent for the products to be subsequently sold to the pet-owning consumer. The Expo exhibits do

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the same thing with retailers, but at a potentially much larger scale. While veterinarians may buy products for sale to maybe a few hundred or so clients, in the case of the Expo, buyers from some of the largest retailers and distributors in the USA and the world are in attendance. Thus, closing just one deal over the three days of the meeting could make the whole trip more than worth it.

There was a decent showing of pet and specialty petfood, treat and supplement companies.

When's the next Expo?

The next Global Pet Expo will be February 22-24, 2007, in the Orange County Convention Center in Orlando, Florida, USA. If nothing else, it's a great place to escape from the frigid north at that time of year. More information on the Expo itself can be found at www.globalpetexpo.org.

One caveat to displaying at this event is that you must be an APPMA member. More information on becoming a member can be found at www.appma.org. The website also explains the many other benefits of membership, such as access to market research information, import/export assistance, public relations and regulatory guidance and other business building tools. As I understand it, there is a sliding scale for membership fees so any size company can be accommodated. ➔

Dr. Dzanis is a writer and independent consultant for the petfood and animal feed industries on matters related to veterinary nutrition, labeling and regulation. He can be reached at Tel: +1.661.251.3543, Fax: +1.661.251.3203, E-mail: dzanis@aol.com.



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Chondroitin in petfood

How is this ingredient most effectively managed in the diet?

An increasing number of petfoods and pet supplements are targeted at joint stiffness or lameness in the aged dog and cat, or at those dogs engaged in highly strenuous activity. Most of these products contain chondroprotective agents such as chondroitin sulfate and/or glucosamine hydrochloride. While these compounds are currently undefined ingredients according to AAFCO, they appear to be of low regulatory priority and their status remains tenuous (see Dzanis, *Petfood Industry*, January 2006). This article will focus on chondroitin sulfate, while next month's article will concentrate on glucosamine hydrochloride.

Oral chondroitin sulfate is biologically available (Adebowale, *et al.*, 2002) and can be found in significant concentrations in the synovial fluid and cartilage, along with other tissues, within a day after administration (Conte, *et al.*, 1995). Supplementation benefits joint health and lameness in dogs (Canapp, *et al.*, 1999; Dobenecker, *et al.*, 2002; McCarthy, *et al.*, 2006) without negative effects (McNamara, *et al.*, 1996). Thus, it appears to be—at least on a preliminary basis—safe and effective. However, from an ingredient perspective, only limited information is available about the origins of chondroitin sulfate; how it is measured; whether it is affected by processing; and how it might impact the acceptability and/or utilization of a petfood.

So ... what is chondroitin sulfate?

In its simplest incarnation, chondroitin sulfate is a specialized sugar comprised of repeating disaccharides that carry a sulfate and an amino group. The two monomer building blocks are beta-glucuronic acid

There are no reports on how processing might affect the bioavailability of chondroitin sulfate.

— Greg Aldrich



and N-acetylgalactosamine sulfate. Like other glycosaminoglycans, it possesses numerous hydroxyl groups, which give it a large water-holding capability. Further, it carries a negative charge, which provides molecular repulsion and allows it to take up a great deal of space. Thus, it can provide a flexible structure with both cushioning and lubrication capabilities—sort of like a wet sponge.

Chondroitin sulfate is the most abundant mucopolysaccharide in the body and a big part of the extracellular matrix. It is found in cartilage, bone, the cornea and the inner layer of the arterial wall. It is located at sites of calcification in endochondral bone and cartilage. It is also found inside certain neurons and may provide an endoskeletal structure that helps maintain their shape. As part of proteoglycans it acts as the flexible connecting matrix between the tough protein (collagen) filaments in cartilage. Chondroitin sulfate is a major constituent of articular cartilage, providing structure, water-holding capacity and porosity, which allows nutrients to move through the cartilage. Since cartilage is not vascularized, this free-flow of synovial fluid full of nutrients is vital to the joint.

Used as an ingredient

In animals and humans, chondroitin sulfate is produced naturally by the body

as a building block for healthy cartilage and joints. However, the amount of chondroitin sulfate in cartilage diminishes with age. Thus, the idea of supplementation is grounded on the notion of providing support as a low-level “ready reserve” should intrinsic reservoirs become exhausted, or should demand outstrip synthesis.

Since cartilage is enriched with chondroitin sulfate, it stands to reason that commercially most of the ingredient is derived from cartilage-containing tissues: most prominently bovine (cattle), porcine (pig) and avian (chicken) sources. Three different forms and/or purities are available.

The first is to simply account for the naturally occurring chondroitin sulfate in the cartilage-containing ingredients already added to the diet—e.g., meat and bone meal or poultry by-product meal.

A second “non-extracted” form is derived from disintegrating and thermally processing raw connective tissue (skin, ears, trachea, tendons, etc.) to yield a viable source of glycosaminoglycans, inclusive of physiologically relevant doses of chondroitin sulfate (Marino, 1999).

The third, and most common form, is an extract that uses bovine trachea as the predominant starting material. In this process, chondroitin sulfate is extracted

by sodium hydroxide, sodium chloride and water, and then hydrolyzed with an acidified pancreatin enzyme preparation. The resulting hydrolysate is filtered and precipitated with alcohol. The process is repeated until the target purity is achieved. This form of chondroitin sulfate is sold as an off-white powder of 95% purity or better and is known to be very hygroscopic. Whether there is an advantage to any particular form or process is not obvious from published literature; however, this may be irrelevant as consumer perception about the source may be the driver behind the purchasing decision (e.g., a label bearing a name like chicken cartilage versus chondroitin sulfate).

To that end, there are still questions regarding how chondroitin sulfate is most effectively managed in the diet. Specifically, there are no reports on how petfood processing might affect the bioavailability of chondroitin sulfate. While it stands to reason that since it has undergone intensive processing already, this shouldn't be an issue, the lack of data doesn't necessarily prove the theory. Further, there are wide variations in the methods used to determine the concentration of chondroitin sulfate in a finished petfood.

For starters, there is some concern about whether it is more appropriate to measure the total polymer content or to separate it into the monomer sugars for quantification. Secondly, most labs (commercial and petfood companies) have developed their own proprietary methods for analysis relative to a "standard," whereas the "official" United States Pharmacopeia method describes an electrophoretic procedure.

What method, if any, the various state feed control officials use or recognize is not known. Some states simply require documentation that one has an identified method. Thus, it is likely that concentrations in petfoods vary widely since they are method and laboratory dependent. Some form of collaborative check-sample program is needed.

Bottom line

Chondroitin sulfate seems to be biologically available to the dog and to provide some benefit to joint health; however, no evidence is available supporting its use in

cats. There is scant information regarding the differences between available ingredients, the methodologies for their quantification and the impact that food processing might have on the expected animal response. Suppliers might do well to support their case by making more information available in the public domain. ➔

Dr. Greg Aldrich is president of Pet Food & Ingredient Technology, Inc., which facilitates innovations in foods and ingredients for companion animals. Tel: +1.785.271.0238, E-mail: aldrich4@cox.net.

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Research Notes

The evolutionary basis for the feeding behavior of domestic dogs and cats

The definition, sense of taste and meal patterning of domestic dogs and cats can be interpreted in terms of their descent from

Key Concepts

► The evolutionary basis for the feeding behavior of domestic dogs and cats

(*J Nutr* 136:1927S-1931S): Dogs' history of domestication has resulted in diversity of conformation and behavior, including feeding. Cats' preference for several small meals reflects their ancestor's daily pattern of multiple small prey kills.

► Skeletal muscle gene expression and age

(ADSA ASAS Joint Annual Meeting): Aging increased expression of stress response genes and decreased those associated with energy metabolism.

► Responses to diets with alternative carbohydrates

(ADSA ASAS Joint Annual Meeting): Fiber blends containing FOS and/or MOS modulate intestinal microbial populations but do not appear to affect dogs' immunological status.

members of the order *Carnivora*. The dog is typical of its genus—*Canis*—in its relatively unspecialized dentition, and a taste system that is rather insensitive to salt. The preference of many dogs for large infrequent meals reflects the competitive feeding behavior of its pack-hunting ancestor, the wolf *Canis lupus*. However, its long history of domestication, possibly 100,000 years, has resulted in great intraspecific diversity of conformation and behavior, including feeding.

Morphologically and physiologically, domestic cats are highly specialized carnivores, as indicated by their dentition, nutritional requirements and sense of taste—which is insensitive to both salt and sugars. Their preference for several small meals each day reflects a daily pattern of multiple kills of small prey items in their ancestor, the solitary territorial predator *Felis silvestris*.

Source: Bradshaw, J.W.S., 2006. The evolutionary basis for the feeding behavior of domestic dogs (*Canis familiaris*) and cats (*Felis catus*). *J Nutr* 136:1927S-1931S.

Skeletal muscle gene expression and age

Aging is associated with loss of muscle mass and increased oxidative damage. The objective of this study was to measure

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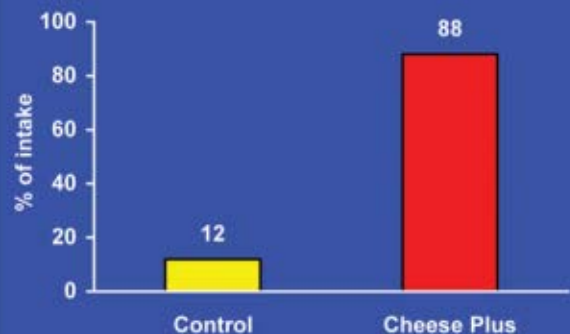


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gene expression differences in skeletal muscle of young adult and geriatric dogs. Six geriatric (11-year-old at baseline) and six weanling (8-week-old at baseline) female beagles were randomly assigned to one of two diets: animal protein-based (APB; 28% protein, 23% fat and 5% fiber) or plant protein-based (PPB; 26% protein, 11% fat and 15% fiber) for 12 months. RNA, isolated from skeletal muscle samples using Trizol, was hybridized to Affymetrix GeneChip Canine Genome Arrays.

Following microarray normalization, data were analyzed using the mixed models procedure of SAS. Transcripts having a $P < 0.05$ (following a false discovery rate adjustment) and > 1.5 -fold change were considered different among groups.

Gene expression changes were noted in old dogs fed either APB (205 transcripts, corresponding to 115 identified genes) or PPB (415 transcripts; 216 identified genes). Regardless of diet, old dogs had decreased expression of genes associated with carbohydrate metabolism compared

with young dogs. Old vs. young dogs fed APB had increased expression of genes associated with immunity and stress response and decreased expression of genes associated with energy and lipid metabolism and muscle contraction.

Overall, aging increased expression of stress response genes and decreased those associated with energy metabolism, many of which were most prominent in dogs fed APB.

Source: Karr-Lilienthal, L., Apanavicius, C., Vester, B. and Swanson, K., 2006. Age impacts skeletal muscle gene expression profiles of young adult and geriatric dogs fed either an animal- or plant protein-based diet. Proceedings of the 2006 ADSA ASAS Joint Annual Meeting, Minneapolis, Minnesota, USA.

Responses to diets with alternative carbohydrates

Several blends of carbohydrates containing fructooligosaccharides (FOS) and/or mannanoligosaccharides (MOS) from yeast cell wall were evaluated as proxies for traditional dietary fibers in animal protein-based diets fed to dogs. Six mixed-breed dogs with hound bloodlines were fitted with ileal "T"-type cannulas. In a 6 x 6 Latin square design with 14-day periods, six diets with different carbohydrate sources were tested. Dogs were offered 175 g twice daily of a brewer's rice and poultry by-product meal-based diet supplemented with no additional fiber (CO); 2.5% cellulose (CL); 2.5% beet pulp (BP); 1.0% cellulose + 1.5% FOS (CF); 1.0% cellulose + 1.2% FOS + 0.3% MOS (CFM1); or 1.0% cellulose + 0.9% FOS + 0.6% MOS (CFM2).



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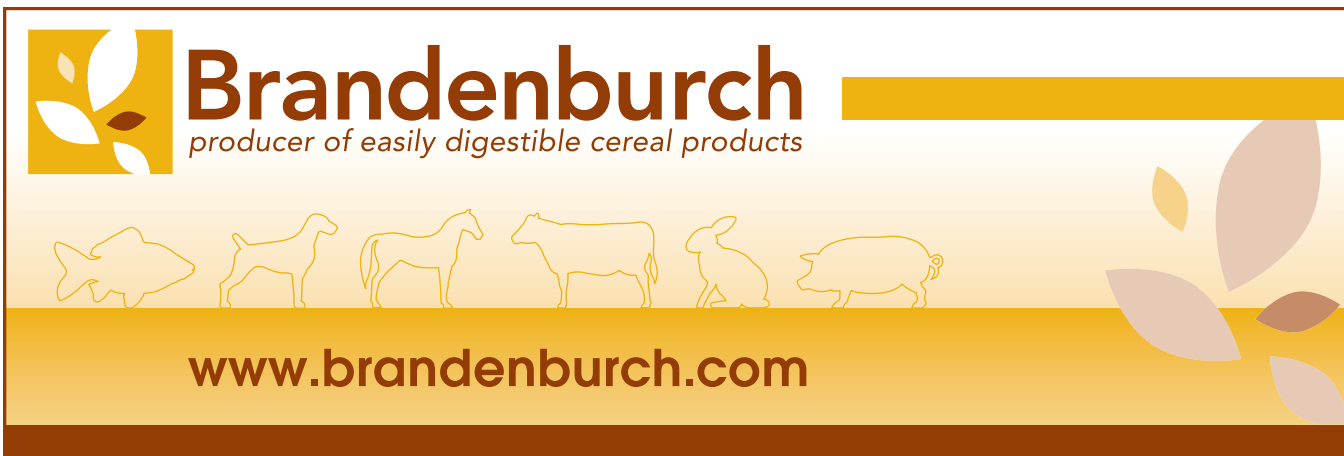
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Chronic oxide was provided in gelatin capsules as a digestion marker at each feeding. On day 11 through 14 of each period, ileal samples and total feces excreted were collected. On day 14, a blood sample was collected for bacterial enumeration by serial dilution and plating on selective agars. Treatment least squares means were compared using a Tukey adjustment. Feed intake, fecal score and fecal pH were similar among treatments, but wet fecal output tended ($P = 0.09$) to be higher for dogs

fed BP compared with CFM1. Fecal *Bifidobacterium* concentrations were higher for CF ($P = 0.02$) and CFM2 ($P = 0.09$) than for CL, and tended to be higher ($P = 0.06$) for CF than for CO.

Lactobacillus concentrations tended to be increased ($P = 0.07$) for CF compared to CL and CO. Total anaerobic microbe concentrations were increased for CF ($P = 0.04$) and CFM2 ($P = 0.05$) compared to CL, while total aerobe microbe concentrations were increased for CF compared to CL ($P = 0.05$) and CO ($P =$

0.06). White blood cell counts and serum immunoglobulin concentrations were not affected by treatment. These data suggest that fiber blends containing FOS and/or MOS modulate intestinal microbial populations but do not appear to affect immunological status of the dog.

Source: Middelbos, I.S., *et al.*, 2006. Gut microbial and immunological responses of dogs to diets containing alternative carbohydrates with properties similar to those of dietary fibers. Proceedings of the 2006 ADSA ASAS Joint Annual Meeting, Minneapolis, Minnesota, USA. ➔

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▶ **SuperZoo**, September 20-22, 2006, Mandalay Bay Convention Center, Las Vegas, Nevada USA. Contact: World Wide Pet Industry Association (WWPIA), Tel: +1.800.999.7295, Website: www.wwpia.org.

▶ **Pet South America International Trade Show**, September 20-22, 2006, Sao Paulo, Brazil. Contact: VNU Business Media do Brasil, Tel: +55.11.3873.0081, ext. 110, Fax: +55.11.3873.1912, E-mail: pet@vnu.com.br, Website: www.petsa.com.br.

▶ **Pet Fair Asia Professional 2006**, September 21-22, 2006, Shanghai, China. Contact: VNU Exhibitions Asia, 3/F - Business Mansion, Shanghai Exhibition Center, No. 1333 Nanjing Road (W), Shanghai 200040, China, Tel: +86.21.6247.7668, Fax: +86.21.6247.9818, E-mail: vnu@vnuexhibitions.com.cn, Website: www.vnuexhibitions.com.

▶ **Practical Short Course on Aquaculture Feed Extrusion, Nutrition & Feed Management**, September 24-29, 2006, Texas A&M University, College Station, Texas USA. Contact: Dr. Mian N. Riaz, 2476 TAMU - Food Protein R&D Center, Texas A&M University, College Station, Texas 77843-2476 USA, Tel: +1.979.845.2774, Fax: +1.979.458.0019, E-mail: mriaz@tamu.edu, Website: www.tamu.edu/extrusion/scaqua.htm.

▶ **VIV China**, September 27-29, 2006, Beijing, China. Contact: Richard de Boer, VNU Exhibitions Europe, PO Box 8800, 3503 RV Utrecht, Netherlands, Tel: +31.30.295.2714, Fax: +31.30.295.2809, E-mail: richard.de.boer@vnuexhibitions.com, Website: www.viv.net.

▶ **Pet Industry Christmas Trade Show**, October 6-8, 2006, Donald E. Stephens Convention Center, Rosemont (Chicago), Illinois USA. Contact: HH Backer Associates, Inc., 200 S. Michigan Avenue, Suite 840, Chicago, Illinois 60604 USA, Tel: +1.312.663.4040, Fax: +1.312.663.5676, E-mail: hhbacker@hhbacker.com, Website: www.hhbacker.com.

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▶ **Petfood Forum**, April 16-18, 2007, Hyatt Regency O'Hare, Chicago, Illinois USA. Contact: Marcia Riddle, Watt Publishing Co., 122 S. Wesley Ave., Mt. Morris, Illinois 61054 USA, Fax: +1.815.734.5631, E-mail: riddle@wattmm.com, Website: www.petfoodindustry.com.

▶ **Petfood Industry Focus on Treats**, April 18-19, 2007, Hyatt Regency O'Hare, Chicago, Illinois USA. Contact: Marcia Riddle, Watt Publishing Co., 122 S. Wesley Ave., Mt. Morris, Illinois 61054 USA, Fax: +1.815.734.5631, E-mail: riddle@wattmm.com, Website: www.petfoodindustry.com.

▶ **Petfood Forum Europe**, May 8, 2007, Jaarbeurs Halls, Utrecht, Netherlands. Contact: Marcia Riddle, Watt Publishing Co., 122 S. Wesley Ave., Mt. Morris, Illinois 61054 USA, Fax: +1.815.734.5631, E-mail: riddle@wattmm.com, Website: www.petfoodindustry.com.

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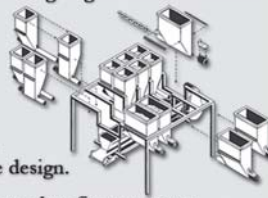
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Second time around

Petco purchased and taken private (again)

Leonard Green & Partners (LG&P) is at it again. Petco Animal Supplies, Inc., the United States' No. 2 pet supply specialty retailer, was recently purchased by Leonard Green & Partners and the Texas Pacific Group (TPG) for approximately US\$1.8 billion, or US\$29 a share this summer—with the final closing to be completed in the fourth quarter of 2006.

The buyout

The financially motivated transaction could not have come at a better time. With Petco's net sales in fiscal 2005 at US\$2 billion (an increase of 10.2% from fiscal 2004) and overall net earnings of US\$75.2 million in 2005, it's no wonder the summer buyout was an attractive proposition. Particularly at a time when the market continues to move to the upside, driven partly by the premium segment—which accounts for approximately 38% of petfood sales. Petco being a major player in the segment was undoubtedly a significant reason for the acquisition and further diversification of the LG&P portfolio.

Petco, headquartered in San Diego, California, USA, operates more than 817 stores in 49 states and the District of Columbia. The company offers more than 10,000 pet-related products, including premium cat and dog foods (i.e., Nutro, Hill's Pet Nutrition), collars, leashes, grooming products, toys and animal habitats and services.

This is not the first time LG&P has purchased Petco. LG&P is a

**This is not the first time
LG&P has purchased
Petco.**

— Huntley Manhertz, Jr.



Los Angeles, California, USA-based private equity firm specializing in structuring and sponsoring management buyouts, going-private transactions and recapitalizations of established public and private companies. It purchased Petco for US\$600 million, or US\$22 a share, in 2000; it then took the company public 24 months later.

Will LG&P and TPG repeat their previous strategy? While there is speculation that the group may take Petco public in a few years (as the firm has intimate knowledge of Petco's operations from their previous ownership), an even less probable but possible scenario is a PetSmart acquisition.

According to Mintel reports, Petco and PetSmart increased their combined market share from 19% to 23% between 1998 and 2003. Mass merchandisers like Wal-Mart have been successful in attracting pet owners with a rapidly rising number of stores, as well as low-priced food and supplies.

Earnings pressures

Petco has announced an expansion strategy in which 30 new stores are projected to be built in the third quarter of fiscal 2006. To date, 40 new stores

have opened, and the program calls for approximately 90 new stores by year's end. In the midst of high fuel prices, one has to wonder if this aggressive strategy is appropriate at this time, given the inverse relationship between gas prices and earnings among retailers in this sector. Petco and PetSmart experienced lower earnings in 2005, which was driven by reduced levels of disposable income among consumers, influencing their purchasing behaviors.

Petco also recently announced it's improving customer service and initiating more effective market communication campaigns, costs that continue to be significant; thus a positive ROI would probably not be realized in the immediate short term. In the long run, the biggest threat may not be from the cost of gas or consumer buying behavior due to economic pressures, but from the competition—i.e., Wal-Mart leveraging its private label brands and everyday low pricing strategy. ➔

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