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Terry Block of Nestlé Purina, p. 22



What pet owners really think about sustainability

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Petro o Industry Volume 53 · Number 4

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On the cover: Terry Block, president of Nestlé Purina PetCare North America, with Bosco.

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Read more about how Nestlé Purina earned this award at www.petfoodindustry.com/NestleBaldrige.aspx.

Research: Plasma and petfood

Learn from Dr. Javier Polo's summary of his spray-dried plasma and wet petfood research at www.petfoodindustry.com/SDP.aspx.

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Something to Chew On

Debbie Phillips-Donaldson

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See the proposed
AAFCO amendment at
www.petfoodindustry.com/
AAFCOcalorielabel.aspx.

Fighting pet obesity



Information such as calorie contents and feeding directions using common measurements could be an important weapon.

THE FOURTH ANNUAL National Pet Obesity Awareness Day Study from the Association for Pet Obesity Prevention shows more than 50% of US dogs and cats are now overweight or obese (www.petobesityprevention. com). Specifically, the survey highlights these preliminary data:

- 55.6% of US dogs—43 million—are overweight or obese;
- 20% of US dogs—16 million—fall into the obese category;
- 54% of US cats—50 million—are overweight or obese; and
- 22% of US cats—20 million—are obese.

The study, conducted in late 2010 and released in February of this year, was done in partnership with Banfield, the line of pet hospitals owned by Mars. According to APOP, this partnership is proof that obesity is an important topic among veterinarians.

"As a surgeon, many of the joint problems I treat are related to excess weight," Steven Budsberg, DVM, director of clinical research at the University of Georgia College of Veterinary Medicine and past-president of the American College of Veterinary Surgeons, is quoted saying on APOP's website. "If pet owners could keep their pets at a normal weight, many of these surgeries could be avoided."

AN ARTICLE BY Gwendolyn Bounds in the *Wall Street Journal* carries the pet owner angle further, saying the survey indicates owners deserve the main share of blame because they regularly overfeed their pets, don't give them enough exercise and are not educated about the serious health consequences of pet obesity.

The article goes on to highlight products

designed to help combat the problem, including, of course, petfoods formulated to help reduce weight. But the focus is on owner awareness and education. As Bounds quotes Dr. Budsberg in the article: "I never met a German Shepherd who could open the refrigerator or food bag and pour himself another bowl."

WHICH MAKES IT all the more essential, I believe, for petfood packaging and labels to include calorie content information and—perhaps even more importantly—feeding guidelines that are clear and easy for the average pet owner to understand and follow. That means directions in terms of common measurements such as cups or portions of cans. Let's face it, most people can't interpret and apply things like kilocalories per grams.

In January, the Association of American Feed Control Officials moved one step closer to mandating that such information be included on all dog and cat food and treat labels, via an amendment to the AAFCO Model Regulations. (See www.petfoodindustry-digital.com/petfoodindustry/201103#pg68.) I understand some people and companies in the industry believe there are very valid reasons to not support this amendment. But can you really argue against those numbers from the APOP study?

Granted, Providing the information is no guarantee that pet owners will follow it. You could argue that human food labels have been required to include information on calories, fat and other substances for a while now, and the overweight/obesity rate in humans (at least in the US) keeps climbing, too.

But unless and until such data is available for petfoods, veterinarians, other experts and conscientious pet parents trying to combat pet obesity are fighting without what could prove to be the most valuable weapon of all: information.

Debbie Phillips-Donaldson is editor-in-chief of Petfood Industry magazine. Email her at dphillips@wattnet.net.



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Industry News

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The latest news and updates are always on www.PetfoodIndustry.com.

Quick-Hits

- Amlan International held its three-day distributor technical conference in Guadalajara, Mexico, in February 2011.
- Coating Excellence International received the 2011 Institute of Packaging Professionals Ameristar Award for its pinchbottom, poly-woven bags.
- Hamlet Protein A/S appointed Katrine Hvid Ellegard as head of research and development.
- Amlan International welcomed Ashraf Elsisi to its international sales team and Dr. LeAnn Johnston to its international technical team.
- Novus International's renovated 1920s-era caretaker's house at its Green Acres Research Farm in Montgomery City, Missouri, USA, has received the Leadership in Energy and Environmental Design for Homes platinum certification from the US Green Building Council.
- Food canner
 Heristo has partnered with Crown
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APPA releases 2010 Pet Industry Spending Figures, 2011 Pet Owners Survey

The American Pet Products Association released its 2010 Pet Industry Spending Figures, which showed growth of 6.2% from 2009 to US\$48.35 billion in 2010.

Petfood spending increased 6.8% to US\$18.76 billion in 2010 while pet supplies and over-the-counter medications grew by 5.1% to US\$10.94 billion in 2010, APPA found. Health care-related pet spending showed the greatest growth within the pet industry, according to APPA figures, with a spending increase of 8.1% to \$13.01 billion in 2010.

APPA forecast growth of 5.1% through 2011, with spending expected to exceed US\$50 billion. The overall spending data includes petfood, supplies, veterinary care, live animal purchases and services such as grooming, boarding and pet-sitting.

APPA also released the 2011-2012 National Pet Owners Survey, examining the demographics, buying habits and other traits of US owners of dogs, cats, fish, birds, horses,

reptiles and other small animals. The survey found the number of US households that own a pet increased by 2.1% to an all-time high of 72.9 million. About four out of 10 pet-owning households are multiple pet owners.

APPA's pet owner survey found the following breakdown of pets owned in the US: 78 million dogs, 86.4 million cats, 151.1 million freshwater fish, 8.61 million saltwater fish, 16.2 million birds, 16 million small animals, 13 million reptiles and 7.9 million horses. For the first time, the survey asked respondents if the economy influenced their pet ownership. The majority of pet owners reported that the economy had not affected their decision to own a pet, but 18% of non-pet owners said their decision not to purchase a pet was because of the economy.

The 2010 Pet Industry Spending Figures and 2011-2012 National Pet Owners Survey were released at Global Pet Expo in Orlando, Florida, USA, on March 17.

World Small Animal Veterinary Association develops global nutrition guidelines

The World Small Animal Veterinary Association developed global nutrition guidelines to raise awareness of nutrition as the fifth vital assessment (5VA) in a standard physical exam for pets.

If published, 5VA would require a nutritional assessment and specific dietary recommendation be made for every patient on all visits. The other four vitals required to be assessed at each visit are temperature, pulse, respiration and pain.

To reach the goal of worldwide implementation of 5VA, the WSAVA Guidelines Development Committee met for a second time at the North American Veterinary Conference in Orlando, Florida, USA. The group formulated a plan to build an alliance of global veterinary organizations to help healthcare teams and pet owners begin implementing the guidelines on an international basis. The Committee's next steps include working to publish the guidelines and encouraging other stakeholders to get involved. WSAVA says its hope is that global veterinary organizations will join with the group to encourage veterinary healthcare teams and institutions to make nutrition a routine part of their recommendation procedures.

"Our team met for two full days during NAVC, and we are all very enthusiastic about the plans ahead for the WSAVA guidelines. We took the existing AAHA guidelines to use as a model and will be working toward the mutual goal of making pet nutrition recommendations relevant worldwide," said Lisa M. Freeman, DVM, PhD, DACVN, professor of clinical nutrition at Tufts Cummings School of Veterinary Medicine. "These guidelines are an important resource that global veterinary practices, petfood companies and all others invested in optimal small animal health can benefit from."

Canadian government to invest U\$\$175,000 in Pet Industry Joint Advisory Council

The Government of Canada will invest US\$175,000 in the Pet Industry Joint Advisory Council of Canada to help develop global market opportunities for Canadian petfood products, according to an announcement by Agriculture Minister Gerry Ritz.

The federal investment will be provided through the US\$88 million AgriMarketing program, under Growing Forward, which helps industry associations implement long-term international strategies. PIJAC Canada will use this investment to build relationships with new and existing customers, as well as increase the sales, exports and value of its products. The Canadian group will also attend US and other international trade shows and participate in outgoing missions.

To find out more about this program, visit: www.agr.gc.ca/agrimarketing.



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For Consumers

Weight Loss System **Small Breed dog** food

The Science Diet Weight Loss System Small Breed dog food from Hill's Pet Nutrition Inc. is designed to be a convenient system for owners of overweight pets to help their pets achieve and maintain a healthy weight. The starter kit contains 72 food packets and 54 biscuit packets, and a food refill carton with 72 food packets and/or a biscuit refill carton with 54 biscuit packets can be purchased.

> Hill's Pet Nutrition Inc. +1.905.826.5655



Barksters Krisps dog treats

Loving Pets US-made Barksters Krisps dog treats are air puffed, low in fat and have 11 calories



per treat, according to the company. They are free of wheat, gluten and contain no additives or preservatives, Loving Pets says. Nine flavor combinations include Alfalfa with Liver, Brown Rice with Chicken and Sweet Potato with Beef.

Loving Pets +1.866.599.7387 www.lovingpetsproducts.com

Peanut Butter Wheat-Free Cake Mix for dogs

Puppy Cake LLC offers a wheatfree peanut butter cake mix for dogs. The cake can be topped with the included yogurt frosting mix. Ingredients in the cake mix are brown rice flour, evaporated cane juice, peanut flour, baking powder and salt.

> Puppy Cake LLC +1.888.859.2253 www.puppycake.com



Original Pet Food Co. beef dog meals

Original Pet Food Co.'s line of dog meals are made from US Department of Agriculture certified organic, grass-fed beef, high in omega-3 fatty acids and conjugated linoleic acid, according to the company. The wet foods are available in Organic Beef, Organic Liver,



Organic Beef and Liver and Hand-Cut Beef Recipe with vegetables. A Hand-Cut Chicken Recipe with vegetables, made with free-range chicken, and Hand-Cut Fish Recipe with vegetables also are available.

> Original Pet Food Co. www.originalpetfood.com

Chicken Meal & Brown Rice Formula Senior dog food

Natura Pet Products Inc. offers Chicken Meal & Brown



Rice Formula Senior dog food in its California Natural limited ingredient line. Specifically formulated to meet the needs of aging dogs, the food is high in protein, has less fat and includes L-carnitine to help maintain muscle mass and lean body weight, according to the company. Glucosamine, chondroitin sulfate and long-chain omega-3 fatty acids also are included in the senior formula.

> Natura Pet Products Inc. +1.800.532.7261 www.naturapet.com

Canidae PureSky, PureLand grain-free dog food

Canidae offers grain-free PureSky and PureLand dog food formulas. PureSky contains duck and turkey meal, and PureLand is made with bison and lamb meal. The formulas feature Cani-





For Consumers

dae's blend of omega fatty acids to support shiny coats and healthy skin. The dog food is made in the US.

> Canidae +1.800.398.1600

www.canidae.com

Wellness dog snacks

WellPet LLC's Wellness brand offers several snack options for dogs. WellBars are bite-sized, oven-baked, wheat-free snacks. Wellbites combine grains, fruits,



vegetables and two kinds of meat in each flavor and also are wheat free. Wellness says. Pure Rewards jerky bits contain more than 90% meat, according to the company, and are grain free. These three snacks offer multiple varieties.

> WellPet LLC +1.978.289.5500 www.wellpet.com

Synergy ultra dog formula

Dick Van Patten's Natural Balance Pet Foods Inc. offers

Synergy ultra dog formula. This dog food contains ingredients like psyllium seed husks, oat fiber and beet pulp for improved digestion as well as omega fatty acids, salmon oil and flaxseed for a healthy coat, according to the



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- Lee Linthicum, Euromonitor

Open innovation: what is in it for you?

— Edwin Grim, Ralco Nutrition

Assessing risks when buying raw materials for petfood production

- Ivo Reekmans, Radar Automation NV

Advances in palatability for dogs

- Marie Jane Fallourd, SPF

Applying polymer science to petfood production

Brian Plattner, Wenger Manufacturing

Energy recovery and odor reduction in modern petfood production

Tjitze Smit, Graintec A/S

New frontiers in nutrition for pet health: the role of nutrigenomics

> -Dr. Peter Spring, Swiss College of Agriculture

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For Consumers

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For Manufacturers



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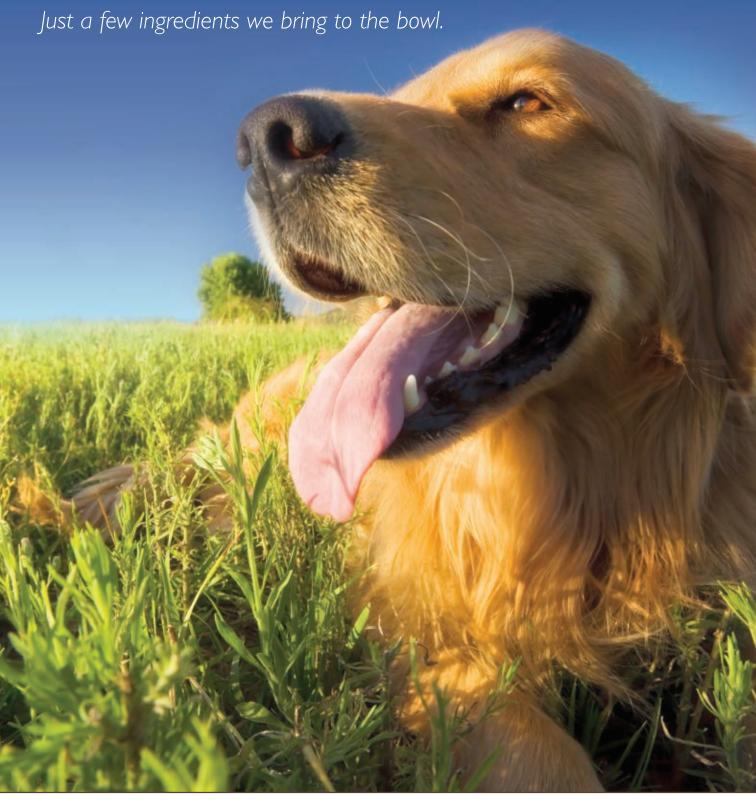
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For Manufacturers

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Officers: W. Patrick McGinnis, CEO/president; Rock Foster, CFO; Terry Block, president, North American Pet Food; Robert Watt, president, Golden **Products**

Sales: US\$12.5 billion in 2010 (global sales for Nestlé Purina PetCare)

Top brands: Purina Dog Chow, Purina Cat Chow, Friskies, Fancy Feast, Alpo, Mighty Dog, Purina Beneful, Purina One, Purina Pro Plan, Purina Veterinary Diets, Busy Bone, Purina Beggin' Strips, Whisker Lickins', Waggin Train and Tidy Cats

Distribution: Throughout North America

Main facilities: 24 in the US and Canada

Employees: Approximately 7,300 in the US and Canada

Websites: www.purina. com (plus individual brand websites)

Already an icon, Nestlé Purina PetCare continues to improve, innovate and grow

THOUGH NESTLÉ PURINA PetCare has been making petfood for 90 years and has an iconic name and unprecedented trust in the marketplace, it is not content to rest on history or reputation. In November 2010, the company reached a new milestone by earning the prestigious Malcolm Baldrige National Quality Award.

"We didn't set out to earn the award," says Terry Block, president of Nestlé Purina PetCare's North American Pet Food division. "We applied with a continuous improvement mindset of wanting to become better. And we

thought for a reasonable fee and some work, we could get some excellent feedback on our practices. Our interest is working on our business practices and trying to benchmark ourselves against what we perceive as other high-performing companies. It's been a journey of ours for the past 17 years."

That continuous improvement including in the all-important areas of product development, safety and quality—contributes to Nestlé Purina's status as the most trusted petfood company, according to Block.

PERHAPS THE MOST visible improvement is the company's business results, with sales and market share growing across the board in 2010. "We improved share in every one of our segments last year and have for the past several years," Block says. While the company does not report sales by market, Nestlé Purina PetCare had global sales of US\$12.5 billion in 2010.

Block credits two factors. "One of the keys to sustainable growth is being able to manage what I call

the tyranny of the short-term and the long-term," he explains. "You have to be able to do both successfully to have sustainable operating performance and be able to outperform the market. So yes, we will always do our best to achieve the shortterm, but we're always looking out three to five years and making the capability and infrastructure invest-

ments that are necessary to sustain our performance over the long term.

"Secondly, I'd say we have a maniacal focus on the consumer, both the dog or cat as well as the owner of that dog or cat," Block continues. "We really want to provide that consumer with products that will allow the dog or cat to thrive over its lifetime."

THE MOST IMPORTANT strategy derived from that consumer focus, Block says, is Innovation & Renovation, Nestlé's R&D strategy. "We spend a significant sum of money as a percentage of sales against R&D. We touch over US\$1 billion a year of our revenue with product

improvements or new products, and we have for the past several years," he explains. "What we look for in innovation is scalable white space. As we see those opportunities, we'll try to seize them and create a product to address that

Block adds that these innovation and renovation efforts help keep the

need."



The Beyond line has packaging made from at least 92% renewable material and printed with soy-based ink, and solar power used partially in the production of the foods.

entire product portfolio fresh and revitalized. To ensure the products are improving in both palatability and nutritional efficacy, Nestlé Purina

has its own large kennel of dogs and cats that continually test not only its products but also competitive ones. In addition, the company looks for what Block calls "bolt-on acquisitions," such as its purchase of Waggin' Train dog snacks in September 2010.

THE MOST EXCITING launch in the past 12 months, Block says, is the brand Beyond from Purina One. "It's about taking small steps to make a difference in the lives of consumers, their pets and the environment. As

Food safety a top priority

Continuous improvement is built into the fabric and DNA of Nestlé Purina PetCare, says president Terry Block, and that includes safety and quality. "Keep in mind that

Nestlé Purina, formerly Ralston Purina, has been in the feed business for 116 years. And we've been in the dog and cat food business for 90 years. So we understand the manufacturing of petfood and where the danger points are, what needs to be sourced and checked with in-bound ingredients and then in the manufacturing processes."

Each Nestlé Purina plant has its own QA lab, Block adds. "We manufacture over 98% of all of our foods at our own plants with our own people doing all the inspections and testing. After the

industry's melamine problem in 2007, we put new technology into our plants that we feel added even more safety to the production process, with how we can record and check in-bound ingredients. Food safety is a top priority, and we're extremely diligent in policing that."

Block says the company stands to exceed any new requirements that may come from the Food Safety Modernization Act. "Quite frankly, I know a lot of our standards are higher than what the Food and Drug Administration, US Department of Agriculture or Association of American Feed Control Officials require. We support efforts by the governmental bodies to improve the quality and safety of petfood, because when the industry has a problem, everybody suffers."

we did research, we were seeing an increasing number of consumers beginning to consider more than taste and nutrition when they choose a petfood.

"Sustainability by itself is not a primary reason to purchase, but when you have the appropriate attributes

was and benefits of food appeal and nutrition, sustainability can be that difference-maker," Block adds. "Consumers are interested in knowing the things we are doing to make our products more sustainable."

The Beyond line, for example, is packaged in bags made from at least 92% renewable material ("I believe that was a first in the industry," he says) and printed with soy-based inks. Also, the brand is produced



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At the Nestlé Purina headquarters in St. Louis, Missouri, USA, employees often bring their pets to work in what Terry Block describes as a passionate, pet-centric culture.

at a Nestlé Purina plant in Denver, Colorado, USA, that's generating a small part of its energy from solar power. "We've got two facilities now, the one in Denver and one in Flagstaff, Arizona, USA, that use solar power," Block explains. "It's one of those small steps we're taking to gain experience with solar power as a source of energy."

Block emphasizes, however, that the company has been reducing the amounts of energy and water used in its plants for years. "Prior to sustainability becoming the hot buzzword, it was called cost efficiency. As you reduce energy and reduce water, you reduce costs, and we have been on that curve for over a decade," he says.

Nestlé Purina's other sustain-

ability initiatives include:

- Together We Can, a three-year-old program involving retailers that encourages consumers to recycle wet petfood cans;
- The use of more sustainable fishing practices and fish, working with several non-government organizations; and
- A variety of social responsibility programs with animal welfare organizations, including Pets for People, Purina Pro Plan Rally to Rescue and the One Hope Network by Purina One.

AFTER OVER 33 years in the industry, Block recently announced his retirement, effective at the end of 2011. He has spent all those years with Nestlé Purina, which he describes as both passionate and petcentric, where many employees bring their pets to the office. "I think that passion transfers into the work we do



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Phone: +972732327398 website: www.lycored.com email: Oren Levy - Oren@lycored.com across all functions as we attempt to outpace our competitors in interacting with the consumer," he says, adding that might be something many people don't realize about the company.

"Because they don't really understand the culture behind that big petfood

company called Nestlé Purina and the checkerboard.

"We call it out in our mission statement that we stand for trust," he continues. "We want to enrich the lives of pets and the people who love them."

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PET OWNERS IN Western Europe spent about US\$150 per household on petfood and other pet care products in 2010. While their counterparts in Eastern Europe spent less than US\$50 per household last year, their average spending has increased more than 60% since 2005, or about 13% each year.

You can discover this and much more market data—plus tips on reaching these pet owners—from Lee Linthicum of

Europe on May 4 at the Koelnmesse in Cologne, Germany. Linthicum will be followed by six other speakers throughout a day of learning, networking and business connections. You can also visit the stands of key industry suppliers as part of Victam International, the co-located trade show.

Here is the schedule, topics and speakers for Petfood Forum Europe as of press time.

9:00-10:00

Registration and check-in with coffee and light breakfast

10:00-11:00

Consumers and Web 2.0: impact on the global petfood market—Lee Linthicum, head of global food

market—Lee Linthicum, head of global food research for Euromonitor International, discusses the relatively recession-proof status of the global pet care industry, thanks largely to the ongoing trend of pet humanization. With the global economy slowly recovering, he provides analysis of the major trends and developments driving pet care sales, including the role of the Internet in shaping consumer prefer-

ences and spending habits.

Linthicum manages
the research program for
the global food industry
at Euromonitor, which he
joined in March 2001. Based
in the UK, he has direct
responsibility over Euromonitor's packaged food, fresh
food and pet care research.
Linthicum has a bachelor's
degree in economics from
the University of Chicago.

11:00-11:40

Open innovation: what is in it for you?—Edwin Grim, general manager for Ralco Nutrition, describes how using the world as your dynamic R&D source accesses virtually unlimited talent and input. The new challenges are in managing

that input, filtering and scaling it to your needs. Expanding your network both within and outside your business offers a playing field with rich rewards—and painful pitfalls.



Grim manages the European activities for Ralco Nutrition and Maxx Flavors International. based in the Netherlands. Previously he established a European presence for AFB International and worked as a business development consultant for NineSigma and as a leader in open innovation projects for multinationals. He has developed his own pet treats under the Dogatti brand. Grim is also a member of the Professional Speakers Academy.

11:40-12:20

Applying polymer science to petfood production—Brian Plattner, processing engineering manager for Wenger Manufacturing (in a paper co-authored by Galen Rokey of Wenger), describes how polymer science, the study of the glass and melt transitions of polymers, has been applied to many areas of petfood processing in recent years-including extrusion and drying troubleshooting and product storage—to better understand and predict processing effects. It can even be applied to ingredient selection, which is often a unique challenge during product develop-



Plattner joined Wenger Manufacturing after graduating from Kansas State University in 1997 with a bachelor's of science in biological and agricultural engineering. He earned his professional engineering license in 2003. During his tenure at Wenger he has held numerous positions including process engineer, test run coordinator and technical center manager. In his current position,

he is responsible for helping customers specify new lines and improve existing ones, and works directly with the Wenger Technical Center and Engineering Group to develop improvements and innovations. Recently he was appointed as an adjunct instructor in the Department of Grain Science and Industry at Kansas State.

12:20-13:45 Lunch buffet

13:45-14:25

Advances in palatability for dogs-Marie Jane Fallourd, dog platform manager for SPF, discusses palatability for dogs, which is mainly driven by the petfood's smell, taste and texture. For dogs, the nature of the palatant used as well as the way to add it to the kibble are important to maximize palatability. All drivers can be looked at when it comes to increasing performance, including the segmentation requirements of the dog food market.



With 17 years' experience as an R&D manager of technical support teams and innovation pipelines in different biotechnology and ingredient companies (most recently with Danisco), Fallourd joined SPF France in 2010 and has responsibility for the R&D dog strategy, pipeline and knowledge management. Fallourd holds a master's of science in food technology as well as a food and beverage innovation management degree.

14:25-15:05

Assessing risks when buying raw materials for petfood-Ivo Reekmans, general manager of Radar Automation NV, explains how risk management is part of the job for a raw material buyer. Traditionally, the focus in risk management was on quality. In the past few years, changes in commodity trading markets

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and highly volatile prices have meant an urgent focus on financial risks and availability. General management needs effective, adequate information to assess raw material coverage and position risks

Reekmans joined Radar Automation, Belgium, in 1988 after earning a bachelor's degree in agricultural engineering and MBS from Katholieke Universiteit Leuven in Belgium. His company provides software solutions and IT projects for the animal feed industry and producers and traders of bio-energy and coal.

15:05-15:45

Coffee break

15:45-16:25

New frontiers in nutrition for pet health: the role of nutrigenomics—Peter Spring, PhD, professor at the Swiss College of Agriculture, discusses nutrigenomics, the study of the effects of nutrition on gene expression, which helps us understand nutrition at a more profound level. Such complete knowledge enhances the potential to transfer gained information from one species to another. This is of particular interest in pet nutrition, where research approaches are often limited by ethical reasons and high animal welfare standards. Dr. Spring focuses on novel information on nutrition, antioxidant protection and digestive system health.



After earning his doctorate, Dr. Spring managed an R&D lab, focusing on research with natural feed additives and their effects on animal health and performance. He is currently professor for monogastrics and head of the Animal Science Department at the Swiss College of Agriculture. His position involves teaching, research and consulting for the feed industry.

16:25-17:05

Energy recovery and odor reduction in petfood production—Tjitze Smit, petfood division manager for Graintec A/S, presents the average energy consumption for extruded petfood manufacturing, as well as ways to save energy. One solution is through condensation and recirculation of the air. Several models are suitable for different types of plants. In addition, because of new EU directives, odor impact has taken on a heightened focus. It is important to analyze and quantify the odor problem, then implement suitable solutions.



Smit holds a master's of science degree in aquaculture from Wageningen University in the Netherlands. He started his career in a familyowned petfood/animal feed business and later was responsible for the design and construction of several fish and animal feed plants. He has been with Graintec A/S, based in Denmark, since 2004.

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What pet owners really think about sustainability By Jessica Taylor

Simple, bold claims are critical to attracting non-"green" consumers and reinforcing messages with already converted consumers.

According to research conducted by Mintel, both packaging and product concerns are the drivers motivating consumers to buy "green" petfood products

5 things to remember

Mintel says the five most important things to remember about sustainability and the consumer perspective of your products are:

- Packaging efforts seems to have the broadestbased appeal and greatest impact on the shelf;
- A clear quality and safety message remains as important as eco-friendliness when it comes to petsumers' purchasing decisions;
- Simple, bold claims are critical to attracting non-"green" consumers and reinforcing messages with already converted consumers;
- The most successful sustainable products require little to no change to the consumer's usual routine; and
- The economy has had little impact on consumers' attitudes toward green spending, but they still remain reluctant to spend more for green benefits, so price can never be ignored.

"From the 8 billion pounds of kitty litter heading to landfills each year to the effects of a pet's carnivorous diet, pet parents should be aware of the carbon footprint left by pets," proclaims the online article, "10 Simple Steps to Reduce Your

Pet's Carbon Pawprint." Books like *Pets and*the Planet: A Practical Guide to Sustainable Pet Care, Eco Dog: Healthy Living
for Your Pet and Green Dog, Good Dog
are widely available to the eco-concious
consumer, promising to guide them to the

"greenest" petfoods and treats. Petco recently announced its partnership with Greenwala.com, the self-proclaimed online resource empowering consumers to go "green."

What does all this mean? According to research

conducted by Mintel, both packaging and product concerns are the drivers motivating consumers to buy sustainable, eco-friendly, green and fair trade petfood products. Mintel defines green claims in categories such as all natural, local and reduced carbon footprint for products and ingredients and recyclable, biodegradable and reduced/minimal for packaging. When asking consumers why they purchased a food making green claims, they responded:

- 67% wanted to create less waste;
- 65% said they wanted to support brands that are helping the environment;
- 45% thought such claims denoted that the product was of a higher quality than other products; and
- 42% said they were concerned about food safety.

Mintel also found consumers ages 18-34 were much more likely to be driven to purchase products due to these claims—calling the bracket of 25-34 year olds the "sweet spot" for sustainable purchasing.

WHEN MINTEL ASKED consumers to think about green products in general and asked them what motivated them to buy certain products, they found that packaging counts more than labeling or special certifications. Fifty percent of consumers said a package that has sustainable attributes motivates them to make a purchase while only 26% of consumers are motivated by a logo or seal from a third party on the label.

Companies like Barkwheats try to steer environmentally conscious consumers to their dog biscuits by not only using 100% recyclable, biodegradable and compostable packaging, but also by claiming to be the first pet

product company to ever carry the fair trade certified mark.

Brands like NuHemp Fetch-erz Ballz entice the sustainably savvy with their ingredients—hemp is not only great for a dog's digestion, it can also grow extremely fast in virtually any climate with no herbicide, fungicide or pesticide, the company says. The box the Ballz are packaged in? Made from 100% post-use recycled fibers, naturally.



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Research online: Plasma and petfood

Read Dr. Polo's study summary and get a better look at the TPA calculations behind his innovative spray-dried plasma and wet petfood research at www.petfoodindustry.com/SDP.aspx.

Wet petfood manufacturers are now also recognizing that plasmo improves the standardization of the quality of the final cooked product by efficiently absorbing quality differences between batches of the meat by-products



Standardizing quality in wet petfood with plasma By Javier Polo, PhD

The use of spray-dried plasma (SDP) can improve wet petfoods by absorbing quality differences in raw materials

THE USE OF spray-dried plasma (SDP) as a superior binder in wet petfood is well recognized and commonly used in the industry. SDP is characterized by its

Figure 1: Comparison of poultry carcass quality
Main characteristics of both poultry carcasses (CL and CH) used in this study.

	% Solids	% Proteins	% Ashes	Texture (g)	Water losses (g)
Poultry carcass (CL)	36.89	15.51	2.93	503±12	21.9±0.6
Poultry carcass (CH)	41.14	15.05	3.37	601±22*	17.1±0.8*

^{*}Values significantly differenyt by Student t-test (P<0.001)

well-balanced technological properties highly appreciated in canned petfood products. Manufacturers can rely on SDP for higher gelling, water retention and emulsion capacities compared to other binders. Wet petfood manufacturers are now also recognizing that plasma improves the standardization of the quality of the final cooked product by efficiently absorbing quality differences between batches of the meat by-products raw material.

To prove the capacity of plasma to homogenize differences in quality between the different raw meat ingredients, APC Inc. conducted a trial working with two different raw poultry carcass qualities testing the effect on the technological properties of cooked chunks in gravy. To analyze differences in the properties, we used texture profile analysis (TPA), which has been shown to have a good correlation with the texture of food.

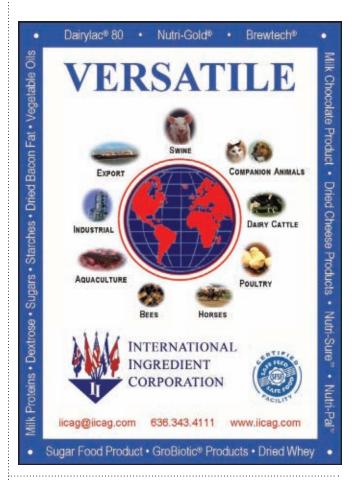
Instrumental TPA was developed about 30 years ago, constituting an interesting way of analyzing several textural parameters in only one assay. Since then, much work has been done and new tools have been developed. TPA via interpretation of stress-strain curves is, and will continue to be, extremely useful for the evaluation of the textural quality of foods, particularly when parameters can be correlated with sensory assessments.

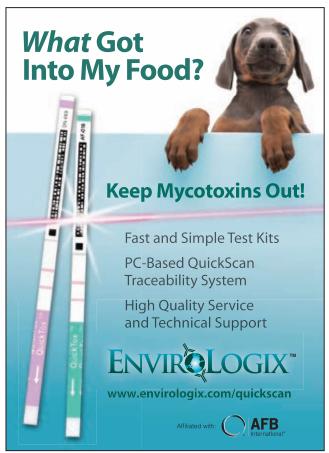
TPA measures parameters such as hardness, adhesiveness, chewiness, gumminess, cohesiveness, resilience and

A closer look: TPA

To analyze differences in technological properties of cooked wet petfood chunks, Dr. Polo used the texture profile analysis (TPA) in gathering his data. These tests not only quantify the texture of the petfood but are also meant to evaluate the consistency of the manufacturing processes.

- 1. Hardness is the peak force of the first compression of the product and provides information about the force needed to produce a distortion in the product.
- Adhesiveness is the area under the profile line that represents the necessary work to remove the probe of measurement from the product, so it measures the attraction forces between the surfaces of the product with other surfaces.
- 3. Springiness or elasticity is how well a product physically springs back after it has been deformed during the first compression. The spring back is measured at the down stroke of the second compression.
- 4. Cohesiveness reflects the resistance of the internal unions of the product and how well the product maintains its integrity during compression, avoiding the fracture. It is calculated dividing the area of work during the second compression by the area of work during the first compression.
- Gumminess is calculated by multiplying hardness and cohesiveness but only applies to semi-solid products with low hardness.
- Chewiness (for solid products) correlates hardness, cohesiveness and springiness, representing the energy required to disintegrate a solid food until a consistency adequate to be swallowed.
- 7. Resilience defines how well a product fights to regain its original position. It is like an "instant springiness" since resilience is measured on the withdrawal of the first penetration, before the waiting period is started.





springiness. These tests not only quantify the texture of the food but also evaluate the consistency of the manufacturing processes.

In this study, two different poultry carcass qualities were received from a Spanish supplier of raw material to different European wet petfood producers. The carcass called CH is considered high-medium quality carcass and the carcass called CL is considered medium-low quality carcass. As observed, the carcass CH had a better texture and lower water losses compared with the carcass CL, indicating that effectively the carcass CH had higher quality (Figure 1, p. 34). Both carcasses were used in the recipe indicated in Figure 2. Two

binders, SDP (AP820 from APC EUROPE SA) or WG (Viten, Roquette Laisa España SA, Valencia, Spain) included at 2% in the recipe were compared to a control diet without binder.

We prepared cans with chunks of similar size and shape, produced with a special device and included in gravy containing 0.8% chicken broth, 0.733% guar gum, 0.38% dextrose, 0.05% STPP and 98.037% water in a ratio 1:1 between chunks and gravy to

Figure 2: Wet petfood recipes

The chunk recipes used in the study comparing a control group, SDP and WG (g/kg).

	Control	SDP	WG
Poultry carcass	711.9	691.9	691.9
Wheat flour	70	70	70
Binder protein	_	20	20
Locus bean gum	5	5	5
Common salt	5	5	5
Sodium poly-phosphate	5	5	5
Sodium bicarbonate	2	2	2
Ascorbic acid	1	1	1
Sodium nitrite	0.1	0.1	0.1
Water	200	200	200

measure the TPA parameters. The cans were sterilized in a laboratory autoclave at 121°C for one hour and

Figure 3: TPA comparison of recipes with and without SDPTPA parameters obtained with the two different poultry carcass qualities with and without binders in the recipe.

Quality carcass	Hardness (g)	Adhesiveness (g.s)	Springiness mm	Cohesiveness	Chewiness g.mm	Resilience mm
CL carcass						
No binder	2477±68.0	-156±13.1	0805±0.008	0.543±0.014	1115±60.9	0.254±0.009
AP820	4912±89.5	-133±15.7	0.874±0.003	0.711±0.002	3061±60.6	0.382±0.002
Wheat gluten	3366±106	-229±7.06	0.832±0.005	0.560±0.009	1609±78.0	0.270±0.006
CH carcass						
No binder	2992±40.4	-248±15.5	0.837±0.005	0.554±0.010	1400±43.0	0.264±0.006
AP820	5178±87.6	-172±17.6	0.876±0.003	0.706±0.004	3219±74.2	0.376±0.004
Wheat gluten	3046±51.4	-183±17.9	0.811±0.005	0.496±0.012	1240±45.6	0.233±0.008



left to cool to room temperature for two days before performing the analyses.

With respect to TPA parameters, we found that in general, the carcass CH shows better TPA results compared with the carcass CL, indicating that effectively, the carcass CH has a higher quality than the CL as the producer already suggested (Figure 3). Independently of the poultry carcass tested, the use of SDP improves all the textural parameters analyzed compared with the other two conditions (control and WG).

Regarding the ability of the binders to reduce the quality differences of the two poultry carcasses used, we found significant differences in almost all the TPA parameters from the control and WG recipes according to the quality of the carcass, but not for the recipe containing SDP (Figure 3). Results may be interpreted that SDP is better able to homogenize differences in quality between carcasses.

Animal by-products suppliers should consider the recommendation of using SDP in wet petfood recipes to avoid daily natural variations in their ingredient raw materials and also to avoid differences in product performance between fresh and frozen meat ingredients for wet petfood. Petfood producers should also consider the addition of a binder like SDP that could be regarded as a "safety belt" to warranty similar quality of their wet petfood on a regular basis.

Dr. Javier Polo is the vice president of research & development for APC Inc.



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Carniking™ offers pure L-Carnitine and is a trademark of Lonza Ltd, Switzerland. www.carniking.com carniking@lonza.com Intervention tools that can ensure that your finished pelfood and treat products are pathogen free are essential.

Emerging food safety technologies By Jessica Taylor

What are the best ways to keep pathogens out of your petfood?

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Be up to date on the latest ways to protect your brand and your products, how to meet FDA requirements and discover the most innovative tools available at Petfood Forum and Petfood Workshop: Safety First, taking place this month, April 11-14. You still have time to register at www.petfoodindustry.com/petfoodforum.aspx.

SALMONELLA, E. COLI and Listeria monocytogenes are three words that instantly grow gray hairs on the heads of every petfood manufacturer. The health of your customers, both furry and otherwise, has to be your top priority. The only way to stay vigilant is to take the proper precautions by using the most innovative technology from reliable sources.

Intervention tools that can ensure your finished petfood and treat products are pathogen free are essential. There is no better way to avoid recall and build consumer trust, but whatever system you decide to put in place must meet specific requirements. According to Ed O'Neill, VP

of quality systems and technical service at Nature's Variety, these requirements are:

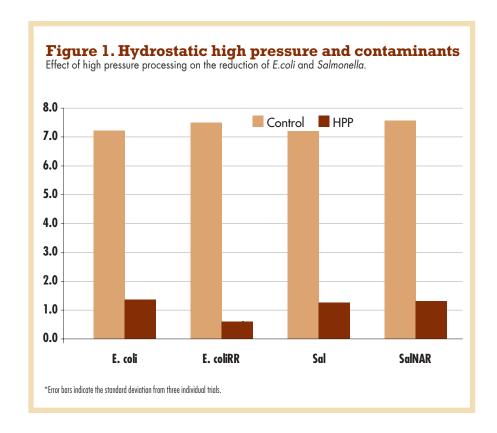
- Insignificant to no impact on the temperature of the petfood cooking process;
- Must work in natural and organic environments;
- Minimal to no impact on the palatability and nutritional quality of the product; and
- Compatible with a premium product line.

High pressure processing (HPP) uniformly applied to food is a relatively new way petfood producers are trying

to meet these specifications and protect their products. Although HPP is proven to reduce both *E.coli* and *Salmonella* in meat (see Figures 1 and 2, p. 40), it requires expensive equipment and can often be logistically difficult. If a raw petfood product has a high moisture content, HHP can be applied to packaged, finished products. There are no further opportunities for recontamination until the package is opened by the consumer, but since the product is pasteurized, the petfood is no longer raw.

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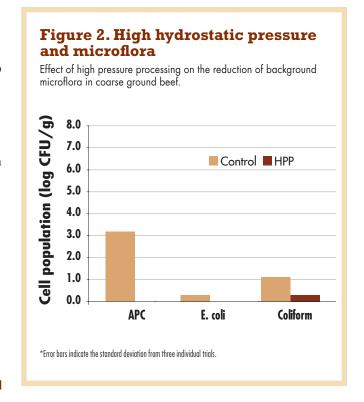
Chemical interventions. Organic acids and surfactants have mold-inhibiting properties.

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The growing number of recalls of petfoods because of microbiological contamination demonstrates the need for effective intervention strategies. Ideally, multiple interventions should be applied that address all potential sources of contamination to allow for the production of safe, pathogenfree petfoods.





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What's in a name? New and proposed ingredients



During its last meeting, AAFCO took action on a number of new and proposed ingredients.

DESPITE THE EXPECTATION that the Food and Drug Administration will phase out its participation in the Association of American Feed Control Officials feed ingredient definition process by 2012, there are still many ingredients in the definition pipeline. During its "mid-year" meeting in January, AAFCO took action on a number of new and proposed ingredients, at least a few of which have impact on petfoods.

GROUND PECAN SHELL. The full AAFCO membership voted to move the definition for this ingredient from tentative to official status. Originally proposed by a petfood company, it is intended to be used as a source of dietary fiber.

When a new or amended definition is first accepted by AAFCO, it is placed in tentative status, i.e., a form of probationary period. These tentative definitions are recognized in the AAFCO *Official Publication* by use of the letter "T" in front of the definition number, which is then removed when the definition is made official.

Other definitions moved from tentative to official status at the mid-year meeting included amendments to the definitions for L-carnitine, salvage petfood, distressed petfood and selenium yeast. However, none of the amendments concerned use in petfoods.

The AAFCO membership also voted to accept new definitions for biodiesel-derived glycerin and ammonium formate, to add a new microorganism to the direct-fed microbial list and to amend the definition for formaldehyde to conform to FDA regulations. As use of these ingredients only pertains to livestock feeds, none of these actions have any impact on the petfood industry, however.

CHARCOAL. ONE ACTION that will affect some petfoods is the deletion of charcoal from the list of feed terms. It is a decidedly very old term. It has been present in the AAFCO *Official Publication* since 1972 and perhaps for much longer (that year is the oldest *Official Publication* in my library).

For decades or more, some petfood manufacturers have been using the feed term in lieu of a formal ingredient definition to support use of charcoal in dog biscuits and similar items as a flavor and/or breath freshener. However, concerns regarding safety (e.g., potential dioxin contamination) and intended use as a "drug" prompted the recent action. Petfood manufacturers currently using charcoal in products theoretically could replace it with bone charcoal, which is an AAFCO-defined ingredient in the Mineral Products section of the Official Publication.

Seaweed-derived calcium may have some implicit consumer appeal in petfoods.

L-CARNITINE. THE INGREDIENT Definitions Committee accepted an amendment to the definition for this ingredient that broadens its use in petfoods. Current language makes reference for use in complete feed, which in interpretation by some did not allow it to be used in treats, snacks, supplements or anything other than complete and balanced dog and cat foods. Removal of that verbiage would thus

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provide for use in any dog food or cat food, which by definition includes items such as snacks and treats. The maximum inclusion rates remain the same, however, regardless of the contribution of the item to the total diet.

Also amended were the units used in reference to inclusion rates, from ppm to mg/kg. While the terms are scientifically synonymous, the change helps clarify use of the appropriate units needed to be consistent with units used for other trace nutrients in petfood label guarantees. The amended definition is now positioned to go before the full AAFCO membership for final vote in August.

SEAWEED-DERIVED CALCIUM. A

newly accepted definition of this ingredient has potential use in petfoods. Obtained from the skeletal remains of specified marine algae species, it is intended as a source of calcium and magnesium in animal feeds. While other sources of these minerals are certainly plentiful in the AAFCO *Official Publication*, this ingredient may have some implicit consumer appeal in petfoods.

Although not alone among sources of minerals, seaweed-derived calcium appears to meet AAFCO criteria for designation as "natural." Again, the new definition must now go before the full membership at the annual meeting before accepted by AAFCO.

OTHER ACTIONS OF the Ingredient Definitions Committee included:

- Move amendments to definitions for DL-methionine and its analogs from tentative to official;
- Accept a new definition for castor oil in animal feeds;
- Accept a new definition for formic acid in swine feeds;
- Amend the definition for ammonium chloride in ruminant feeds and move it from the Non-Protein Nitrogen section to the

- Mineral Products section:
- Amend definitions for camellia meal in chicken and cattle feeds, phytase in swine and poultry feeds and canola meal; and
- Withdraw the definition for rape-

seed meal.

While no action was taken at this meeting, some new definitions and amendments on the horizon include fruit pomace, maltodextrins, hydrolyzed cassava and unrefined salt.



Ingredient Issues

Greg Aldrich, PhD

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Tapioca: a novel starch source for petfood



This ingredient has become especially prevalent in no-grain and elimination diets. In the search for more novel ingredients to use in petfood, a new starch source, tapioca, has begun to find its way into some specialty foods. This ingredient has become especially prevalent in no-grain and "elimination" diets. While most of us in the far northern and southern hemispheres know of tapioca only as a dessert pudding option, to many of our counterparts from equatorial countries around the world this tuber is a staple carbohydrate in the diet.

Given most petfoods are produced in regions of the world where tapioca is novel, we should probably do a little investigation to see what information is available about the features, benefits and issues of this ingredient.

TAPIOCA IS A purified starch derived from a specific root crop (*Manihot esculenta*) native to the South American Amazon and Caribbean regions. Today, it is grown worldwide—from India, throughout the southern Pacific Rim and Indonesia to Sub-Saharan Africa, where it is a staple. In these various regions around the globe, the plant that produces tapioca is known by a number of common names such as cassava, manioc, boba, yuca (not to be confused with yucca), sagudana, kappa, bot nang and many others.

In Western literature, the name cassava is almost universally used. The "cassava" plant is adapted to humid savannah regions, growing well in poor soils, and is tolerant to seasonal droughts. Most cassava plants are propagated by stem cuttings, and under acceptable growing conditions, the roots can be harvested about eight months thereafter.

Global agricultural production of cassava is

projected to be on the order of 275 million metric tons by 2020 with Sub-Saharan Africa the overwhelming leader, followed by Latin America, Southeast Asia and India (Tonukari, 2004). Human consumption tends to match production in these regions; the export markets are not yet as well developed internationally as those of the other commodity starches. For export, Thailand is the leading country and the source of most commercially available tapioca for Western countries.

ON A DRY basis, tapioca is almost exclusively non-structural carbohydrates (approximately 99%) and contains insignificant amounts of protein, ash, fat and fiber. Of these non-structural carbohydrates, starch predominates, with only a smattering of free sugars (about 3.5%). The starch is composed primarily of amylopectin (>80%, a branched-chain polysaccharide molecule) rather than amylose.

On the anti-nutrient side of the equation, cassava is almost famous for its association with ill effects from cyanide. However, if properly processed, this is a non-issue. These cyanide effects are associated with the cyanogenic

glucosides—linamarin and to a smaller degree
lotaustralin. They are found in largest
concentration in the leaves,
stems and skin and
form a natural
part of the

Tapioca is a purified starch derived from a specific root crop native to the South American Amazon and Caribbean regions that is grown worldwide today.

Dr. Greg Aldrich is president of Pet Food & Ingredient Technology Inc.

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plant's defense system against preda-

plant's defense system against protion.

Upon ingestion of plant tissue these cyanogenic glucosides are hydrolyzed by an enzyme called linamarase to liberate prussic acid Upon ingestion of plant tissues, hydrolyzed by an enzyme called linamarase to liberate prussic acid, a source of hydrocyanic acid (HCN). Consumption of prussic acid has been

tion when compared to puppies fed a diet containing rice (Kamalu, 1991a, 1991b; Kamalu and Agharanya, 1991). So, while this is something to be taken seriously, it should be no cause for concern if processed properly.

To that end, the commercial

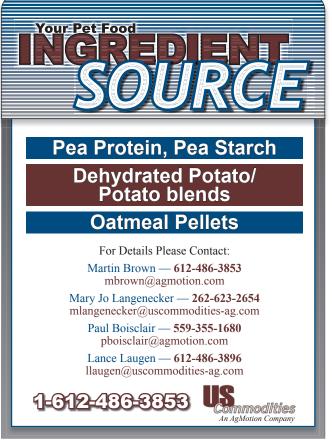
Additional refining steps involve water washes and physical separation of the starch from the root fibers and skin pulp based on differential density (cyclones). By these methods, tapioca (free of all cyanide compounds) is made available for human (and pet) consumption and is standardized for incorporation into foods.

In Western literature, the name cassava is almost universally used.

associated with goiter, pancreatitis, paralysis and in severe cases death; this includes in companion animals. In a series of papers, puppies fed gari (an unrefined but processed cassava preparation that contains some HCN) were reported to grow slower, have impaired pancreatic insulin production but maintain normal thyroid funcproduction of tapioca from cassava involves peeling the skin from the root and then "rasping" or shredding the flesh. This ruptures the starchy cells of the tuber, releasing the linamarase enzyme, which cleaves the HCN from linamarin. The liberated HCN is soluble in water and volatilizes (evaporates) as the preparation is dried.

Commercially, Tapioca is available in pellet, pearl and flour form. As flour, it has a similar consistency to corn flour, and in many countries around the world it is used in combination with wheat flour to make bread or as a thickener in dessert and confectionary products. It mixes well in cold water and begins to thicken slightly at around 125°F to 150°F (gelatinization/ pasting temperature) to become a thin gravy. As cook time and temperature increase, the gravy will clarify and be more gelatinous.





However, this increased viscosity does not survive more extreme temperatures like those found in the canning retort process. In extrusion, tapioca expands exceptionally well and can, under the same equipment settings, expand two to three times that of a rice-containing diet.

STARCH DIGESTIBILITY OF diets containing high levels of tapioca (>40%) were reported to be 99% and 98% in dogs and cats, respectively (Carciofi *et al.*, 2008; de-Oliveira *et al.*, 2009). Animals fed these diets also produced firm stool scores.

Dogs fed the cassava diet demonstrated the typical postprandial (after a meal) glucose-insulin response with a spike in glucose and insulin within 30 minutes of the meal, with rapid decline thereafter. However, in cats, no similar glucose-insulin spike was observed. Rather, insulin and glucose increased

in a steady linear fashion for 12 hours following the meal. Whether this was an inherent part of the tapioca's digestion characteristics or a factor unique to cats is not known. Since tapioca contains appreciably more amylopectin than amylose, the higher ratio of amylopectin may change the rate of intestinal hydrolysis to glucose and modify absorption kinetics.

COMMERCIALLY AVAILABLE TAPIOCA seems to be a safe and effective starch source that fits well with a number of petfood applications. No negatives regarding palatability were noted in the literature, and it appears that

in the literature, and it appears that cats and dogs utilize diets containing tapioca very well. So, as long as supply chain issues can be worked out and market forces are favorable, tapioca could be a reasonable ingredient for

use in pet diets.



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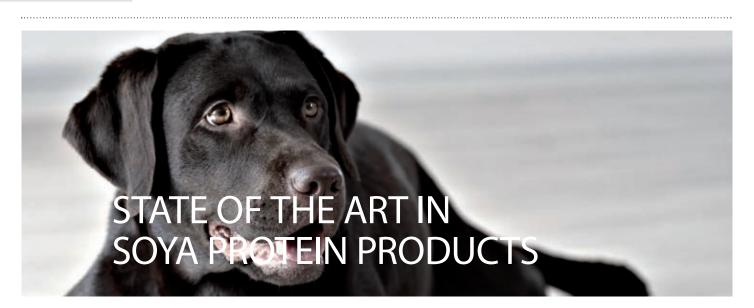
Key Concepts

- Geometric analysis of cats' macronutrient selection (J. of Exp. Bio. 214: 1039-1051. doi: 10.1242/ jeb.049429) These results add to the growing appreciation that carnivores, like herbivores and omnivores, regulate macronutrient intake.
- Increasing water to reduce energy density (JAPAN online December 2010. doi: 10.1111/j.1439-0396.2010.01107.x) Body mass gain following caloric restriction is ameliorated and physical activity enhanced by feeding a diet low in energy density from the addition of water.
- Selenium balance in the adult cat (JAPAN online February 2011. doi: 10.1111/j.1439-0396.2011.01132.x) Cats closely regulate selenium homeostasis through increasing urinary excretion while fecal absorption remains unaffected.

Geometric analysis of cats' macronutrient selection

Several feeding studies on adult domestic cats are designed to disentangle the complex interactions among dietary protein, fat and carbohydrate in the control of intake. Using geometric techniques that combine mixture triangles and intake plots from the geometric framework, we demonstrate that cats balance their macronutrient intake, estimate the composition of the target balance and reveal the priorities given to different macronutrients under dietary conditions where the target is unachievable.

Our analysis indicates cats have a ceiling for carbohydrate intake, which limits ingestion and constrains them to deficits in protein and fat intake (relative to their target) on high-carbohydrate foods. We reanalyze data from a previous experiment that claimed kittens failed to regulate protein intake and show that, in fact, they did. These results add to the growing appreciation that carnivores, like herbivores and omnivores, regulate macronutrient intake and have important implications for



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designing feeding regimens for companion animals. Source: A.K. Hewson-Hughes *et al.*, 2011. Geometric analysis of macronutrient selection in the adult domestic cat, *Felis catus. J. of Exp. Bio.* 214: 1039-1051. doi: 10.1242/jeb.049429

Increasing water to reduce energy density

Caloric restriction induces body mass loss that is often regained when restriction ends. This study aimed to determine if dietary energy density modulates the extent of post-restriction body mass regain. Water (20%) was added to a commercially available dry cat food and fed to 27 domestic shorthaired cats with a 20% caloric restriction. Following restriction, cats were offered the same dry diet *ad libitum* either without additional water or with 40% added water, therefore maintaining macronutrient composition while manipulating energy density.

Despite no significant difference in energy intake during *ad libitum* consumption, post-restriction body mass regain was greater on the high-energy-dense (0% hydrated) vs. the low-energy-dense (40% hydrated) diet.

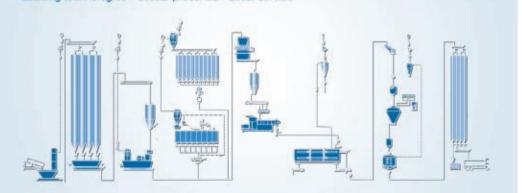
The same protocol was repeated with a separate cohort of 19 cats with additional measures of physical activity, gut transit time and energy digestibility. Activity levels on the LED diet were significantly higher than in cats on the





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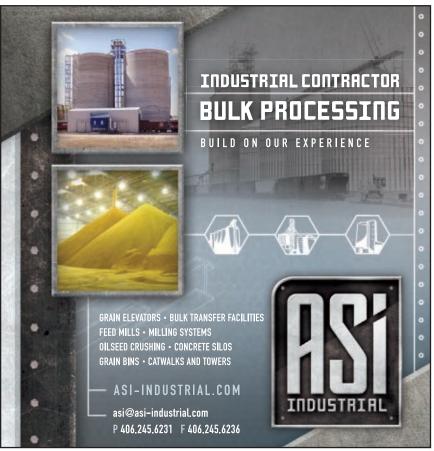


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HED diet and were similar to those recorded during caloric restriction. These results suggest body mass gain following caloric restriction is ameliorated and physical activity enhanced by feeding a diet low in energy density from the addition of 40% water.

Source: K.M. Cameron *et al.*, 2010. The effects of increasing water content to reduce the energy density of the diet on body mass changes following caloric restriction in domestic cats. *JAPAN online* December 2010. doi: 10.1111/j.1439-0396.2010.01107.x

Selenium balance in the adult cat

The response of cats to dietary sodium selenite (Na2SeO3) and organically bound selenium was studied in two separate studies with four cats per treatment and three levels of selenium supplementation (targets 1.0, 1.5 and 2.0 μ g/g DM) for each Se source. Whole blood and plasma selenium concentrations and glutathione peroxidase (GPx) activity were determined at seven points across the 32-day study.

The basal diet used had a low apparent fecal selenium absorption of $25.3 \pm 3.0\%$. Daily fecal and urinary selenium excretion increased linearly with increasing selenium intake for both Se sources. Urinary selenium concentration of the cats fed the supplemented diets increased rapidly and remained constant throughout the remainder of the study. Apparent fecal selenium absorption was high for both selenium sources (73.2% and 80.0%). Plasma and to a lesser extent whole blood selenium concentrations increased in a dose-dependent manner with supplementation.

Whole blood and plasma GPx activity were highly variable and showed a variable response to dietary selenium intake. Cats closely regulate selenium homeostasis through increasing urinary excretion while fecal absorption remains unaffected. Source: S.E. Todd et al., 2011. Selenium balance in the adult cat in relation to intake of dietary sodium selenite and organically bound selenium. JAPAN online February 2011. doi: 10.1111/j.1439-0396.2011.01132.x

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Petfood Forum 2011, April 11-13, 2011. Renaissance Schaumburg, Schaumburg, Illinois, USA. For more details and to register, go to www.petfoodindustry.com/ PFF2011.aspx.

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information on these events

 Food Packaging Technology Summit 2011, April 5-7, 2011.
 Hyatt Regency St. Louis at the Arch, St. Louis, Missouri, USA.
 For information, please visit www. foodpackagingtechnologies.com.

Petfood Workshop

Petfood Workshop 2011: Safety First, April 13-14, 2011. Renaissance Schaumburg, Schaumburg, Illinois, USA. For more details and registration, please visit www.petfoodindustry.com/ PetfoodWorkshop2011.aspx.

PetfoodForum EUROPE

- Petfood Forum Europe 2011, May 4, 2011. Koeln Messe, Cologne, Germany. Visit www. petfoodindustry.com/ petfoodforum.aspx for more information
- Animal Agriculture Alliance's Annual Stakeholders Summit, May 5-6, 2011. The Westin Arlington Gateway Hotel, Arlington, Virginia, USA. For more information, please go to www.eventfarm. com/stakeholderssummit.
- Technology Group International (TGI) 7th Annual Users Conference, May 11-13, 2011. This conference will take place in San Antonio, Texas, USA. For more details, please visit www.tailtd.com.
- Alltech's 27th Annual International Animal Health and Nutrition Symposium, May 22-25, 2011. This event is scheduled to take place in Lexington, Kentucky, USA. For more information and to register, please visit www.alltech. com/symposium.

Online events





- The Powder and Bulk Online Training Center is a virtual campus providing online training and lectures on topics such as Pneumatic Conveying, Mixing & Blending and Solids Flow. All of these web-only classes are available at www. powderandbulk.com/online_training.
- Mocon Inc. has announced its 2011 Free Webinar Series, which began March 9, 2011, and takes place once a month until December 10, 2011. To view class details and registration information, please visit www.mocon.com/events.php.







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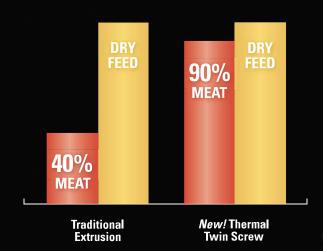
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