2013 study shows senior dogs had improved cognitive function with DHAgold!

The omega-3 fatty acid DHA is an essential nutrient for brain and eye development. A 2013 study showed that a group of 8 to 10 year old dogs fed food containing DHAgold for 6 months had significantly improved memory and visual performance compared to the control group.

DHAgold is an all natural, high quality, sustainable ingredient. Foods, treats, and supplements with DHAgold provide your pet with a smart source of DHA.

For more information on DHAgold go to www.DHAgold.com

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Like humans, dogs are living longer and therefore spend a longer period of life in the senior life stage. In fact, the industry has expanded the companion animal life stages to include the geriatric phase. Animals in the senior and geriatric life stages, compared with younger animals have different nutritional requirements, one factor being a reduction in their inability to absorb some nutrients. Nutritional studies indicate that during the senior and geriatric life stages of many animals “extra” nutritional supplementation is required to help avoid the onset of certain age related health issues, such as declined immune function or to mediate the ill effects of common age related health issues, such as inflammation associated with degenerative joint disease. Ingredients rich in omega-3 fatty acids are one of the more frequently used supplements to help support the health of ageing dogs.

It is not unusual that with a growing population of older humans we often see health issues that parallel ageing dogs. Science has demonstrated that dogs are good models for humans when it comes to many common health issues. In fact, “The key to unlocking some of nature’s most perplexing puzzles in human health has actually stood right next to us, wagging its tail,” said Matthew Breen, a genomics professor at North Carolina State University College of Veterinary Medicine. Researchers from the University of North Carolina School of Medicine, North Carolina State University’s College of Veterinary Medicine and Duke University recently published findings in the journal Cancer Research that showed both dogs and humans develop a molecularly comparable cancer called diffuse B-cell lymphoma. This is the most common lymphoma subtype in humans and one of the most common canine cancers diagnosed by veterinarians. Since nutrition plays an integral role in steering biological pathways, nutrient supplements that are effective at mediating human health concerns are excellent candidates for addressing the same health concerns in dogs.

For adults over 50, the benefits of healthy eating include increased mental acuteness, resistance to illness and disease, higher energy levels, faster recuperation times and better management of chronic health problems. Getting adequate nutrition can however be a challenge as you get older. With age the number of calories you need begins to decline. Every calorie you consume must be packed with other vital nutritional content in order to hit the mark. This is no different for dogs. The human nutrition and health industry, particularly in the area of dietary supplements and fortified foods, has stepped up to the challenge by developing nutritional science that points to a variety of dietary supplements that provide these much needed health benefits. These nutrient rich products combined with proper food create a more balanced diet that can help seniors address the special needs of their bodies.

Is the pet food industry learning from this? An August 2012 Packaged Facts consumer survey shows that 43% of dog owners and 36% of cat owners purchase some type of specialty nutritional formula pet food or supplemental nutritional products for their pets. “As in human nutritional products market,” says David Sprinkle, Research Director at Packaged Facts, “ageing is the core market driver, as more pets suffer from age-related conditions such as joint deterioration and cognitive dysfunction.” Popular and fast growing supplement ingredients in the human market include glucosamine, omega fatty acids and probiotics, with omega fatty acid ingredients being the most prominent among the top three listed regionally (Figure 1). The pet food industry has therefore an opportunity to pursue many of the same dietary supplements in their quest to address the health needs of ageing dogs.

**Figure 1**

By Jeffrey Alix, Global Marketing Manager Pet Nutrition, DSM Nutritional Products
Of the nutrient categories, one plays a particularly important role. There are over 14,000 scientific reports addressing the use of omega-3 fatty acids to support health and wellbeing, with canines being the most studied companion animal. The underlying physiological reason for the described health benefits may be complex but the perceived benefits are top of the list for many dog owners – skin health and coat condition, brain health including trainability and the decline of cognitive function, even heart and vision health. All these benefits are on the top ten list of concerns for owners of ageing dogs.

It is therefore understandable that over the past ten years we have seen a significant growth in pet consumables that highlight health benefits because they contain omega-3 fatty acids. The most common of these health benefits are related to skin, coat, and joint health. There is however a growing body of evidence supporting brain health. Companies like Hill’s Pet Nutrition and P&G Pet Care have demonstrated that nutrient supplementation including the omega-3 fatty acid DHA can significantly impact the achievement of genetic potential in the puppy increasing puppy trainability. Further evidence now exists that demonstrates food supplemented with DHA helps improve cognitive function in older dogs. Improving trainability or maintaining cognitive function can only help to strengthen the bond between owner and pet.

With growth in the older dog population, more and more pet parents are experiencing the strain of having an older dog presenting with a decline in cognitive function. This condition is called Cognitive Dysfunction Syndrome (CDS) and is compared to Alzheimer’s disease in humans. Researchers believe CDS is caused by physical and chemical changes that affect the brain function in older dogs. Dogs with CDS may show signs of confusion and/or various other behavioural changes that are not a normal part of ageing. Experts have developed a check list of symptoms in the general categories: disorientation and confusion; reduced interaction with family members; atypical changes in sleep and activity; and a loss of house-training. In one study at the University of California-Davis, 62% of 11- to 16-year-old dogs showed signs in at least one category of CDS. With an increased humanization of dogs, many pet owners will be seeking to prevent the onset of CDS using nutritional intervention, because this condition is not reversible.

Currently fish oil is the ingredient most used by the pet food industry as a source of omega-3 fatty acids. Fish oils have many challenges. As a liquid, it must be carefully applied in production using pumping equipment and metered to deliver the right amount. It is calorie dense and careful consideration must be made to limit the use of other calorie dense fats and oils in the formulation. It is a highly unstable fat which requires strict quality control specifications and diligent use of antioxidants to control lipid oxidation. The total omega-3 fatty acid concentration and ratio of the specific fatty acids DHA and EPA is often different depending on the source of fish and the extraction and refining process. Fish oil can also contain many contaminants like heavy metals, PCB, dioxin and antibiotics. It can impart a rather strong fish odour which is not always acceptable, depending on the type of pet product being produced. Ultimately, the biggest challenge for the pet industry is procuring good quality fish oil and competing with the rapidly growing human industries demand for omega-3 rich ingredients.

It is important to understand that fish do not create their own omega-3 fatty acids. The original source of these fatty acids is marine algae (Figure 2). Fish oil contains DHA and EPA because of the food chain in the ocean. Unless farm raised fish are fed ocean fish or algae, they do not contain these important omega-3 fatty acids. Fish farmers are slow to adapt algae as a source of omega-3 because it is typically a low margin industry and algae is more expensive than crude ocean fish by-products. Consequently, overfishing our oceans has become a real issue. Entire species of ocean fish are at risk of extinction due to the growing demand for omega-3 rich fish oil. Worldwide, fishing rights and quotas are more difficult to obtain and are more restrictive because of this concern. Crude fish oil prices have risen 86% since 2011 due to the rising demand.

A high quality, whole-cell, marine algae can be a feasible alternative to ocean fish derived raw materials. Algae grown by fermentation has many positive attributes. It is a rich, highly sustantainable source of the most desired omega-3 fatty acids and not limited by a natural resource. It is devoid of the contaminants found in fish sources. A high quality algae is odour and colour neutral, allowing greater flexibility in the development of pet food products. The dried whole-cell algae ingredient DHAgold S17-B exists commercially and contains almost twice the concentration of DHA found in fish oil. The price of this type of algae is also consistent because it is produced by fermentation where demand has much less impact on the cost of production.

Although marine micro-algae is a rich source of omega-3 fatty acids, it is relatively new to animal nutrition and, therefore, few studies have been done to demonstrate its effect on the health of companion animals. The benefit of DHAgold S17-B from DSM Nutritional Products was recently investigated by Cancog technologies, world leaders in companion animal cognition and behavioural sciences. Cancog has developed a series of behaviour based tests that evaluate the animal’s ability to visually identify and remember various objects and images. These tests are performed over time to determine changes in the
animal’s performance based only on their daily diet.

The study used a standard commercially available dry dog food made with (test) and without (control) added DHAgold S17-B. The test and control diets were fed for 7 months to two cognitively equivalent groups of 8.5 to 11 year old dogs. Over the course of this study, five different behavioural based tests were performed to measure components of visual performance, learning and memory which together describe an individual’s cognitive function. This was a blinded study meaning both the investigators and the technicians did not know which diet contained DHAgold S17-B until the end of the study.

Although there were several significant findings, two showed outstanding results – the concurrent discrimination and contrast sensitivity tests.

The concurrent discrimination test (Figure 3) measured each dog’s ability to perform the task correctly over time. The group of dogs on the diet containing DHAgold S17-B performed significantly (p=0.0187) better than the control group over the 40 day period of testing (Figure 4). The experts at Cancog interpreted these findings and other related test results as an indication of improved learning and long-term memory due to supplementation with DHAgold S17-B.

For the contrast sensitivity test, each dog had to visually identify printed geometric images on a white background, with decreasing contrast (Figure 5), with the measure being success rate. Naturally more correct answers are seen with 100% contrast (black on white) but greater differences between each group were noted as the contrast was reduced step-wise down to 5% (light grey on white). Over 60% of the group of dogs on the diet containing DHAgold S17-B completed all levels of training, while less than 30% of the group of dogs on the control diet completed all levels of training (Figure 6). The experts at Cancog interpreted these findings as an indication of improved visual processing ability due to supplementation with DHAgold S17-B involving the retina, cerebral cortex and possibly both.

Although studies have been done demonstrating fish oil enriched diets improve puppy trainability, only this Cancog study evaluating a standard diet containing DHAgold S17-B demonstrated improved overall cognitive function in older dogs using a multi-dimensional test design.

Leading manufacturers of nutritional products for pets are looking for ingredients that deliver health benefits that address the real needs of today’s growing population of companion animals. They also seek more human food quality ingredients that are natural. Whole cell, micro-algae offers the pet industry a sustainable, natural source of nutritional lipid as an alternative to fish oil. This unique ingredient also contains protein, dietary fibres, minerals, and other nutrients important for a complete and balanced diet.

Addressing health benefits that matter to pet parents, the high quality micro-algae DHAgold S17-B promises a brighter and smarter future for pets.