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Association of American Feed Control Officials

Response from AAFCO to JAVMA Viewpoint Article of February 15, 2021

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The February 15, 2021, edition of the *Journal of the Veterinary Medical Association* contained a Viewpoint Article authored by Dr. Sharon Center *et al.* titled, Is it time to reconsider current guidelines for copper content in commercial dog foods?¹ The Viewpoint article proposed that the Association of American Feed Control Officials (AAFCO) do three things. First, reestablish a maximum concentration for copper (Cu) in the AAFCO Dog Food Nutrient Profiles. Second, set the recommended content for Cu in the AAFCO Dog Food Nutrient Profiles to a range from 0.9 mg Cu/1000 kcal of metabolizable energy (ME) (equivalent to 3.6 mg Cu/kg dry matter (DM) in foods containing 4000 kcal ME/kg DM) to a maximum of 1.1 mg Cu/1000 kcal ME (4.4 mg Cu/kg DM). Third, prohibit the use in dog foods of all supplemental sources of Cu except copper oxide.

Within a month of the publication of the February 15, 2021, Viewpoint Article, AAFCO had convened an Expert Panel formed in accordance with the Criteria for Nutrition Indications in the AAFCO *Official Publication*.² The Expert Panel was composed of the professionals listed in Table 1 and met four times between May 2021 and July 2022 to consider the requests in the Viewpoint Article and the underlying implication that Copper Associated Hepatitis (CAH) in dogs is being caused by the content and supplemental sources of Cu used in dog foods.

The implication that CAH is being caused by the content and supplemental sources of Cu used in dog foods comes from the observation that the Cu content measured in the liver of dogs has been increasing and is now statistically greater than it was prior to some reference time point within the last 10 to 25 years.^{1,3,4} AAFCO judges the increase in Cu content of canine liver to be well documented. However, whether this increase is a result of a change in the methods used to quantify liver Cu concentrations,^{5,6} the number of samples being analyzed within a given time interval, a change in genetic predisposition to Cu retention in certain breeds,⁷⁻¹⁰ or the Cu content and composition of commercial dog foods is unclear. Some researchers believe commercial dog food to be the predominant cause,¹ but others do not.¹¹ AAFCO is reluctant to make regulatory recommendations based on implications or associations in the absence of definitive proof of cause and effect and the need for more stringent regulation to correct or prevent a food based caused. AAFCO is also reluctant to make any of the three requested items in the Viewpoint article for the following reasons.

The Expert Panel made an extensive search of the scientific literature and confirmed that the lack of data sufficient for establishing a safe upper limit or maximum tolerance for Cu in dog foods that existed when the 2006 *Nutrient Requirements of Dogs and Cats* was published still currently exists. No scientific data on what a safe upper limit is for dietary Cu for dogs has been published since 2006 and is an area of knowledge that needs to be scientifically established. To set a maximum recommended content for Cu in dog foods at this time would be an arbitrary decision, not based on science, without any assurance that the value selected would be protective against CAH as desired.

To set the minimum requirement for Cu in diets for dogs to 0.9 mg Cu/1000 kcal of ME (3.6 mg Cu/kg DM) would make the recommended Cu content much smaller than the recommended amounts set by the National Academy of Sciences in the 2006 *Nutrient Requirements of Dogs and Cats* of 1.5 – 3.1 mg Cu/1000 kcal ME (6 – 12.4 mg Cu/kg DM) depending on the life stage of dog.¹² Setting the minimum recommended amount in combination with a maximum amount of 1.1 mg Cu/1000 kcal ME (4.4 mg Cu/kg DM) would make the risk of Cu deficiency likely, particularly for dogs in lactation and growth stages of life. To set a maximum for Cu in diets for dogs of 1.1 mg Cu/1000 kcal ME would indicate that dogs are more sensitive to Cu than sheep and that Cu is more toxic to dogs than selenium (Se), a required trace element with one of the narrowest ranges between required and toxic amounts of roughly 0.09 – 0.5 mg Se/1000 kcal ME (0.35 – 2.0 mg Se/kg DM). To date nutritional science has not shown dogs to be more sensitive to Cu than sheep or Cu to be more or as toxic to dogs as Se.

Finally, to prohibit the use in dog foods of all supplemental sources of Cu except copper oxide would effectively leave no biologically available sources of Cu for use in dog foods that might require Cu supplementation. Copper oxide is essentially nonbiologically available and will supply nothing of nutritional value to the diet or the animal. At this time AAFCO does not see the need to restrict the use of other sources of Cu in dog foods beyond any restrictions already imposed in their definitions or approvals. Manufacturers are still responsible for the safety of their marketed products and should not use excessive amounts of supplements beyond what is needed and consistent with good manufacturing and feeding practices. Until such time as science definitively shows additional controls or restrictions are needed, AAFCO feels that recommendations for Cu concentration in foods for normal dogs are appropriately and sufficiently regulated at present.



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Table 1 Members of the AAFCO Expert Panel of Copper in Dog Foods

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