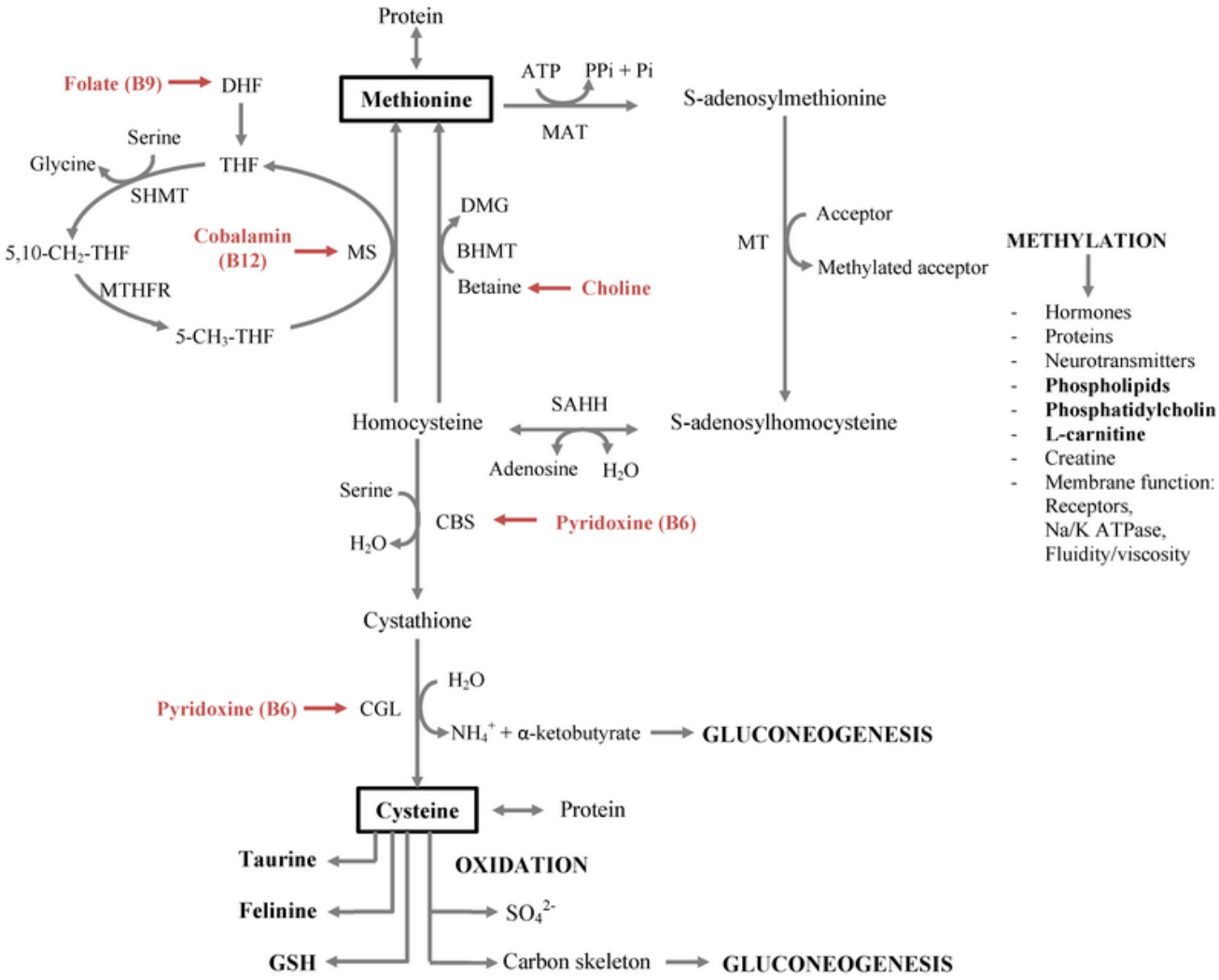
Position statement on Taurine, Grain-free and Dilated Cardiomyopathy – Hilary Watson

Taurine is <u>not</u> an essential nutrient for dogs because dogs can manufacture taurine in their bodies. Taurine is manufactured in a dog's body in a series of reactions that converts the essential amino acid methionine into cysteine which is then converted into taurine. A diet that is completely devoid of taurine (ie vegan) can meet all essential nutrient requirements for a dog as defined by both AAFCO and NRC. It is technically not possible to have a "dietary deficiency" of a nutrient that is not essential. It is possible to have a "metabolic deficiency" of a non-essential nutrient if a disease condition prevents a dog from being able to manufacture that nutrient to the level that is required for normal function.



All meats and eggs contain taurine. Meats are also high in methionine, the precursor for taurine. Peas and other legumes are relatively low in methionine and more importantly, the methionine and cystine in legumes has very poor digestibility. Studies in rats have shown that whereas the overall ***protein*** digestibility of legumes is typically over 75%, the digestibility of ***limiting amino acids*** such as methionine and cystine may be less than 50% and in some cases as low as 0% (***Sarwar & Peace, J Nutr 1986, 116, 1172–1184***). Products that use a lot of legumes instead of meat for protein may not be providing enough bioavailable methionine to meet a dog's needs. The risk of methionine deficiency is higher in diets that are lower in total protein, higher in fibre and for dogs that are consuming less than the feeding guides recommend.

There is a lot of fear-mongering and spreading of misinformation happening wrt grain-free and dilated cardiomyopathy (DCM). In my opinion, the risk is being greatly exaggerated. Between 2014 and 2019, the FDA has received 515 reports of DCM associated with grain-free diets. This sounds like a lot until you consider the market share that these diets have (ie number of dogs being fed grain-free foods) and the disease incidence of DCM (number of dogs that get DCM regardless of diet).

In 2017, grain-free diets had a 43% share of the specialty pet food market. In 2017, 44% of all dog foods sold in the US did not have any grains listed on their ingredient decks (***https://www.petfoodindustry.com/blogs/7-adventures-in-pet-food/post/7161-pet-food-ingredients-whats-hot-and-getting-hotter***). There are 77 million dogs in the US. There are literally tens of millions of dogs being fed grain-free diets. Stated another way, more than 99.9% of dogs eating grain-free diets have not developed DCM. This is why the FDA has not issued a single recall for any grain-free product.

DCM is not the same as bacterial contamination, toxic vitamin D content, or other pet food quality assurance issues. DCM is a <u>disease</u> that existed long before grain-free diets existed. The incidence of DCM in the general dog population is estimated to be between 0.5-1.1%. (***https://centredmv.com/wp-content/uploads/2013/09/Dilated-cardiomyopathies-in-dog.pdf***). Heart disease is relatively common in dogs, being the fourth leading cause of death. However, the majority of dogs with heart disease have diseases of the heart valves (murmurs) not heart muscle (DCM). An incidence of 0.5-1.1% in a population of 77 million dogs means there are currently between 385,000 and 847,000 dogs with DCM in the US. Most of those dogs will have been diagnosed in the past 5 years (ie the same time frame as the FDA report collection). If 515 of these DCM cases were being fed grain-free, what were the other 384,485 to 846,485 cases being fed? Stated another way, 0.06 to 0.13% of DCM cases diagnosed in the past 5 years were linked to grain-free food, while 99.9% of DCM cases were not.

Is it possible that DCM is under-reported in grain-free fed dogs, ie there are grain-free dogs with DCM that have not yet been diagnosed? Undoubtedly, but that is true for DCM in general – it is generally present initially without symptoms and not diagnosed until the dog shows overt signs.

While dog owners have been made aware of this situation relatively recently (FDA warning published in July 2018), veterinary cardiologists have been actively looking for grain-free-associated cases of DCM since 2014. So far they have reported 515 cases to the FDA. Even if the grain-free associated cases are under-reported by a factor of 100 (ie there are in fact 51,500 grain-free cases), this still means that 90% of DCM cases diagnosed in North America in the past five years have been in dogs not being fed grain-free diets. Every dog is being fed something. If the FDA issued a warning stating that feeding moose was associated with DCM, every one of the 385,000+ dogs diagnosed with DCM that happened to be fed moose would be reported to the FDA. Correlation does not equal causation.

Do I believe the risk is zero? No I don't. In the Golden Retriever study published by UC Davis in Dec 2018, 10 out of 24 dogs with grain-free-associated DCM were being fed ACANA Single Protein Pork and Squash. Those 24 cases were collected from 3 veterinary colleges and 11 specialty referral practices located in 9 different states and 2 Canadian provinces. What are the odds that 42% of the dogs in this study were not only fed the same ***brand***, but also were fed the same ***variety*** within that brand? ACANA Pork and Squash does not have a 42% market share. I believe this particular diet was over-represented in the Golden Retriever study because of its diet design, ie too much legume, too little protein, in 24 Goldens who were being fed significantly less than the feeding guides recommended, leading to a methionine deficiency leading to DCM in these dogs. But even in the case of this particular dog food, there are still literally thousands of dogs eating this food and that have not developed DCM. Golden retrievers have been considered an at-risk breed for taurine-deficient DCM for at least two decades.

SL Sanderson published a study 18 years ago (**Am J. Vet Res. 2001 Oct;62(10):1616-23**) in which he fed 17 Beagles a very low protein diet that met AAFCO minimums for protein, methionine and cystine. He fed the diet for four years. All dogs developed low blood taurine and two of the dogs developed DCM which he was able to reverse by supplementing with taurine. Basically, in Sanderson's study, long term feeding of a very low protein diet decreased blood taurine resulting in DCM in a minority of dogs (2/17 = 12%). This occurred in a breed which doesn't typically suffer from DCM (Beagles) and Sanderson was able to reverse the symptoms of DCM by supplementing with taurine. Sanderson concluded that with very low protein diets, methionine and cystine requirements may be higher than AAFCO minimums. This is why my HILARY'S BLEND® RENAL supplement for home-made meals (for dogs with renal disease) contains methionine and taurine, whereas HILARY'S BLEND® original supplement does not. Sanderson's test diet was not grain-free, however a similar situation may occur with grain-free foods if the amino acids are poorly digestible, as is the case with excessive use of legume proteins.

Pet food is a highly competitive market category and the large multi-national pet food companies have always been very aggressive with their marketing strategies. Grain-free diets represented 3.4 billion dollars in sales in 2017. If large multi-nationals can scare pet owners away from these

smaller brands, this represents a significant business opportunity for these multi-nationals. I believe that some of the companies and academics I have trusted in the past to provide authentic evidence-based information are actively and knowingly misrepresenting the risk in this case. Ultimately, individuals and companies that actively promote fear and spread misinformation will lose credibility and pet owner trust in the long term.

I see no risk in feeding grain-free home-made recipes, especially those that contain high quality meat or egg protein. I see no reason to supplement with taurine unless your dog has DCM and low blood taurine. I personally own a Belgian Shepherd who was diagnosed with DCM in 2008 when she was 6 months old. She is still alive today and doing very well at 11 years of age. She has never been supplemented with taurine nor has her blood taurine ever been below normal. She has been on home-made grain-free recipes for the past 10 years, ever since I first launched HILARY'S BLEND® supplement and published my dog cookbook. I have no plans to change her diet.