

A Quick Update on Taurine

A few weeks ago, I posted about taurine and, more specifically, about some breeds which might be less efficient in producing it ([you can read everything here](#)).

As taurine deficiency can lead to DCM (dilated cardiomyopathy) I think all those owning a breed at risk should assess their dogs. I eventually tested Briony and her results fell in the normal range: she eats an homemade diet and, apparently, despite my poor cooking skills, she is getting enough methionine and cysteine that she can convert into taurine.

As said above, her results are within the normal range, but I showed them to a nutritionist (Lucia Casini, Professor of Veterinary Nutrition at the University of Pisa, [School of Veterinary Medicine](#)) asking her whether Briony should benefit, like other athletes, from any taurine supplements during the hunting/shooting season and she said yes, to supplement with **500 mg a day** (she weighs around 20 kgs) in these periods.

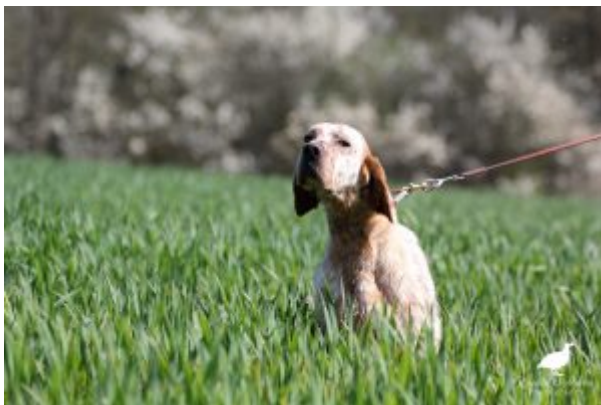
Some of the laboratories testing for taurine in Europe are: Idexx, Laboklin and San Marco.

Considering that most of my readers own working dogs ([read about the Gundog Research Project!](#)), let me also add that these athletes might need more taurine than the average dog. The web is full of articles on taurine and DCM in dogs, go and read them if you want to know more, I am just here to spread the word and raise some awareness.

Taurine, English Setters & other breeds

Last week the server crashed after I published an article on [tyrosine](#) and dark coats. I stayed away from the admin panel for ten days because I was afraid I could crash it again, but now I am back discussing another amino acid. A couple of days ago, an English Setter owner living in the USA posted on FB about her dog's being diagnosed with congestive heart failure. The dog had developed [DCM](#) (dilated cardiomyopathy) and the cardiologist suggested testing his taurine blood levels. She tested him and her other dogs and the tests confirmed that some of them had indeed very low levels of taurine. Curiously, those with lower levels were fed a grain free, high protein, trendy dog food while the other ones, eating what would be considered an "average" dog food, were doing better.

Taurine has multiple functions, as you can read [here](#), but can taurine deficiency in the diet lead to DCM? We know this can happen in cats: taurine is, for cats, an essential amino acid which means they cannot synthesize it and that it must be introduced with the diet. When it comes to dogs, instead, taurine is not considered essential as they can produce it by themselves. But... to do so, they need to convert dietary sulfur amino acids (SAA, methionine and cysteine) to taurine.



I decided to speak again with Lucia Casini, Veterinary Nutrition Professor at the [University of Pisa](#), and she

confirmed what I just wrote above, adding that a lack of methionine and cysteine could, however, cause taurine deficiency. So, are some dog foods lacking of methionine and cysteine? Maybe, or it could also be that some animals are less efficient when it comes to transforming them into taurine. There are several breeds of dogs that have a lower than normal ability to convert SAA: American Cocker Spaniels, Cocker Spaniels, Golden Retrievers, Labrador Retrievers, St Bernard, English Setters and Newfoundlands (and probably more we still do not know about). In their cases, taurine supplementation could have a preventive, rather than [curative](#) role.

So... What should we do? I think further research is needed but, personally, owning an English Setter, I am investigating on laboratories which can assess taurine levels and trying to collect information about the cost of this service. Would I advise you to do the same? Probably, and I am also wondering if other breeds, especially those related to the aforementioned breeds and those prone to DCM, should be tested: more research is certainly needed!

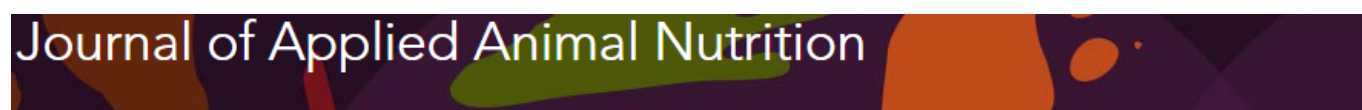
Update: in Europe at least 3 labs test for taurine in dogs: Idexx, Laboklin and San Marco. Prices are around 40-50 euros. [Update on my test here.](#)

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Own a dark dog? Read this!

Black dogs sometimes turn rusty brown. People tend to attribute this to “too much sun” but, indeed, some black dogs never turn brown, while some others are brownish all year round, winters included. I owned a black dog only for a couple of months: he was a rescued Greyhound and he was, indeed, brown but this was caused by severe anemia and leishmaniasis. We all know systemic diseases can affect coat colour, but nutrition can as well.

Yesterday, my friend Lucia Casini, who is professor of Veterinary Nutrition at the [University of Pisa](#), shared this study with me [“Tyrosine supplementation and hair coat pigmentation in puppies with black coats – A pilot study.”](#)



Article

Metrics

Volume 3 January 2015, e10

Tyrosine supplementation and hair coat pigmentation in puppies with black coats – A pilot study

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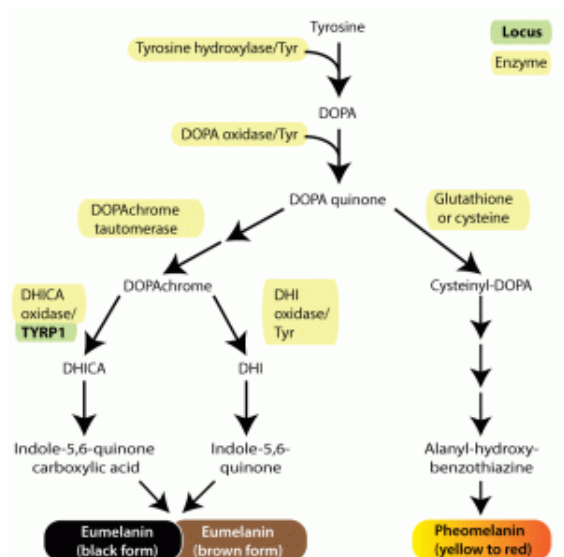
DOI: <https://doi.org/10.1017/jan.2015.8> Published online: 22 September 2015

Abstract

The appearance of a red hue to the hair in black coated cats and dogs has previously been reported as a “red hair syndrome”. Such changes in hair colour are related to an alteration in the proportions of two types of pigments produced by melanocytes; black eumelanin and brown pheomelanin. In black cats, it has been demonstrated that higher levels of phenylalanine + tyrosine (Phe+Tyr) than those recommended for growth are required to support eumelanin synthesis. The purpose of this study was to evaluate if a similar observation could be made in dogs. Twelve black coated puppies (Black Labrador retrievers and [Newfoundlands](#)) were divided into 3 groups of 4 and fed 3 diets with increasing concentrations of Phe+Tyr (A: 4 g/Mcal; B: 5.8 g/Mcal; C: 7 g/Mcal) for a period of 6 months. Quantification of plasma amino acids (Phe, Tyr, Cys) and spectrocolourimetry of hair samples from the Labrador retrievers (as the a* dimension of CIE Lab system) were performed at the beginning, during and at the end of the study. There was a significant negative linear relationship between plasma Tyr levels and a* values of hair in Labrador dogs on diets A and B, suggesting that a diet with total Phe+Tyr content of 6 g/Mcal (higher than the growth recommended allowance) was necessary to ensure an optimal black coat colour in these puppies and that levels up to 7 g/Mcal can lead to a more intense black coat colour. Moreover, similar to what was found in kittens, plasma levels of Tyr up to 54 µmol/l did not guarantee an optimal black colour coat and led to the “reddish hair” appearance in black coated puppies.

The study, as you can read in the abstract, suggests that dogs with darker coats need twice the amount of tyrosine the average dogs needs – according to the NRC guidelines.

Furthermore, the longer the coat, the higher the requirements for tyrosine. She also explained that the role of tyrosine and coat colour has been studied more in cats, but added that some commercial foods, especially those poor in proteins of animal origins, do not contain enough tyrosine for black dogs. Phenylalanine seems to play a role too and they are both essential aminoacids, hence they must be introduced through the diet.



Some biochemistry...

Meat, especially pork and poultry, is a good source of tyrosine. The National Research Council (USA) recommends: 2g of tyrosine each 1000 kcal for adult dogs and 3,5 g for puppies, but darker coated dogs requirements seem to be double.