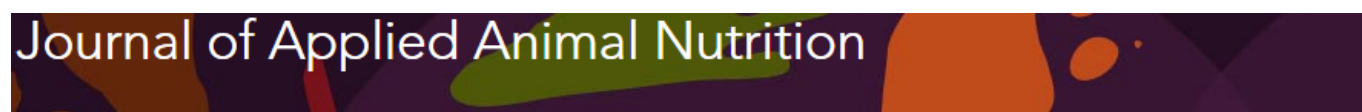


Hai un cane dal mantello scuro? Leggi qui!

A volte i cani neri diventano rossicci. Di solito si pensa che lo schiarimento sia causato dal sole ma... ci sono cani neri che non diventano mai marroni e cani neri che sono marroni tutto l'anno, anche in inverno. Ho posseduto solo un cane nero e solo per qualche mese, era un greyhound recuperato dai cinodromi e era marrone anziché nero ma questo era causato da una grave anemia e dalla leishmaniosi. Sappiamo tutti che le malattie possono alterare il colore dei mantelli, ma anche l'alimentazione!

Ieri, la mia amica Lucia Casini, che è professore di Nutrizione Veterinaria presso [l'Università di Pisa](#), a condiviso questo studio con 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

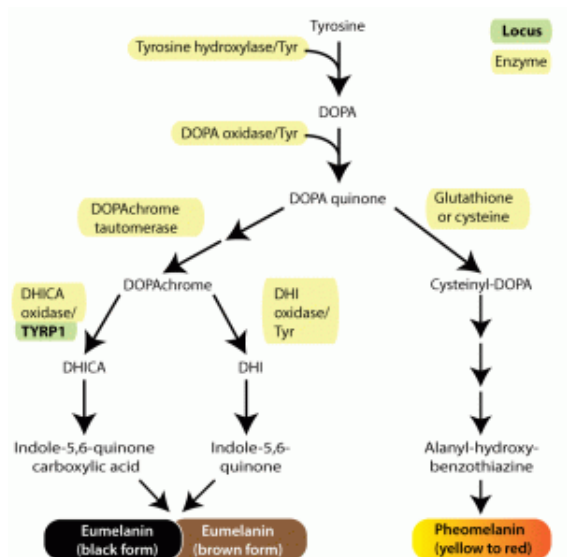
Adrian Watson ^(a1), Eric Servet ^(a1), Marta Hervera ^(a2) and Vincent C. Biourge ^(a1)

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.

Lo studio, come potete leggere nell'astratto (in inglese), suggerisce che i cani dai mantelli scuri abbiano un fabbisogno di tirosina doppio rispetto agli altri cani e rispetto a quanto indicato nelle linee guida del NRC. Lucia ha anche spiegato che il ruolo della tirosina è stato studiato in maniera più approfondita nei gatti ma che molti cibi industriali, specialmente quelli poveri di proteine di origine animale, non contengono abbastanza tirosina per i cani neri. La fenilalanina sembra anch'essa avere un ruolo ed entrambi sono amminoacidi essenziali, ovvero vanno introdotti attraverso la dieta.



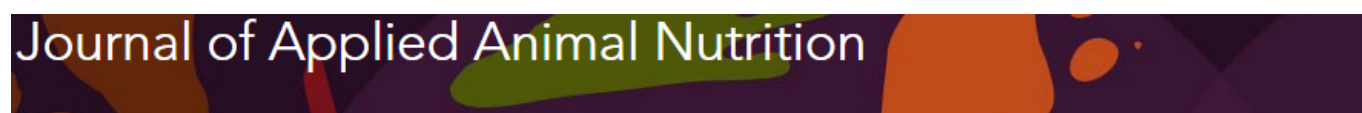
Some biochemistry...

La carne, specialmente il maiale e gli avicoli sono una buona fonte di tirosina. Il National Research Council (USA) raccomanda: 2g di tirosina ogni 1000 kcal per i cani adulti e 3,5 g per i cuccioli ma i cani dal mantello scuro parrebbero necessitare di dosi doppie.

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 known 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.”](#)



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

Adrian Watson ^(a1), Eric Servet ^(a1), Marta Hervera ^(a2) and Vincent C. Biourge ^(a1)

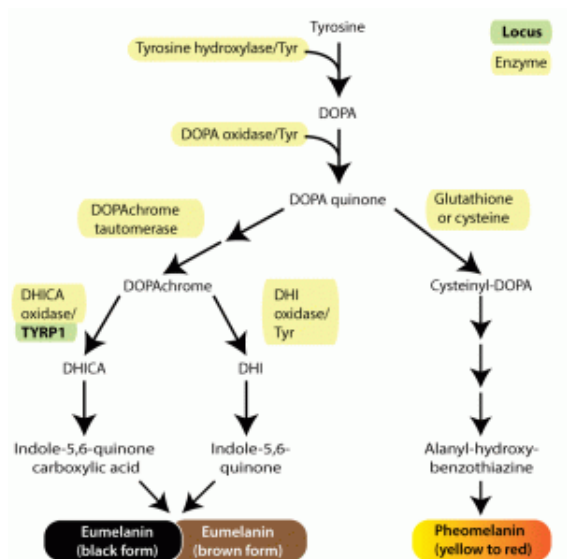
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The appearance of a red hue to the hair in black coated cats and dogs has previously been reported as a “red hair syndrome”. Such changes in hair colour are related to an alteration in the proportions of two types of pigments produced by melanocytes; 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.