

Article Review

Revealing Albinism in Turtles: About the Causative Factors

Revealing Albino in Turtles: about the Causative Factors

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Abstract

Albinism is a genetic disorder caused by a lack of melanin production for someone with a paler hair or skin colour. This article aims to uncover the factors that cause albinism in turtles. The method used is literature in the form of journals. The results of this article discuss the factors that cause turtles to become albinos. In this context of albinism often faces serious challenges in adapting to its environment due to their white skin and fur that do not provide natural protection. However, albinism can also have positive effects, such as maintaining genetic diversity in populations and attracting attention as an object of scientific research. To understand more deeply the research of albinism and the development of strategies in animals and plants, appropriate protection is needed with organisms affected by albinism.

Keywords: *Albinism, factors, animals, turtles*

Abstract

Albinism is a genetic disorder caused by a lack of melanin production, resulting in a person with paler hair or skin colour. This article aims to reveal the factors that cause albinism in turtles. The method used is literature in the form of journals. The results of this article discuss the factors that cause turtles to become albino. In this context, albinism often faces serious challenges in adapting to their environment because their white skin and fur do not provide natural protection. However, albinism can also have positive impacts, such as maintaining genetic diversity in the population and attracting attention as an object of scientific research. To better understand albinism research and develop strategies in animals and plants, appropriate protection is needed for organisms affected by albinism.

Keywords: Albinism, Factors, Animal, Turtle.

INTRODUCTION

Albinism is a phenomenon that has long fascinated scientists and nature watchers, in which an organism has a lack or absence of pigments, which produce colour in the skin, hair, eyes, or body.

It occurs in a wide range of creatures, including humans, animals and plants, and has been the subject of fascinating research in the fields of biology and ecology. In this article, we will explore the genetic and environmental factors that can cause albinism in turtles, as well as how this pigment deficiency affects the affected organisms. By better understanding albinism in different types of organisms, we can gain deeper insight into the ecological dynamics and natural adaptations involved in the changing colours and characteristics of organisms (Semedi, 2020).

Sea turtles are ectothermic (cold-blooded) animals. The development of the turtle embryo is highly dependent on external environmental conditions, and extreme conditions that can cause congenital abnormalities. Sea turtles are one of the nationally and internationally protected species. Sea turtles can be found throughout the world's oceans. According to scientists, sea turtles have existed since the end of the Jurassic period (145-208 million years ago) or the same age as dinosaurs. Sea turtles have a pair of forelimbs in the form of rowing legs that give them the dexterity to swim long distances in a short time. A distance of 3,000 kilometres can be covered in 58-73 days. Although the turtle lives its entire life in the water, it must occasionally rise to the surface of the water to take a breath. Because turtles breathe using their lungs. In the scientific classification of turtles into Kingdom Animalia, phylum Chordata, Class Sauropsida, Order Testudinata, sub order Cryptodira, and superfamily chelonioidea.

Albinism can occur due to pigmentation disorders or congenital conditions that show discolouration of certain body parts (hypopigmentation). In the congenital condition of leucism, all pigment-producing cells differentiate from the same precursor cell, which can lead to a reduction in all pigment types. As opposed to albinism, where one or more genes that produce or distribute melanin are defective (lack of pigmentation in the eyes, skin, nails), in leucism normal colour is seen in some parts of the body (such as the eyes and nails).

Leucism is generally associated with several factors that are not mutually exclusive such as pollution, diet, follicular damage, genetic mutations, lack of pigmentation and inbreeding. This albino condition can affect fitness, as colouration is an important component for survival and reproduction (mate selection) (Rodolfo, et al 2021).

IMPLEMENTATION METHOD

The method used is the literature study method. Literature study is a process of research and analysis of relevant written works in a particular field of knowledge or topic. It aims to understand, synthesise, and interpret information that already exists in pre-existing literature. Literature studies are used to support research, identify trends, develop theoretical foundations, and understand the development of knowledge in a field. In the literature study, researchers collected and presented existing information in the form of papers, scientific articles, journals, and various sources from the internet Google and Google Scholar. This research focuses on

on the factors that cause albino in sea turtles. The literature search used 2001, 2019, and 2020 articles.

RESULTS AND DISCUSSION

Based on the results of literature studies, the factor that causes albinism in sea turtles is the result of Mendel's basic recessive. From research conducted by Perrault & Coppentrath on the ratio of albino hatchlings to total eggs in green turtle cages, it is likely that albinism in sea turtles is caused by basic Mendelian recessiveness Justin Perrault and Christina Coppentrath, "Albinism in Florida green turtle (*Chelonia mydas*) hatchlings: ratio-based evidence of basic Mendelian recessiveness," Marine Turtle Newsletter 156 (15 January 2019): 38-40.. Mrosovsky (1995) states "albinism is caused by a single locus homozygous recessive allele, a cross between two heterozygous parents will result in 25% of the offspring having an albino phenotype" Fernando Madeira et al, "High Number of Healthy Albino Green Turtles from Africa's Largest Population," Marine Turtle Newsletter, 21 January 2020, 19-22.

	Mum	p Mum
Dad	PFPM (25%) normal pigment	PFPM(25%) normal pigment, carriers of albinism
p father	PFPM(25%) normal pigment, carriers of albinism	PFpM (25%) albinism

Red eyes in turtles indicate a lack of melanin pigment in the eye so that capillary blood can be seen through the retina. True albinos are easy to distinguish as they lack pigmentation and have red or pink eyes, whereas leucistic animals have reduced/absent colouration but normal eye pigmentation László Krecsák, "Albinism and Leucism Among European Viperinae: A Review," Russian Journal of Herpetology 15, no. 2 (2008): 97-102. In general, albinism in turtles is very rare. Observations of albinism in older life stages are rare (Fletemeyer 1977; Sönmez & Özdilek 2011), suggesting little to no chance of survival in turtles with abnormal pigmentation. It is understandable that this trait is not selected for in the wild as albino turtles are likely to have higher mortality rates due to their inability to camouflage José Erickson and Igor Luis Kaefer, "Multiple Leucism in a Nest of the Yellow-Spotted Amazon River Turtle, *Podocnemis unifilis*," 30 October 2015, 273-76.

CONCLUSIONS

From research conducted by Perrault & Coppenrath on the ratio of albino hatchlings to total eggs in green turtle cages, it is likely that albinism in turtles is caused by basic Mendelian recessiveness Justin Perrault and Christina Coppenrath, "Albinism in Florida green turtle (*Chelonia mydas*) hatchlings: ratio-based evidence of basic Mendelian recessiveness," *Marine Turtle Newsletter* 156 (15 January 2019): 38-40. Mrosovsky (1995) states "albinism is caused by a single locus homozygous recessive allele, a cross between two heterozygous parents will result in 25% of the offspring having an albino phenotype".

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