Equus caballus Hair as a Suture Material: Hair Color as Related to Tensile Strength

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Horse hair has the potential to be a low-cost, widely accessible suture material for the use in third world countries. Historically, horsehair was used during the Civil War and in ancient India as a wound closure. In order for horse hair to be a viable suture material, it must have a high tensile strength, reduce bleeding, and lower the risk of infection (Yedke, et al. 2013). The purpose of my project is to see if the tensile strength of horse hair changes depending on the color of the hair. To test this, we measured hair diameter using laser diffraction and measured the hairs' maximum failure load using a clamp stand and slotted weights. Our results show that there is a statistically significant relationship between hair color and tensile strength, specifically between light colored hair and black colored hair with a confidence value of alpha =0.05 . We also found that there may be a negative linear relationship between tensile strength and diameter, but there is no relationship between diameter and hair color. Our results show that hair strength may be related to the amount of melanin in the cortex of the hair, as darker colored hairs contain more melanin. In the future, this project could be expanded to explore additional factors that might be affecting tensile strength in order to determine which hair type has the ideal characteristics for use as a suture material.

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