How Does Exposure to Ultraviolet Light Denature Protein Structure?

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Denaturing proteins is a process vital to many fields of biology such as pharmaceuticals, biosensing, and synthetic biology. In order to denature proteins, however, the proteins must be exposed to a heat source. Through my experiment, I sought to discover if wavelengths from ultraviolet light could change the protein structure in eggs. Ultraviolet light is a form of radiation invisible to the human eye and doesn't give off as much heat as the average light bulb. Because of this, the basis of my investigation was if the wavelengths from UV light would denature protein structure instead of heat. The success of my experiment could lead to a more environmentally safe way to create pharmaceuticals. However, in order to collect quantitative data, I had to dilute the protein and view the absorption rate through a spectrometer. This involved mixing 1 mL of egg with 2.5 mL of sodium hydroxide then adding 2 mL of copper sulfate. After letting the solution separate, I removed 1 mL of the solution and diluted it with 4 mL of distilled water. I then calibrated the spectrometer to 540 nanometers and tested its accuracy with a 'blank' (a mixture of copper sulfate and sodium hydroxide.) After measuring the results, I recorded all the data and analyzed it. The experiment ultimately proved my hypothesis to be correct; however, the data differed from my expectations as the solution exposed to the UV light for 10 hours showed the highest absorbance.

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