

Is Your Makeup Sun Proof?

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This project was to determine whether the makeup with sunscreen, protects you from ultraviolet (UV) rays. During this experiment the UV light I used projected ultraviolet light. The material the ultraviolet light was put under was sunprint paper. The sun print paper was covered with different types of makeup brands, including sunscreen. The sunprint paper was put under the ultraviolet light to determine whether it turns dark or light. When the sunprint paper turns dark it was not protected. When it turns light it means it was protected from the rays. The sunprint paper that had cosmetic foundation came out lighter than all of the other tests. This showed that the cosmetic foundation came out to be the strongest at protecting against ultraviolet light. The sunprint paper that was covered in sunscreen came out darker than all of the other tests. This showed that this was the weakest at protecting against ultraviolet light. My hypothesis for this experiment was correct. My hypothesis was that the cosmetic foundation with sunscreen would protect the sunprint paper as much as the sunscreen would. The cosmetic foundation was stronger than the sunscreen so my hypothesis was correct.

Introduction

Have you ever wondered if your makeup protects you from UV rays. Some people might think that your makeup product with sunscreen in it is a substitute for sunscreen. The sun projects uv light that humans should not be exposed to for to long. UV light is what causes skin cancer or premature aging. If you wear sunscreen every time you go outside on a sunny day your skin won't be exposed to UV light. This is because the sunscreen rejects the uv light, so the UV light won't cause skin cancer or old age wrinkles. When you are wearing sunscreen you can go outside as long as the sunscreen recommends, and it will protect you from the UV light. Maybe even your cosmetic foundation with sunscreen might protect your skin! This topic is important because this is experiment can help you protect your skin. Being exposed to UV light can be dangerous, so you would want to know if you are protected. If your makeup product with sunscreen actually protects your skin you'll be fine, and you'll look amazing. My research question is "Does your cosmetic foundation protect you from ultraviolet rays?"

Research

Sunscreen was first invented by a man named Franz Greiter. Greiter was a chemistry student who got burned while climbing a mountain. He made a solution for not getting sunburned (sunscreen). Soon after Franz Greiter's invention, Benjamin Green, made the first sunscreen in 1938. Soon after Franz Greiter's invention Benjamin Green invented another kind of sunscreen made out of red vet pet. Red vet pet was Benjamin Green's way of making sun block. He used his sunblock to protect his soldiers from the sun during World War II. Red vet pet is made up of cocoa butter and red veterinary petrolatum. He invented this sun block in 1944.

Sunscreen contains organic and inorganic chemicals; with inorganic sunscreen the UV ray light bounces off your skin, and with the organic chemical absorbs the UV ray light. Both of these chemicals help your skin not get affected by UV ray light. Sunscreen provides a barrier which prevents the UV rays from penetrating the skin. Sunscreen also provides resistance to being washed off of your skin.

The whole point of sunscreen is to block your skin from UV rays. Ultraviolet light, this is a type of electromagnetic radiation that makes black light posture glow. Ultraviolet light is the light that can cause living tissue damage, sunburn, or problems to your eyes, they can even cause weakened immune systems. Ultraviolet light can also cause premature aging of the skin. Even though Ultraviolet light causes all of these problems, Ultraviolet light is impossible to see through human eyes. Ultraviolet light falls into the range of the Em spectrum between visible light and X-rays. There are many kinds of Ultraviolet light such as; UVA, UVB, and UVC. UVC is the most powerful ultraviolet radiation, but it is blocked by the earth's atmosphere. UVB is the second strongest but humans don't get a lot of UVB so it does not penetrate the skin. Lastly, UVA is strong, but it is not as strong as UVB or UVC, but we humans still get a lot of it on our earth. Since UVA is the only ultraviolet light we get on earth we do all we can to stop it from penetrating the skin.

Experiment

The independent variable for this experiment is the different kinds of makeup products. The dependent variable is does the sunprint paper get darker or lighter when it is protected with different kinds of protection. My hypothesis was that the cosmetic foundation would work the same as sunscreen that is not in any kind of cosmetics. The constant for this project is; the type of UV light, the amount of UV light, the amount of time we exposed the paper to the UV light, the size of the paper, and the type of paper. The controlled factor was putting the sunprint paper under the UV lamp without any kind of makeup on it. Finally the uncontrolled factors were; getting the paper out of the light at the same exact time, and the amount of cosmetic foundation or sunscreen that was rubbed onto the acrylic block.

Procedure

For this experiment these materials were needed:

- Photo paper
- UV ray lamp
- Cosmetic foundation with an SPF rating of 55
- Cosmetic foundation
- Sunscreen with an SPF rating of 50
- Pencil
- Acrylic block, 4 inches by 4 inches

First these materials were acquired; a 3 inch by 3 inch piece of sun print paper, 350-410 nm UV lamp, cosmetic foundation that has an SPF rating, a 4 inch by 4 inch clear plastic block. First the UV lamp was set up but left off. Then the piece of sun print paper was placed under the lamp. After that, the foundation

with sunscreen was rubbed onto the clear plastic block. The clear plastic block was then placed on top of the sun print paper with the foundation facing up. The lamp was turned on. After five minutes was up the light was turned off and the sun print paper was taken out from under the lamp. Immediately, the sun print paper was rinsed in cold water. Afterward, the sun print paper was labeled trial one. This process was repeated four more times with the exception that each new sunprint paper was labeled two, three, four, and five.

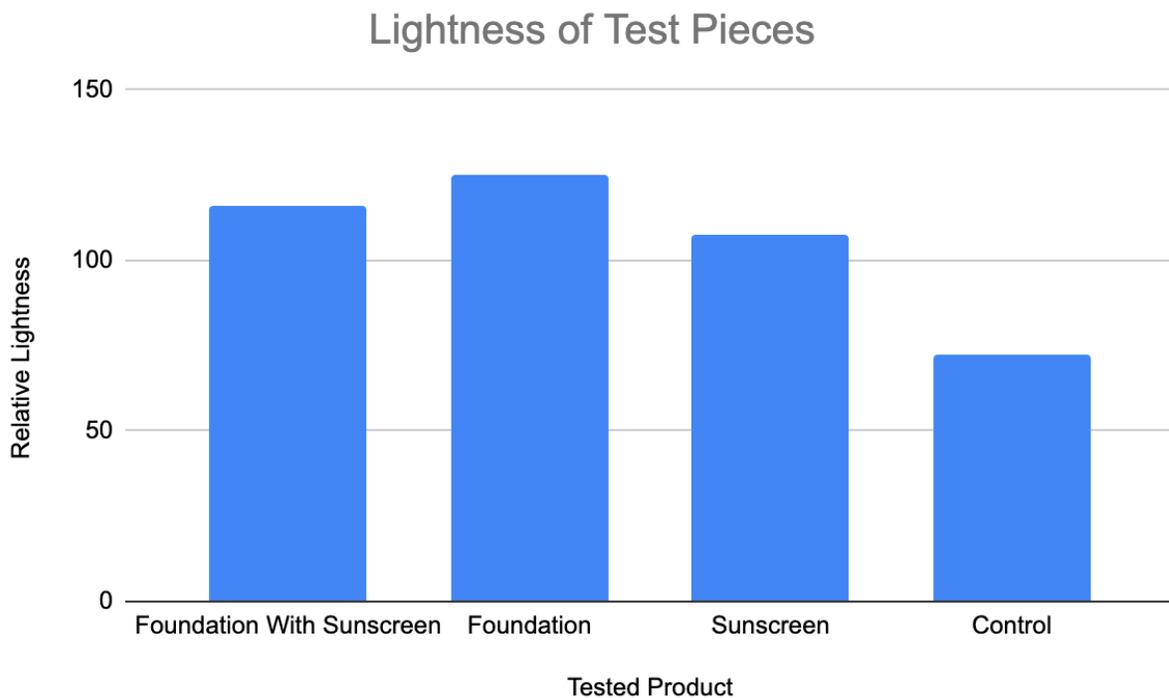
First these materials were acquired; a 3 inch by 3 inch piece of sun print paper, a 350-410 nm UV lamp, cosmetic foundation with no SPF rating, a 4 inch by 4 inch clear plastic block. First the UV lamp was set up but left off. Then the piece of sun print paper was placed under the lamp. After that, the foundation without sunscreen was rubbed onto the clear plastic block. The clear plastic block was then placed on top of the sun print paper with the foundation facing up. The lamp was turned on. After five minutes was up the light was turned off and the sun print paper was taken out from under the lamp. Immediately, the sun print paper was rinsed in cold water. Afterward, the sun print paper was labeled trial six. This process was repeated four more times with the exception that each new sunprint paper was labeled seven, eight, nine, and ten.

First these materials were acquired; a 3 inch by 3 inch piece of sun print paper, a 350-410 nm UV lamp, sunscreen with an SPF rating of 50, a 4 inch by 4 inch clear plastic block. First the UV lamp was set up but left off. Then the piece of sun print paper was placed under the lamp. After that, the sunscreen was rubbed onto the clear plastic block. The clear plastic block was then placed on top of the sun print paper with the sunscreen facing up. The lamp was turned on. After five minutes was up the light was turned off and the sun print paper was taken out from under the lamp. Immediately, the sun print paper was rinsed in cold water. Afterward, the sun print paper was labeled trial eleven. This process was repeated four more times with the exception that each new sunprint paper was labeled twelve, thirteen, fourteen, and fifteen.

First these materials were acquired; a 3 inch by 3 inch piece of sun print paper, a 350-410 nm UV lamp, a 4 inch by 4 inch clear plastic block. First the UV lamp was set up but left off. Then the piece of sun print paper was placed under the lamp. After that, the clear plastic block was then placed on top of the sun print paper. The lamp was turned on. After five minutes was up the light was turned off and the sun print paper was taken out from under the lamp. Immediately, the sun print paper was rinsed in cold water. Afterward, the sun print paper was labeled trial sixteen. This process was repeated four more times with the exception that each new sunprint paper was labeled seventeen, eighteen, nineteen, and twenty.

Results and Analysis

Data and observations



The results for this experiment were surprising. After the sunprint paper was put under the ultraviolet light the foundation came out lighter than any of the other test's. The sunprint paper that was smeared with foundation had a rating of 125.071. This rating was higher than all of the others. The sunprint paper that was smeared with foundation with sunscreen had a rating of 115.739. This rating was surprising because I expected the sunscreen to turn out lighter than the foundation with sunscreen, but it only had a rating of 107.576. While the sunprint paper with sunscreen was drying it looked lighter than all of the others, so I expected this one to have the highest rating. What could have affected the results is the amount of protection that was applied to the acrylic block. Since it is impossible to get the same amount of coating on the acrylic block throughout the whole experiment I had to guess. Guessing might have made one test thicker

than the others or the other way around. Having one test thicker or thinner than the others would have affected the results because it might be that the sunscreen was stronger than all of the others, but it only had a thin layer. Having a thin layer would have made the sunprint paper darker, and when the sunprint paper is darker it means that it was not protected from the UV rays. Another way the experiment could have been affected is by how much light it gets from when it is out from the UV lamp. When using sunprint paper you put the paper under water immediately so it does not get affected by other light. Again you are unable to take the paper, and put it under water at the exact same time as you did for the others. The last reason why the results came out surprising was because the sunscreen only had a spf rating of 50. The cosmetic foundation had a spf rating of 55. Having this difference would seem small, but this might have been the main reason why the cosmetic foundation with sunscreen came out lighter than the sunscreen. Having a rating tells you how strong the sunscreen is, and so the sunscreen was weaker than the sunscreen that was in the cosmetic foundation. Being weaker would have made the sunscreen have a lower result than the cosmetic foundation.

Conclusion

_____ My hypothesis for this experiment was correct. The cosmetic foundation protected the sunprint paper as much as the sunscreen did. If I were to do this experiment again I would have used the same rating for the cosmetic foundation with sunscreen and sunscreen that is not in any kind of cosmetic. I would also use different brands of makeup products and sunscreen products. If I were to continue this experiment I would get the same type of makeup brands, but testing them at different times. I would do them at different times so I know that This experiment is important because it can let the world know that even if they wear foundation with sunscreen they would be protected. They would not have to worry about getting sunburned or internal damage.

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