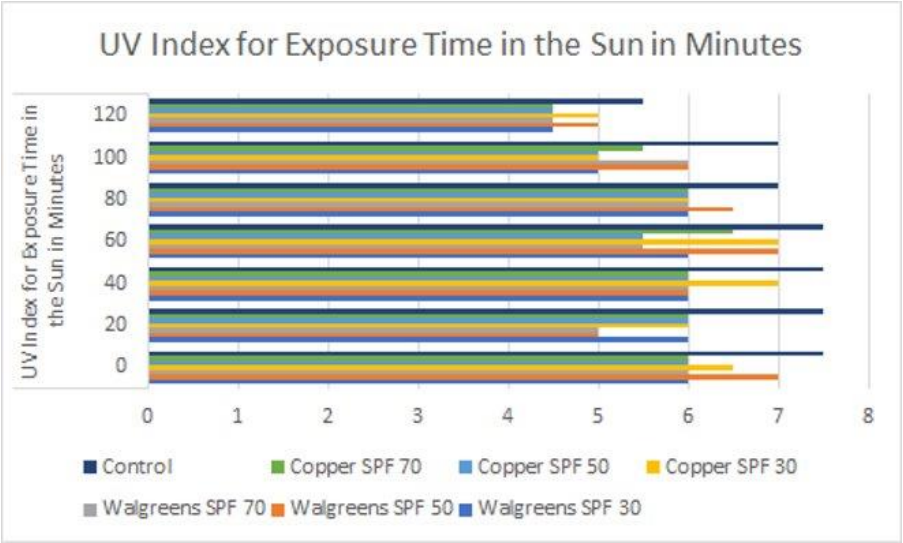
The Change in Sunscreen Effectiveness Over Time

Research Question

How do different mixtures of sunscreen reduce the effects of UV radiation and how much do the sunscreens block?

Results of testing



Procedures

1. Sunscreen was spread on a microscope slide using a Q-tip until it was clear for each sunscreen. One slide was left clean to act as the control group.
2. All 7 slides were set on the box in the sun.
3. A timer was set every 20 minutes.
4. At 20, 40, 60, 80, 100, and 120 minutes (about 2 hours), a UV sensor was used to record the UV rating for each slide and each slide was placed back on the box in the sun for the next interval.

Conclusion

Even with the data that was collected, the time period was not big enough to prove anything significant other than the fact that the sunscreens proved to work somewhat against UV light.

Background Information

- The goal of sunscreen is to reflect and scatter UV
- Sunburns are the strongest risk factor for melanoma and non-melanoma skin cancers

Research Question

How do different mixtures of sunscreen reduce the effects of UV radiation and how much do the sunscreens block?

Hypothesis

I Hypothesis that the sunscreens with higher sun protection factors are more likely to block more UV light than the other sunscreens.

Variables

The independent variable is the brand of sunscreen

The dependent variable is the density of UV light that is not blocked.

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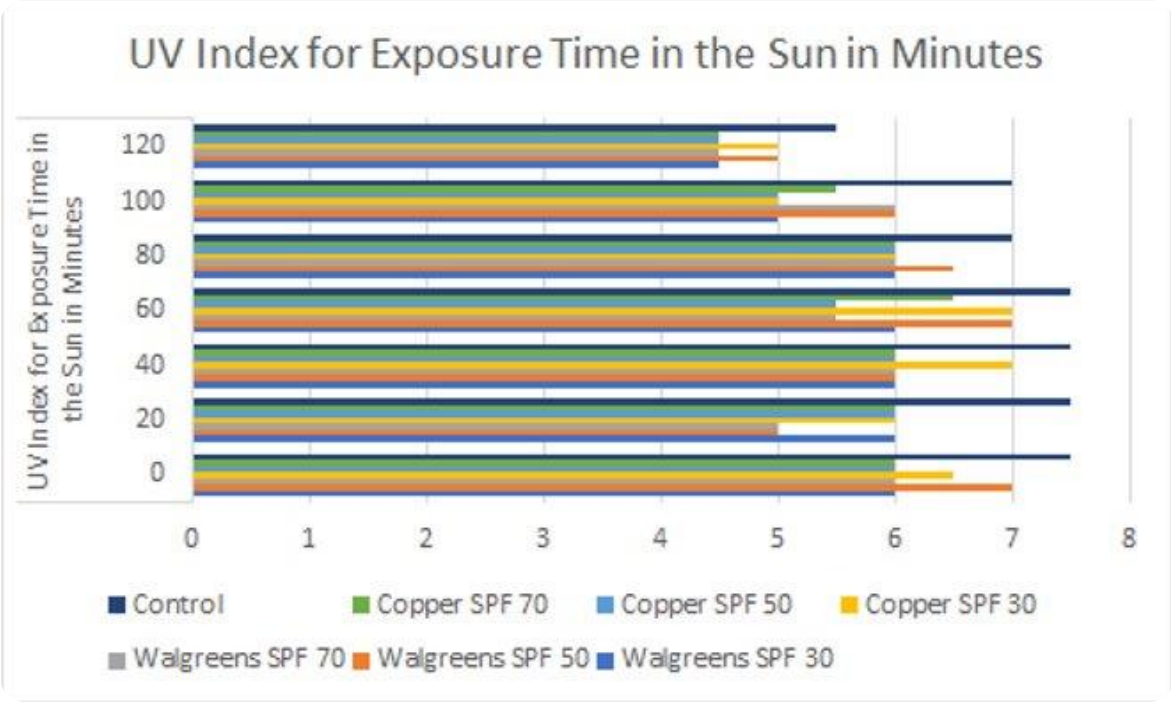
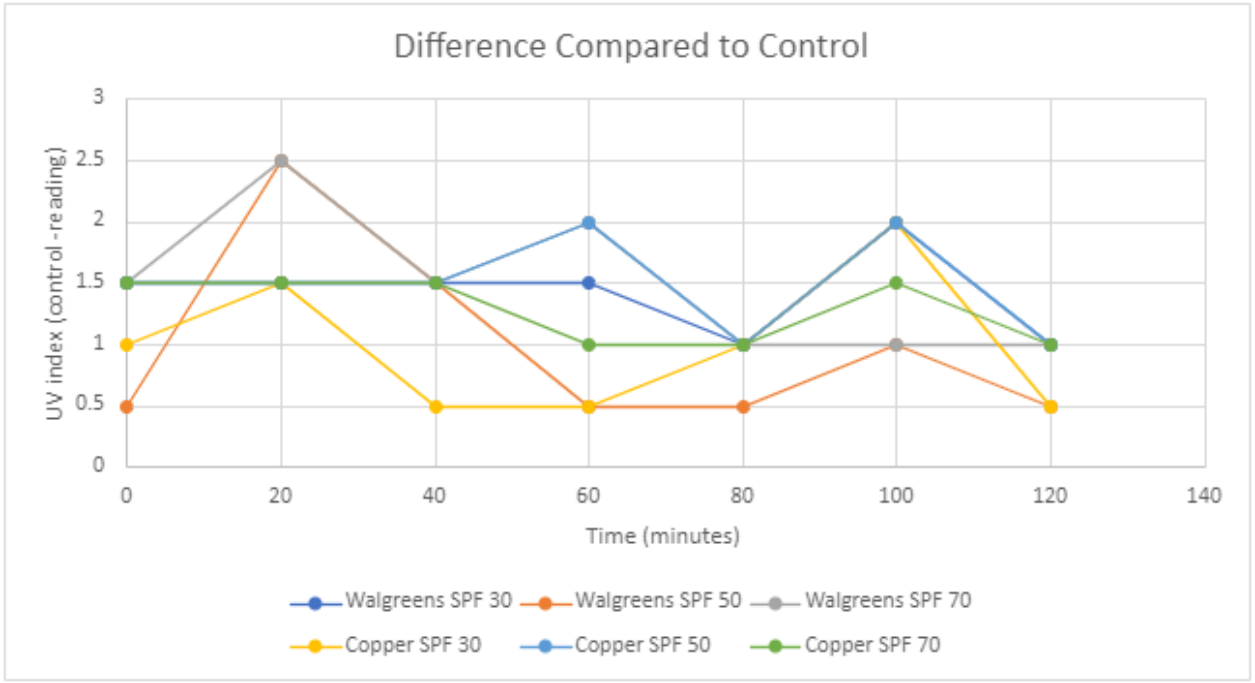
Results

- 7 slides were analyzed over a 2-hour span
  - 6 of the slides contained different brands and SPFs of sunscreens
  - 1 slide was left as a control group



The test readings were subtracted from the control to account for the sun's change in intensity over time.



Conclusion

Even with the data that was collected, the time period was not big enough to prove anything significant other than the fact that the sunscreens proved to work somewhat against UV light.

Discussion

The testing period was too short for any good data to be found

The microscope slides reduced the actual reading by 0.5

The reading was somewhat inconsistent when data was being recorded

Citations

- Le Thi Nhu Ngoc, Vinh Van Tran, Ju-Young Moon, Minhe Chae, Duckshin Park, Young-Chul Lee (2019). Recent Trends of Sunscreen Cosmetic: An Update Review. Chemistry, 64, 2079-9284. https://doi.org/10.3390/cosmetics6040064
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