

Title: Protecting Your Largest Organ

Research Question: Which suntan lotion SPF 30 is most effective? To explore the implications of this question, the UV index will be measured for each brand. The lower the UV index, the better protection from the sun's harmful rays.

Hypothesis: All brands are equally effective.

Equipment:

- 1) Pasco wireless light sensor
- 2) Computer
- 3) 4 types of suntan lotion SPF 30—we used Hawaiian Tropic Island Sport, Equate Sport, Banana Boat Sport, and Coppertone Sport
- 4) Microscope slides with coverslips
- 5) Chair to place sensor on to make sure it's level
- 6) Beryll pipet for each lotion

Procedure:

- 1) Make sure the wireless light sensor is bluetooth-paired with a laptop.
- 2) Select the UV index option.
- 3) Make sure the ambient sensor is level on the chair facing upward and is not blocked by a shadow.
- 4) Press start and measure the UV index using the ambient light sensor for approximately 10 seconds. Repeat for a total of 3 runs.
- 5) Place a slide with a coverslip over the ambient sensor on the level chair. Make sure the coverslip is in direct contact and totally covers the sensor opening.
- 6) Press start and measure the UV index for approximately 10 seconds. Repeat for a total of 3 runs.

7) Place one drop of Banana Boat on a slide with a coverslip. Make sure the coverslip is in direct contact with the sensor and totally covers it on the level chair. Press start and measure the UV index for approximately 10 seconds. Repeat for a total of 3 runs.

8) Repeat step 7 using the other 3 types of sunscreen.

Data: Sun Only Graph: Minimum: 3.13, Max: 3.16, Mean: 3.15

Control using slide and cover: Minimum: 2.78, Max: 2.80, Mean: 2.80

Banana Boat: Minimum: 1.61, Max: 1.64, Mean: 1.62

Coppertone: Minimum: 1.45, Max: 1.49, Mean: 1.47

Equate: Minimum: 1.42, Max: 1.49, Mean: 1.45

Hawaiian Tropic: Minimum: 1.46, Max: 1.56, Mean: 1.51

Analysis: The Equate brand offers the most protection from UV rays (Mean=1.45). However, the Banana Boat product exhibited more consistent protection (Minimum: 1.61, Max: 1.64). We noticed that the Coppertone product had the thickest texture. As a result, we had difficulty making sure the sample size was uniform compared to the other three brands.

Conclusion: Based on the data, our hypothesis was not confirmed. The Equate brand provides the best UV protection for your money. The Banana Boat product did seem to provide more consistent protection overall.