

Which Lip Balm Is The Most Effective?

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Abstract

I have always had chapped lips and was curious which one was the most sterile and which one had the most benefits. So I decided to test five different brands of lip balm to see which one has the most benefits. I tested the Sun Protectant Factor, moisture barrier, and if any of them grew bacteria. I tested if any of them grew bacteria by swabbing each lip balm brand new, used on silicone tape, and used once on my lip. I tested the moisture barrier by putting fabric on a tube and putting lip balm on the fabric. Then after three days I measured the distance from the beginning water level and the current water level. I tested the SPF effectiveness by putting beads in a 3D printed dish and putting a petri dish lid covered in the lip balm and taking it outside. Then I had some of my neighbors rate each one out of five, one being the lightest and five being the darkest.

Purpose

Is lip balm as good as it claims to be? Does its sun protection factor (SPF) have real value? Are the moisture barriers as good as they say? Or is lip balm a bacteria growing environment we rub on our lips every day?

Hypothesis

If I test different brands of lip balms moisture barrier, SPF value, and if it grows bacteria then the Blistex lip balm will do the best compared to other brands because it's advertised as a very medicated lip balm.

Materials

- Blistex SPF 15 Deep Renewal Lip Protectant
- Burt's Bees Lip Balm
- eos Natural SPF 15 Lip Balm- Pineapple Coconut, Daily Protection, Water Resistant, SPF Lip Balm, Moisturizing SPF 15 Lip Care
- NIVEA Smoothness Lip Care, Sunscreen Lip Balm with SPF 15 Broad Spectrum, Shea Butter, Nourishing Oils and Vitamin C & E
- ChapStick Moisturizer Original Lip Balm Tubes, SPF 15 and Skin Protectant
- Silicone Scar Tape
- Petri dishes
- Neutrogena Ultra Sheer Stick Sunscreen for Face SPF 60
- Five ml tubes
- UV color changing beads
- 3D printed dishes

Procedures 1

SPF Test

- Put five beads in each 3D printed dish, which are on a tray, and put the clear petri dish lids on the dishes.
- Spread the lip balm evenly on the top of each petri dish lid and let the SPF activate in the dark for fifteen minutes
- Put a box on top of the tray to keep the UV rays away and take it outside
- Start the timer as soon as you take the box off of the tray
- Have a certain amount of people come and rate each dish of beads out of five, five being the darkest and one being the lightest

Procedures 2

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Moisture Barrier test

- Place thirty-three 5 ml tubes in a tube holder
- Put 4 ml of water in each tube and mark where the water level is on each one
- Secure a piece of cotton fabric on the top of the tube with a rubber band and leave two with nothing on them for controlled variables
- Spread each lip balm on the piece of fabric on top of three tubes
- Leave one tube with the lid on, leave one with nothing on top of it, and leave one with just the fabric, no lip balm on it, for three controlled variables
- Watch over the next three days and measure the distance from where the water level dropped to where it began

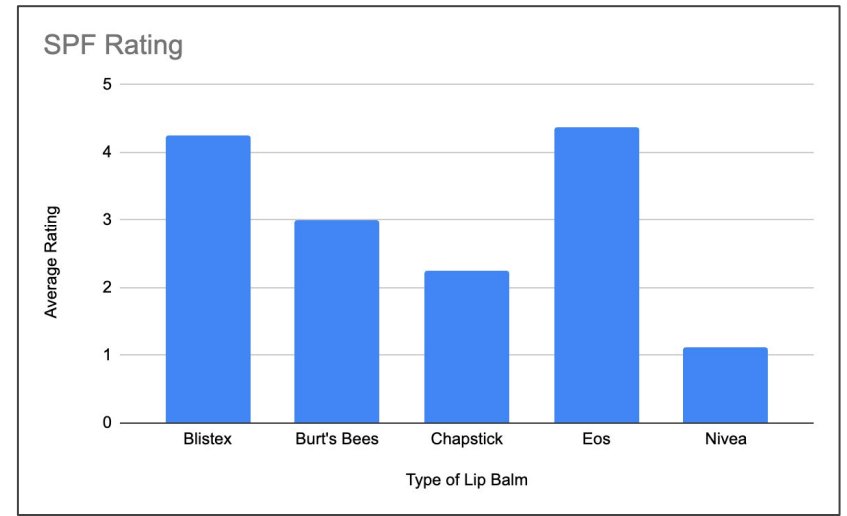
Procedures 3

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Bacteria Tests

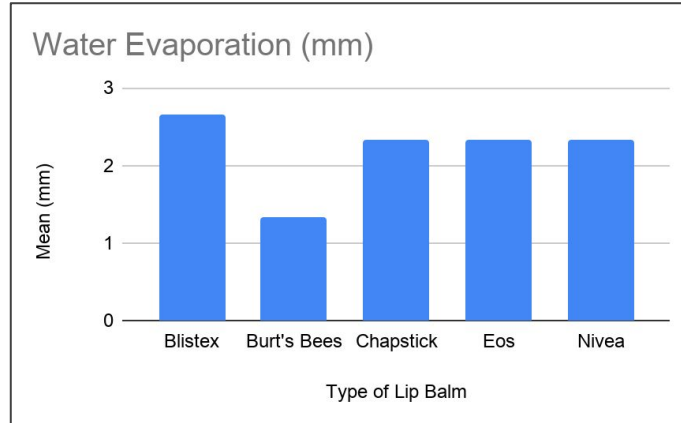
- Swipe one of each lip balm straight out of the package on an agar plate
- Take pictures and record data the next day
- Then use those lip balms on their own piece of silicone tape twice a day for five days
- At the end of the five days swipe each used lip balm on an agar plate
- Take pictures and record data the next day
- Use each lip balm on one part of your lip and be careful not to mix them together
- Swipe each lip balm on their own agar plates
- Take pictures and record data the next day.

Graph And Table (SPF Test)



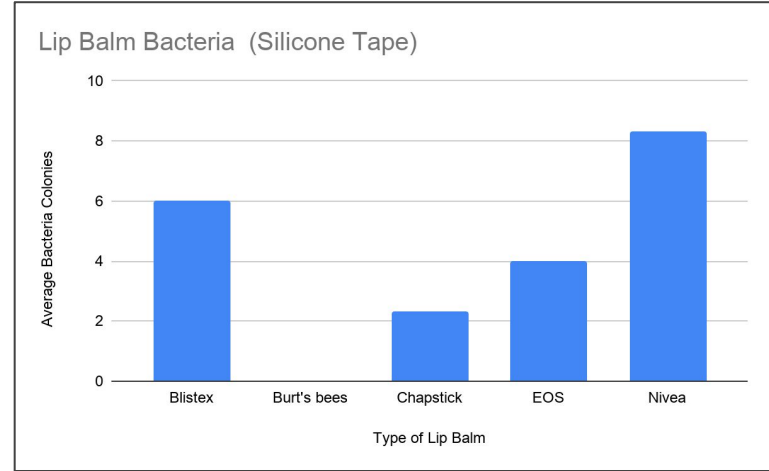
	Average	Standard Deviation	Person 1	Person 2	Person 3	Person 4	Person 5	Person 6	Person 7	Person 8
Blistex	4.25	1.035098339	5	4	5	2	5	4	5	4
Burt's Bees	3	0.755928946	4	3	2	4	2	3	3	3
Chapstick	2.25	0.707106781	2	2	3	3	3	2	1	2
Eos	4.375	0.744023809	1	3	5	4	5	4	5	4
Nivea	1.125	0.353553390	6	1	1	1	1	1	1	2

Graph And Table (Moisture Barrier Test)



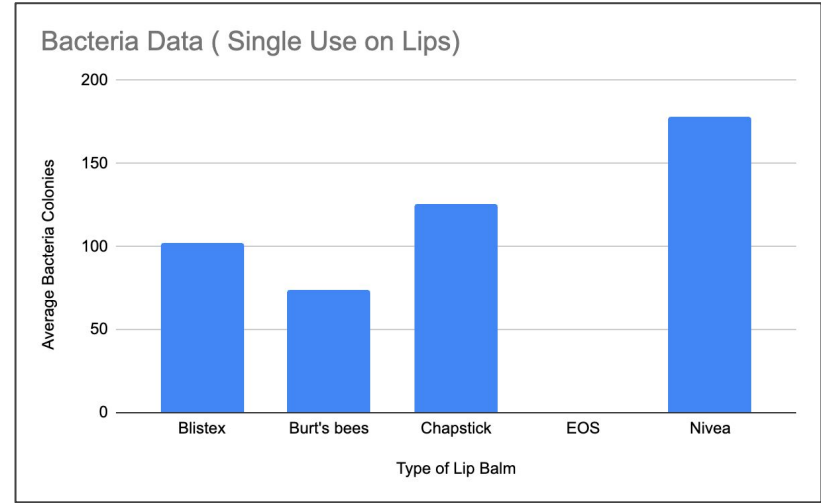
	Blistex	Burt's Bees	Chapstick	Eos	Nivea	Control Negative	Control Positive (open)	Control Positive
Mean (mm)	2.666666667	1.333333333	2.333333333	2.333333333	2.333333333	1	3	3
Tube 1	3	1	2	3	3	1	3	3
Tube 2	3	1	3	2	2			
Tube 3	2	2	2	2	2			
Standard Deviation	0.1924500897	0.1924500897	0.5091750772	0.5091750772	0.5091750772			

Graph And Table (Bacteria Test 1)



	Average	Standard deviation	Plate 1	Plate 2	Plate 3	Sum
Blistex	6	9.539392014	0	17	1	18
Burt's bees	0	0	0	0	0	0
Chapstick	2.333333333	4.041451884	7	0	0	7
EOS	4	6.92820323	0	0	12	12
Nivea	8.333333333	6.506407099	15	8	2	25
Negative Control	0		0			
Positive	0		0			
Positive (Rat)	0		0			

Graph And Table (Bacteria Test 2)



	Average	Standard deviation	Plate 1	Plate 2	Plate 3	Sum
Blistex	102	61.79805822	172	79	55	306
Burt's bees	74	39.03844259	72	36	114	222
Chapstick	125.3333333	22.03028219	148	104	124	376
EOS	0	0	0	0	0	0
Nivea	178	103.7111373	164	288	82	534
Negative Control	0		0			
Positive	0		0			

Analysis

My hypothesis was not supported. There was no clear lip balm that was the best. This data says that overall each of the lip balms had different strengths and weaknesses. Burt's Bees for example didn't grow a lot of bacteria but didn't do so well in the SPF test. Nivea on the other hand grew the most bacteria but did really well in the SPF test. Blistex didn't seem to have a lot of strengths, it wasn't the worst but definitely not the best. Based on the data I would recommend the Burt's Bees because it has a good moisture barrier based on the others, it didn't grow a ton of bacteria, and the SPF wasn't the worst, it was in the middle.

Error And Future Experiments

During the SPF test each participant rated the beads at different times within a ten minute period and the Sun was setting so that could've changed the amount of UV rays that the beads were getting.

For my future experiments I would like to try different brands of lip balms with different amounts of SPF. I also wonder if trying lip oil instead of balm would change the results.

Works Cited

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