

THE MATERIALS

- 0.3G HYALURONIC ACID SAMPLES X3
- DRYING OVEN
- FILTER PAPER X3
- 500ML ERLLENMEYER FLASK
- 3 BEAKERS (5ML, 30ML, 300ML)
- CORR RINGS X3
- DISTILLED WATER (5ML, 30ML, 300ML)
- SCALE
- METAL SPATULAS X3
- FUME HOOD
- WATCH GLASSES X3
- TONGS

INTRODUCTION

The world of cosmetology is often found bobbing about with claims untested. One such statement is the long-held belief that hyaluronic acid can absorb one thousand times its molecular weight in water.

Despite journalists, cosmetic companies, and plastic surgeons alike repeating it, there is no scientific literature that proves truth behind such a powerful—and marketable—assertion. The only studies done thus far consist of hyaluronic acid cross-linked with other moisture-absorbing compounds (Xue, Y. et al). When studying elaborate mixtures of molecules rather than hyaluronic acid in isolation, customers believe every product featuring the ingredient will create the same extreme result. Hyaluronic acid is not one molecule with special powers, but rather a small piece of complex systems chemists can create, which not all brands will repeat (Khunmanee, S., Jeong, Y., & Park, H.). Establishing a value for unaltered hyaluronic acid in scientific literature could send marketers in the cosmetic industry into uproar, as well as potentially changing the messages audiences receive online.

Approach carefully and always wear protective gear before interacting with potentially dangerous chemicals, for what lurks behind the headlines could prove unexpected.

SOCIOPOLITICAL COMPONENT

Cosmetic companies are a commercialized vacuum of systemic and personal reactions toward aging. Current beauty standards come from the wealth disparity, as rich people can afford the most effective cross-linked forms of hyaluronic acid, whilst the rest of the country resorts to purchasing a product without the ability to verify its virtue, even going to such lengths as obtaining hyaluronic-acid based filler from dubious online retailers. People fall victim to ageism and pressure which leaves them isolated and suffering from visceral self-hatred. This poster has a reference to *The Substance* (2024), which gained worldwide acclaim because it illustrated how the fear of aging and pursuit of beauty comes from the external, not just the internal. The characters watch themselves fail continuously to be accepted and risk becoming invisible to their community. The film reflects the real experiences of people and their relationship to themselves. This is not vanity; it is politics.

THE TRUTH

EXAMINING THE ABSORPTION CLAIM

ABOUT COSMETIC HYALURONIC ACID

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THE SUBSTANCE IS HYALURONIC ACID - WILL IT CHANGE YOUR LIFE?

RESULTS FROM THE LAB

Sample	HA Weight (g)	Water Amount (mL)	HA Post Absorption (g)	xlt's Weight in Water	Claim Was Correct
1	0.3	3	3	10	NO
2	0.3	30	0	0	NO
3	0.3	300	0	0	NO

Figure 1: Tracking the capability of three hyaluronic acid samples to absorb water. Sample 1 was set in a beaker with 3mL of water, Sample 2 was set in 30mL of water, and Sample 3 was set in 300mL of water. Sample 1 absorbed all 3mL of the water, meaning the acid only absorbed 10x its weight. Samples 2 and 3 did not absorb any of the water; thus, the results do not correspond to the claim when studying the molecule in isolation.

ACID ABSORPTION PER SAMPLE

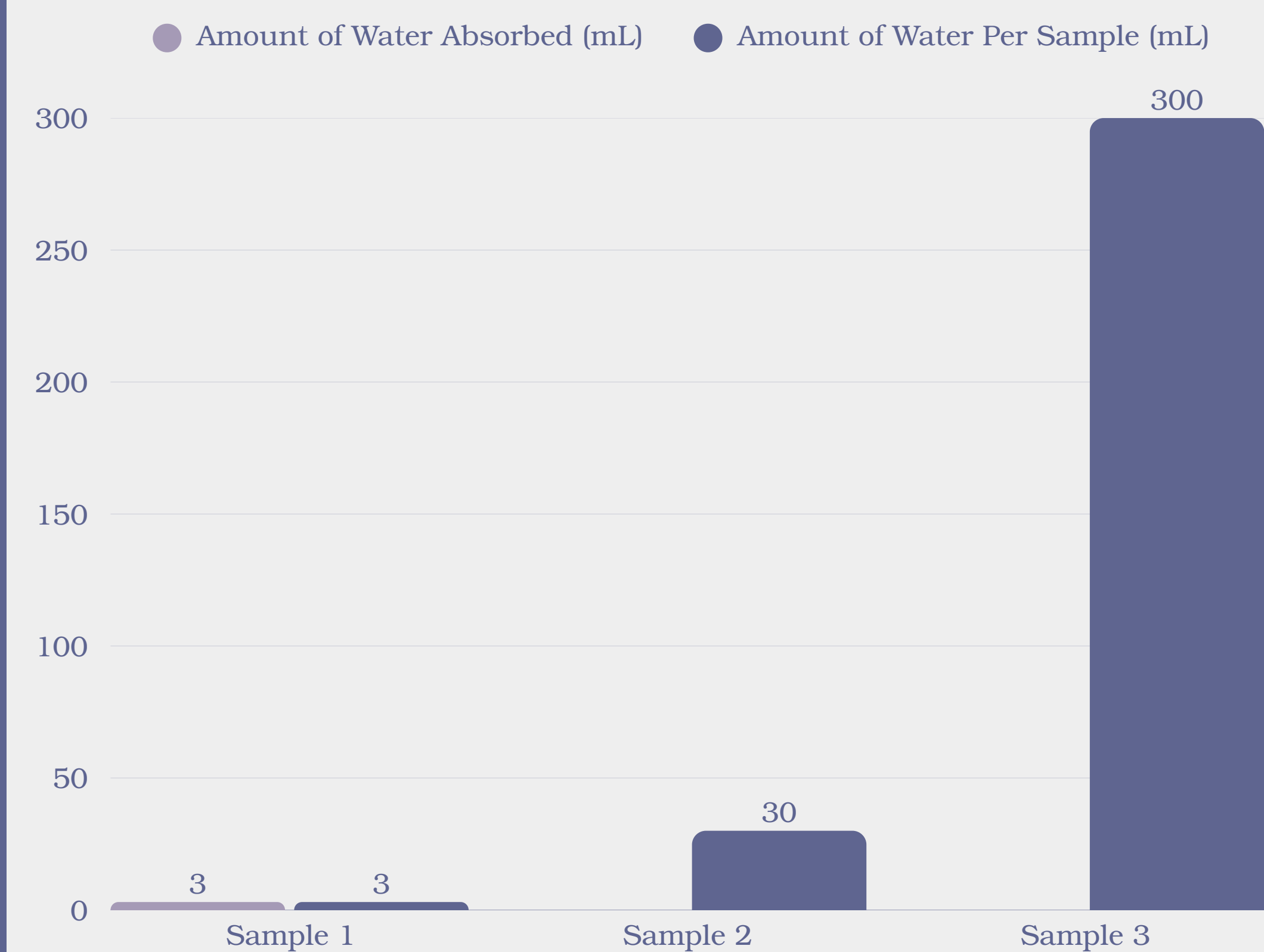


Figure 2: The bar chart shows the amount of water each hyaluronic acid sample absorbed layered beside the total amount of water given to the three samples. Sample 1 had 3 mL of water, and the 0.3 g of hyaluronic acid absorbed all 3 mL. Sample 2 had 30 mL of water and absorbed none of the water. This was also the case for Sample 3, which had 300 mL of water. If the water per sample exceeded 3 mL, then the hyaluronic acid sample did not absorb, instead homogenizing.

TREND OF TOTAL ABSORPTION

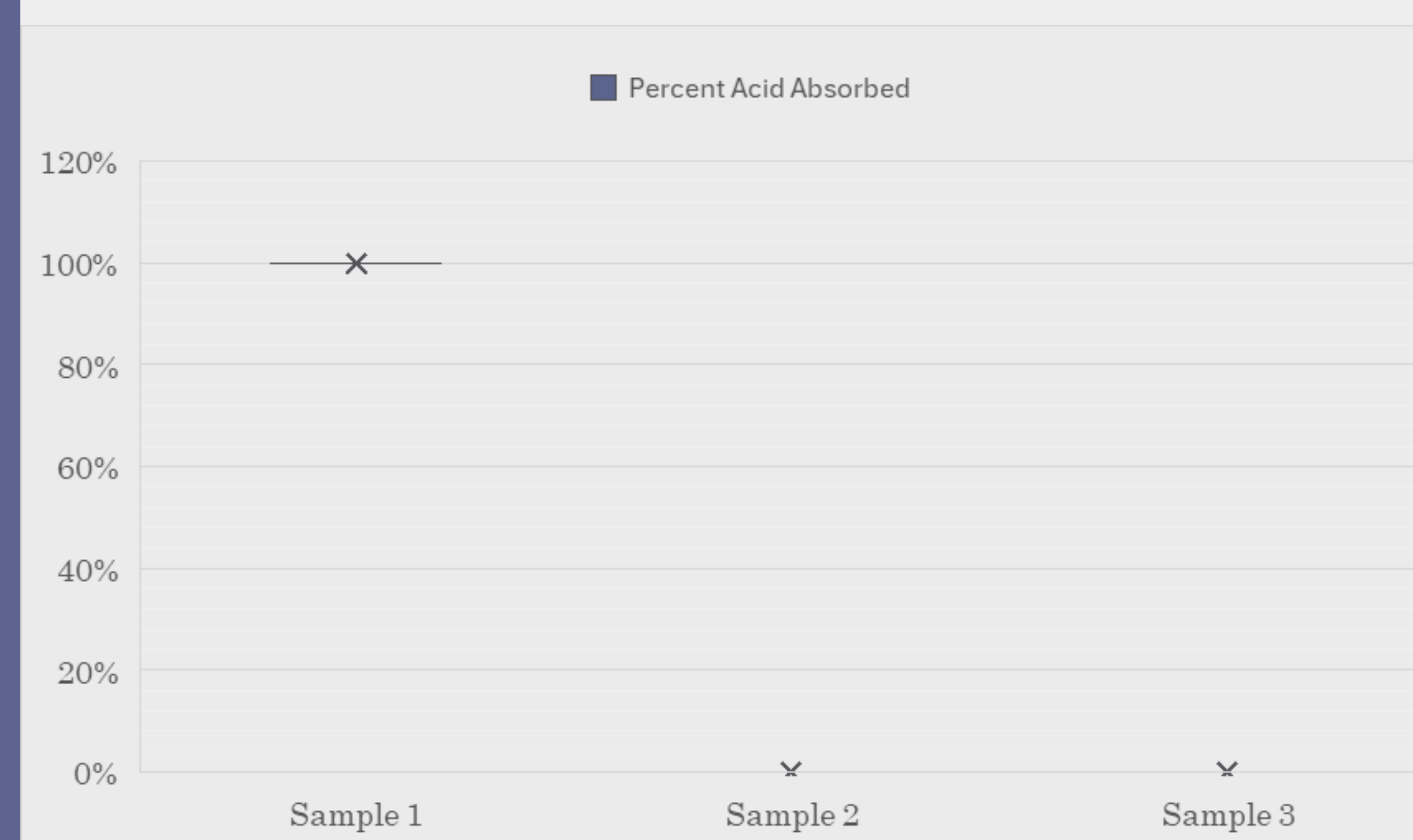


Figure 3: Box plot also illustrates the percentage of water each sample absorbed. Sample 1 absorbed 100% of the water, and Sample 2 and Sample 3 absorbed 0% of the water. Box plot shows exact results without sample sizes to directly explain the overall trend of water absorption, demonstrating the observed lack of ability of hyaluronic acid to absorb water.

TRUTH VS. TALK

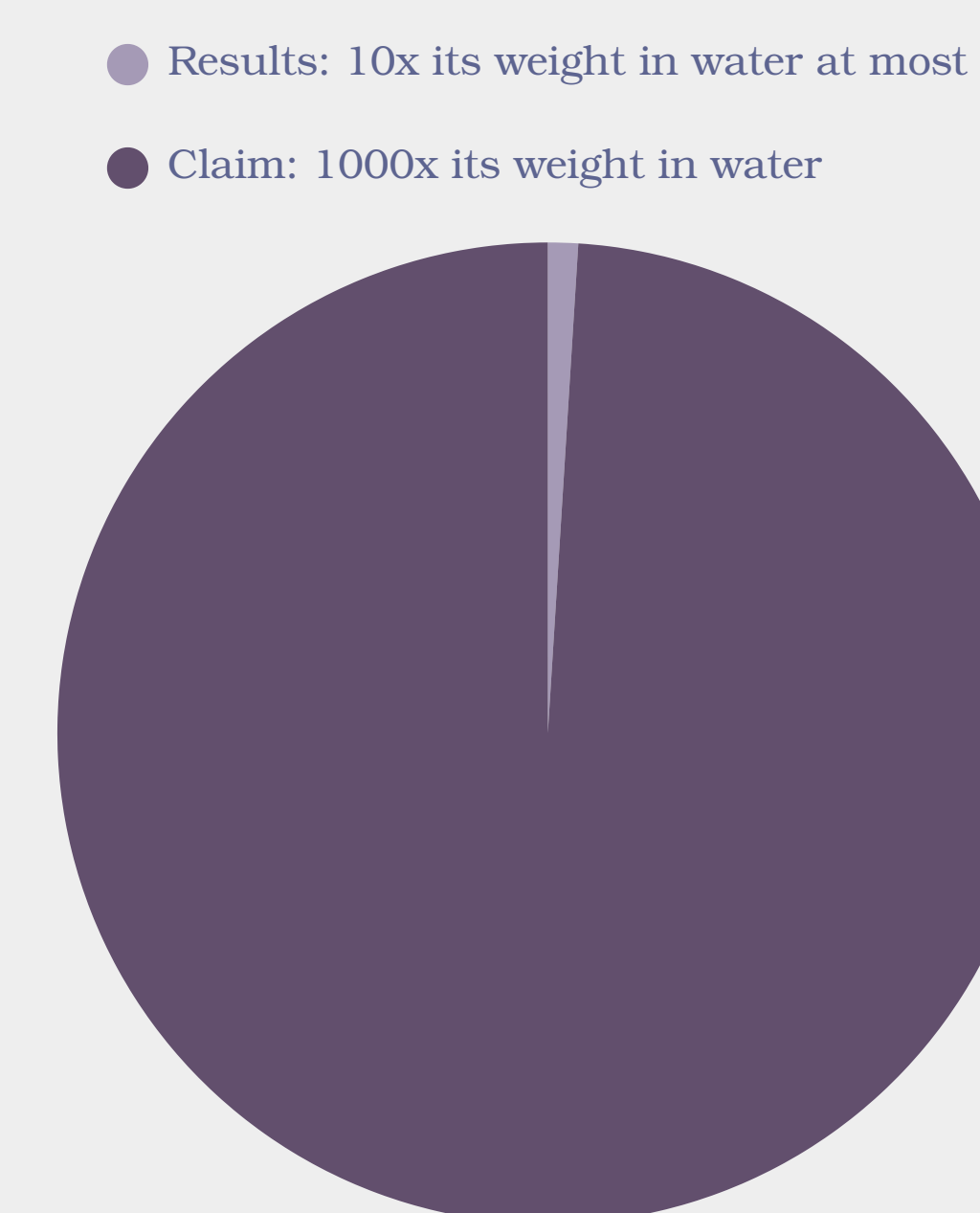


Figure 4: The claim cosmetic companies and influencers make that hyaluronic acid can absorb 1000x its weight in water is not supported by the results of the experiment. The samples had 0.3 g of hyaluronic acid each. Sample 1 was given 10x its weight in water, Sample 2 had 100x and Sample 3 had 1000x its weight in water. Therefore, the only sample to absorb anything absorbed 10x its weight in water. Though given the opportunity, none of the samples came close to absorbing 1000x its weight in water.



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DISCUSSION

Dr. Nicole DeCaro often proposes questions about ethics in marketing to her business classes, as respecting the balance remains as fine a line as ever. As people desperately clamor for a substance in a bottle or syringe to prevent aging, claims cosmetic companies propose about their formulas seem more science fiction than quick fix. Cosmetic companies have presented hyaluronic acid as an all-powerful ingredient, able to absorb 1000x its molecular weight in water. When testing the absorption of cosmetic-grade hyaluronic acid, the results were conclusive: the three hyaluronic acid samples did not absorb 1000x their molecular weight in water; thus, the cosmetic companies' hypothesis is rejected.

If the topic of truth in cosmetics were unimportant, films like *The Substance* would not explore the visceral self hatred that comes with aging. However, in addition to false advertisements, the rise of social media allows falsehoods to become ubiquitous and presented by people who appear informed without having proper expertise. As chemicals continue to become buzz words, audiences must understand that there is always more information veiled beneath the processes which create the products on the shelf or in the syringe for better or for worse.

WORKS CITED

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