



Which trending skin-care ingredient yields higher skin hydration + Client satisfaction: Collagen or Omega 3?

By: Zoya Nur

6th Grade, Woodside Middle School.

Fort Wayne, Indiana.

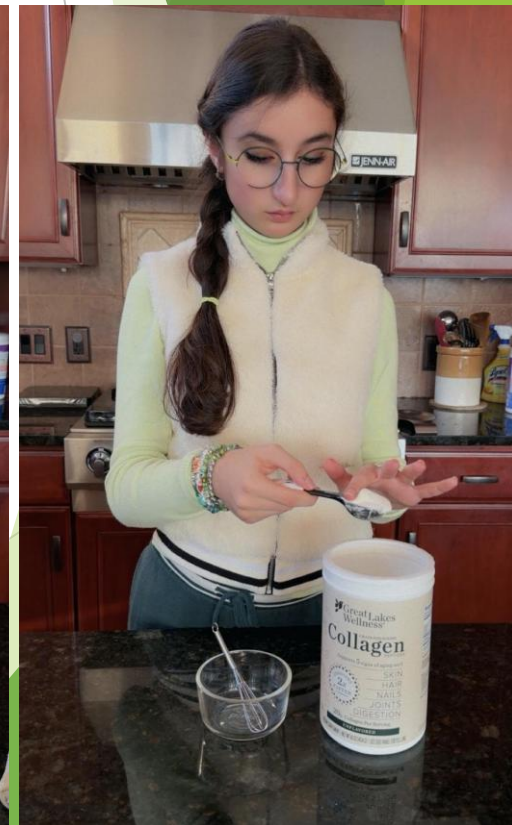
Research Topic: With growing awareness of the harmful effects of conventional skincare products that utilize harsh chemicals, synthetic ingredients, petroleum derivatives and artificial fragrances, there is an increased public interest in utilizing natural ingredients instead. The results of my study will help anyone who is interested in making their skin more hydrated and healthier. My project results will either prove or disprove the supposed benefits of two popular and trending natural ingredients in skincare products.

Question: Between Omega 3 and collagen, which is more beneficial for skin hydration when used by itself as a topical application such as a face mask?

Hypothesis: If the hydration benefits of a collagen mask and one made from an omega 3 source (flax seed) are compared, then the omega 3 mask will be more hydrating for the skin because according to dermatologists, collagen molecules will only impact the surface layer of the skin due to their large size which prevents them from penetrating into the skin's deeper layer where collagen is stored. On the other hand, Omega 3 will have lasting benefits by absorbing more effectively across the skin layers.

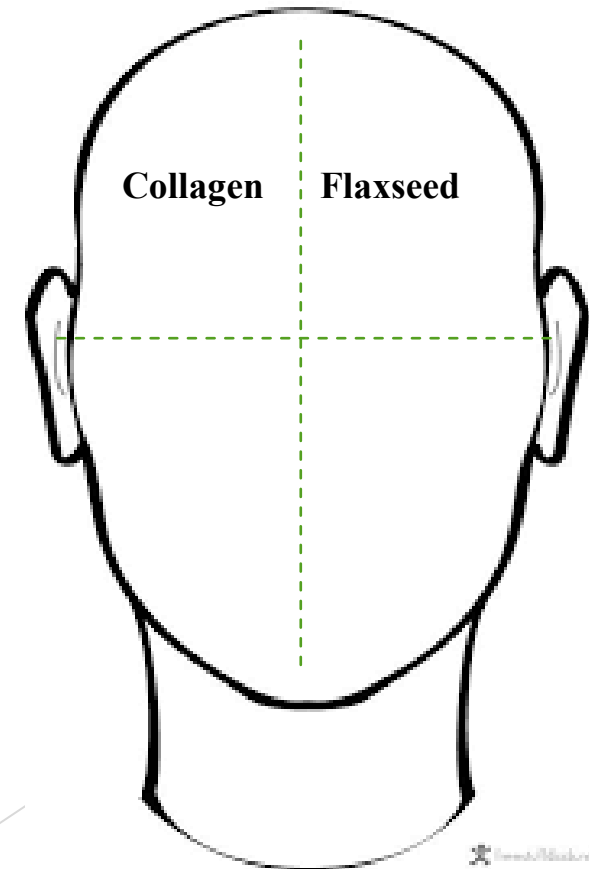
Experimental Design and Data Collection

- ▶ The flaxseed mask was made by adding 2 tablespoons of ground flaxseed to 1 cup of boiling water. The mixture was then simmered for 7 minutes (stirring occasionally) to create a gel-like consistency.
- ▶ The collagen mask was made by thoroughly mixing 1.5 tablespoons of hot water with 5 tablespoons of collagen to form a thick paste.
- ▶ To obtain pre-treatment measurement on my test subjects, I used Neutrogena facial cleansing wipes to clean the forehead and cheeks. The subjects then rinsed their face with warm water to remove any residue from the wipes and patted dry using a clean face towel.



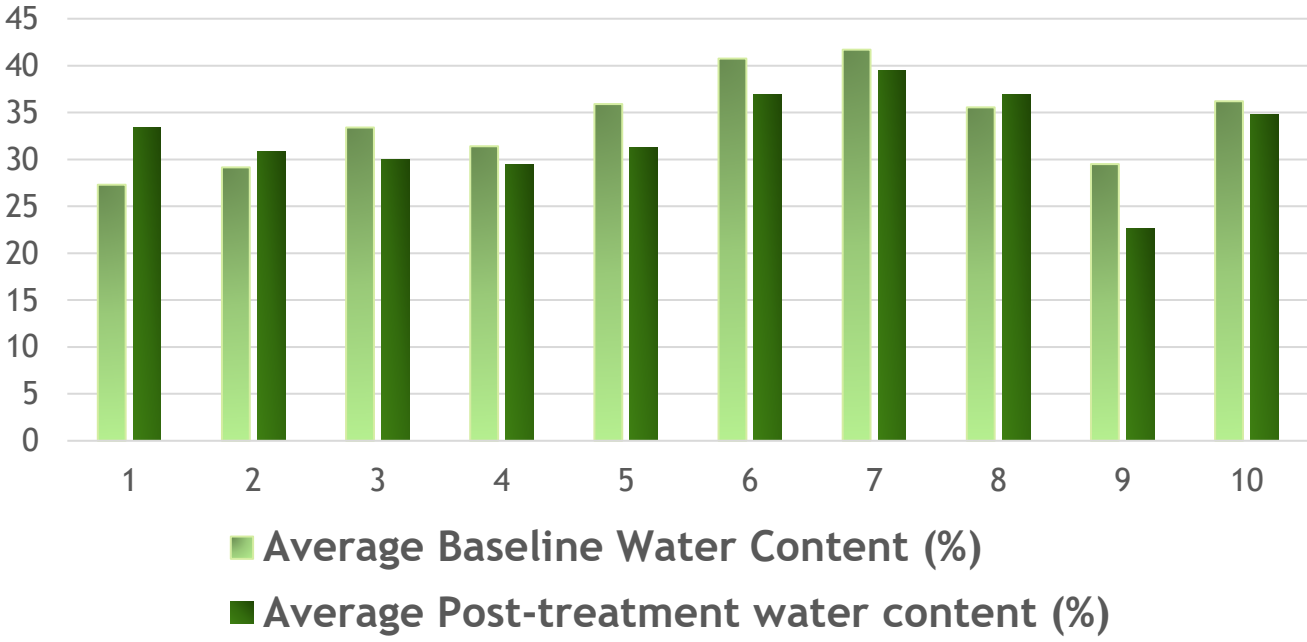


- ▶ After 3 minutes (to allow the skin to fully dry), I took baseline measurements of the skin's water content in four areas: right side of forehead, left side of forehead, right side of cheek, and left side of cheek.
- ▶ Using a mask brush, I applied the collagen mask to the right side of the face and apply the flaxseed mask to the left side of the face.
- ▶ The masks were left on for 15 minutes. The face was then rinsed with warm water and patted dry using a clean face towel. Steps 8, and 9 were repeated.
- ▶ All subjects completed a post-treatment survey.

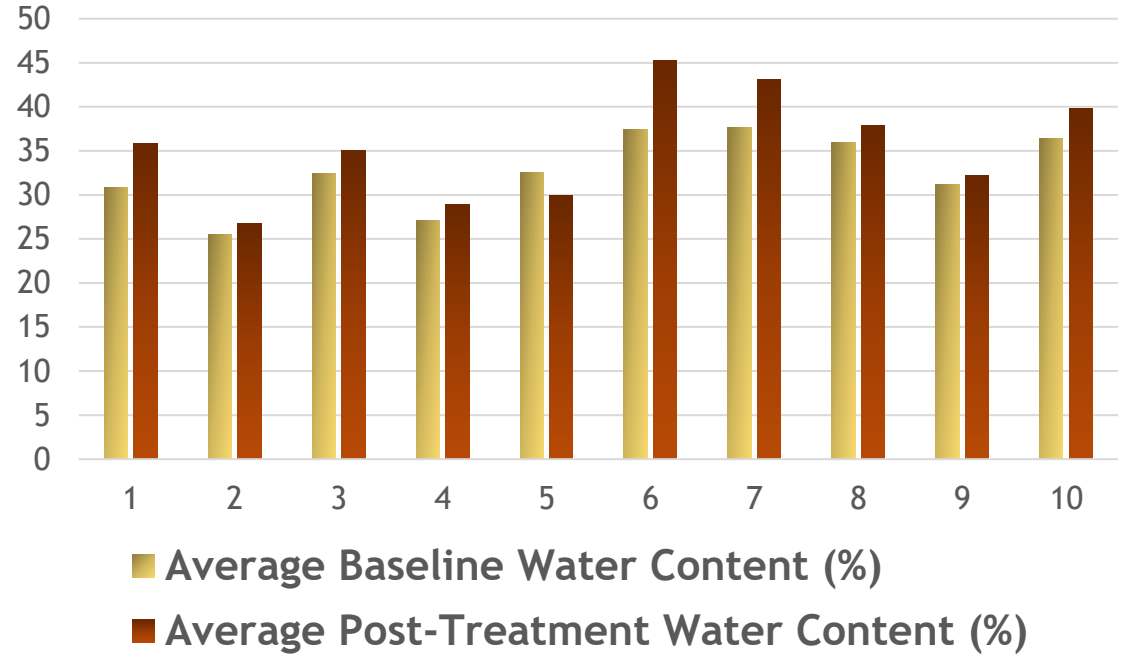


Independent Variable	Dependent Variable	Control
The type of mask (either collagen or flaxseed).	Skin's hydration (water content).	<ul style="list-style-type: none"> • Time between cleansing a subject's face and getting measurements with the skin analyzer. • Mask application time. • Both masks are made using only one additional ingredient which is water. • Measurements were always taken on the same part of the subject's face before and after treatment.

COLLAGEN MASK PRE- AND POST-TREATMENT DATA



FLAXSEED MASK PRE- AND POST-TREATMENT DATA



Data Analysis / Results

- ▶ When average hydration levels for the subject's face (calculated by taking the average of the forehead and cheek readings) were compared before and after the application of the collagen mask, it was found that 30% of the subjects had improved hydration after using the collagen mask. The remaining 70% of subjects showed reduced hydration with use of the collagen mask. Despite this, 60% of the subjects felt that the mask made their skin feel more hydrated and 100% reported improved appearance of their skin.
- ▶ The average hydration levels for the subject's face, when compared before and after the application of the flaxseed mask, were found to be improved for 90% of the subjects. Only one subject had reduced hydration. 90% of the subjects reported that their skin felt more hydrated while 80% felt that their skin's appearance was improved by using the mask.
- ▶ When subjects were asked which mask they would choose if treatment was to be repeated, it was evenly split: 50% chose collagen and the remaining 50% chose flaxseed.

Conclusion

- ▶ The effect of the collagen mask on skin hydration was not positive for 70% of the participants. This is because collagen molecules are too large to penetrate the skin's barrier and hence are unable to reach the deeper layers of the skin that store collagen. In fact, the skin analyzer readings showed slightly reduced water content in the skin. This finding can be explained by the well-known fact that repeated washing or cleansing of the skin in the absence of a hydrating agent can cause the skin to become less hydrated by stripping away the natural oils of the skin that work as a protective barrier and prevent the moisture from escaping.
- ▶ When asked for their feedback regarding whether their skin felt hydrated and soothed, subjects were somewhat split in terms of whether they found the mask to have made a positive difference in how their skin felt. However, all participants found the mask to have improved their skin's appearance. This was because collagen has been found to shrink pore size which in turn gives the appearance of youthful and tighter skin, which tends to be a much-desired aspect.

- As for the flaxseed mask, the skin analyzer readings showed that 90% of the subjects benefited from increased skin hydration. This is due to the high water-binding capacity in flaxseed mucilage that enables it to provide deep hydration and long lasting moisturization. Studies have shown that flaxseeds in the form of a topical face mask application can improve skin health through increasing hydration.
- All but one subject reported that they felt that the flaxseed mask improved their skin hydration. 80% of the participants believed that their skin looked better after using the flaxseed mask, because it is found that the gel-like consistency of its mucilage can have a temporary tightening effect on the skin.

- The last question on the survey asked the participants about their subjective preference regarding which mask they would use again if they were given the choice. Their answers yielded an even distribution. This may be due to people having different preferences for what benefits they prioritize: skin that feels more soothed and hydrated or skin that appears youthful and smoother. It can be inferred that half of the participants who chose the collagen mask desired a facial treatment that enhanced their skin's appearance while the other half that chose the flaxseed mask most likely placed a higher value on the soothed and hydrated sensation of the skin.
- While both ingredients have their benefits, the flaxseed mask is more effective for skin hydration according to both the results of the skin analyzer and the survey results.
- Future studies can enroll a larger sample of subjects to help determine if there are significant differences between male vs. female participants and/ or across different age groups.

References

- https://productlabreviews.org/the-truth-about-collagen-supplements-what-independent-tests-revealed-about-what-really-improves-skin-collagen/?tw_source=google&tw_adid=781376443087&tw_campaign=23201393888&tw_kwdid=kwd-98273177&gad_source=1&gad_campaignid=23201393888&gbraid=0AAAAAqBCB4de1RIRLWwPGogfjeXNNTbtM&gclid=Cj0KCQjwgpzIBhCOARIsABZm7vHjMKRPgpAuaIwaG24-CDBaaR1lGnkvs_I6pke_1a5gNEl4TSvHPskaAgq-EALw_wcB
- https://ijprajournal.com/issue_dcp/The%20Science%20of%20Flaxseed%20in%20Skincare%20%20A%20Review%20on%20Its%20Moisturizing%20and%20Hydrating%20Benefits.pdf
- <https://www.facialartistrymd.com/blog/the-flaxseed-mask-that-went-viral-is-it-better-than-botox-dr-konstantin-weighs-in/>
- <https://health.clevelandclinic.org/how-often-should-you-wash-your-face>