Analyzing the Strength of Different Edible Biodegradable Films

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A substantial amount of plastic has found its way into waters, endangering not only marine life but also people through the human food chain. Most of these plastics are derived from food and beverage packaging. In addition, plastic requires an extensive amount of time to biodegrade, spanning from a couple of decades to several hundred years depending on the product. Edible food packaging offers a solution! Edible food packaging is food wrapping that is made of natural materials derived from plants and animals. The edible films have the same functions as conventional plastic wrap but can also be eaten along with the food so that there is no waste remaining. Moreover, due to its natural ingredients, it can biodegrade relatively fast. This study compares the strengths of the gelatin and agar based food packaging to determine which one is a better plastic substitute. The strengths were tested in terms of durability and elasticity. To examine their durability, a heavy weight on the films then they were checked for any damages, and if so, to what extent. To study the elasticity, the films were stretched. It was then recorded how long it took for them to break. The results showed that the gelatin film had only suffered wrinkles from the drop test while the agar suffered a severe rip. In addition, the gelatin had longer recorded times compared to the agar when they were stretched. All in all, this means that the gelatin endured stronger forces better and was more elastic compared to the agar films. Thus, it was concluded that the gelatin was overall the better plastic substitute. This research hopes that the films studied can one day be used as a permanent substitute for the treacherous plastic that pours into our oceans everyday.