

Challenges in Preserving Vitamin Stability in Gummy Supplements

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Description

Vitamins are essential nutrients that play a vital role in maintaining a healthy body. While we can get vitamins from our diet, supplements such as vitamin gummies have gained popularity in recent years due to their ease of swallowing, appealing appearance and tasty flavors. However, water-soluble vitamins, such as vitamin C, are susceptible to degradation when exposed to oxygen, moisture, light, heat and changes in pH during manufacturing and shelf life. Therefore, it is essential to improve vitamin stability and delay the degradation process. There are several ways to preserve vitamin stability in gummy supplements. The first step is to use high-quality ingredients. The vitamins used in gummy supplements should be of pharmaceutical grade to ensure their purity and stability. In addition, the other ingredients used in the gummies should be of high quality, free from contaminants and compatible with the vitamins.

Another important step is to control the manufacturing process. The manufacturing process should be optimized to minimize the exposure of the vitamins to oxygen, moisture, light, heat and changes in pH. The manufacturing process should be designed to ensure that the vitamins are protected from degradation during every step of the process, from mixing the ingredients to packaging the finished product. Packaging is another crucial factor in preserving vitamin stability. The packaging should be designed to protect the gummies from exposure to oxygen, moisture, light and heat. The packaging material should be impermeable to moisture and oxygen and should not react with the gummies or the vitamins. The packaging should also be opaque to protect the gummies from light. Finally, proper storage conditions are critical in preserving vitamin stability. Gummy supplements should be stored in a cool, dry place away from direct sunlight and heat.

The storage temperature should be controlled to ensure that it does not exceed the recommended range. Exposure to high temperatures can accelerate the degradation of vitamins, while exposure to moisture can cause the gummies to become sticky and lose their texture. Preserving vitamin stability in gummy supplements is essential to ensure that consumers get the full benefit of the vitamins. High-quality ingredients, optimized manufacturing processes, proper packaging and storage conditions are all crucial factors in preserving vitamin stability. By following these guidelines, manufacturers can ensure that their vitamin gummies are of the highest quality and provide maximum health benefits to consumers.

Vitamin C is a powerful antioxidant that plays a vital role in maintaining a healthy immune system and protecting cells from damage. Vitamin C is also a water-soluble vitamin that is susceptible to degradation when exposed to

oxygen, moisture, light, heat and changes in pH. This degradation can result in a loss of potency and a decrease in the health benefits of vitamin C. However, researchers have found a way to improve the stability of vitamin C in vitamin gummies by encapsulating it in a casein gel. Casein is a protein found in milk that has excellent emulsifying and gelling properties. It is also biodegradable, non-toxic and readily available. Researchers have found that by encapsulating vitamin C in a casein gel, they can protect it from degradation and increase its stability.

Encapsulation is the process of enclosing one substance inside another to create a protective barrier. In the case of vitamin C, it is encapsulated in a casein gel to protect it from exposure to oxygen, moisture and light. The encapsulation process involves dissolving casein in an acidic solution to form a gel, adding vitamin C to the gel and then drying the gel to form small particles. The casein gel not only protects the vitamin C from degradation but also provides a slow release of the vitamin. This slow release allows for a sustained release of vitamin C in the body, providing a more consistent level of vitamin C over time. The use of casein gel encapsulation has several benefits for vitamin gummies. Firstly, it improves the stability of vitamin C, ensuring that the gummies retain their potency throughout their shelf life. Secondly, it provides a slow release of vitamin C, ensuring a more consistent level of the vitamin in the body.

Finally, it is a natural and non-toxic method of encapsulation, making it a safe and sustainable option for manufacturers. Encapsulating vitamin C in casein gel is an effective way to improve its stability in vitamin gummies. This process not only protects the vitamin from degradation but also provides a slow release of the vitamin, ensuring a more consistent level of the vitamin in the body. This method of encapsulation is a natural and non-toxic option for manufacturers, making it a safe and sustainable choice for improving the quality of vitamin gummies.

Vitamin gummies have become a popular way for people to supplement their diets with essential vitamins and nutrients. Gummies are an appealing option for those who have difficulty swallowing pills or capsules and they come in a range of flavors that make them more enjoyable to take. However, gummy supplements, like any other supplement, can pose challenges when it comes to preserving vitamin stability. The following are some of the challenges in preserving vitamin stability in gummy supplements.

Moisture: Vitamin gummies contain moisture, which makes them susceptible to degradation over time. Exposure to moisture can cause the gummies to become soft and sticky, which can lead to the degradation of the vitamins. This is especially true for water-soluble vitamins like vitamin C, which are highly susceptible to moisture.

Light: Vitamins are also sensitive to light and exposure to light can cause them to degrade. Light can cause oxidation of the vitamins, which can result in a loss of potency. This is why it is important to store vitamin gummies in a cool, dry place away from direct sunlight.

Oxygen: Oxygen is another factor that can lead to the degradation of vitamins. Oxygen can cause oxidation of the vitamins, which can result in a loss of potency. This is why vitamin gummies are often packaged in containers that are airtight and sealed to prevent exposure to oxygen.

pH: The pH of the gummy supplement can also affect the stability of the vitamins. Changes in pH can cause vitamins to degrade, which can result in a loss of potency. This is why it is important to control the pH of the gummy supplement during manufacturing.

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Heat: Heat can accelerate the degradation of vitamins, especially heat from sunlight or other sources. This is why vitamin gummies should be stored in a cool, dry place away from direct sunlight and other sources of heat.

To overcome these challenges in preserving vitamin stability in gummy supplements, manufacturers can take several steps. For example, they can use high-quality ingredients, optimize the manufacturing process, use proper packaging and control storage conditions. By following these guidelines, manufacturers can ensure that their gummy supplements are of the highest quality and provide maximum health benefits to consumers. Preserving vitamin stability in gummy supplements poses several challenges, such as exposure to moisture, light, oxygen, changes in pH and heat. However, manufacturers can overcome these challenges by taking steps to control the manufacturing process, use proper packaging and control storage conditions. By doing so, they can ensure that their gummy supplements are of the highest quality and provide maximum health benefits to consumers [1-5].

Acknowledgement

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Conflict of Interest

None.

References

1. Ahmed, Mohammad Zubair, Anshul Gupta, Musarrat Husain Warsi and Ahmed M Abdelhaleem Ali, et al. "Nano matrix soft confectionary for oral supplementation of vitamin D: stability and sensory analysis." *Gels* 8 (2022): 250.

2. Yan, Bing, Seyed Mohammad Davachi, Raheleh Ravanfar and Younas Dadmohammadi, et al. "Improvement of vitamin C stability in vitamin gummies by encapsulation in casein gel." *Food Hydrocoll* 113 (2021): 106414.
3. Ghiraldi, Marlucci, Beatriz G Franco, Izabel CF Moraes and Samantha C Pinho. "Emulsion-Filled Pectin Gels for Vehiculation of Vitamins D3 and B12: From Structuring to the Development of Enriched Vegan Gummy Candies." *ACS Food Sci Technol* 1 (2021): 1945-1952.
4. Coelho, Sílvia Castro, Berta Nogueiro Estevinho and Fernando Rocha. "Recent Advances in Water-Soluble Vitamins Delivery Systems Prepared by Mechanical Processes (Electrospinning and Spray-Drying Techniques) for Food and Nutraceuticals Applications—A Review." *Foods* 11 (2022): 1271.
5. Grétarsdóttir, Kaja Gertin. "Development of vitamin D gummy supplements and their shelf-life." PhD diss, 2019.

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