

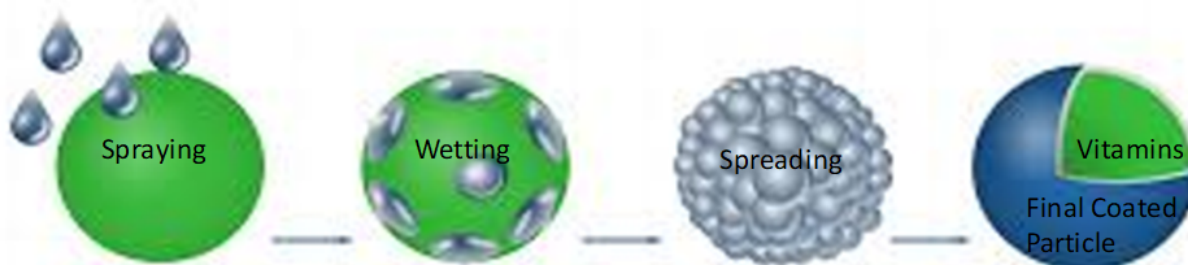
## Microencapsulated Vitamins

When it comes to vitamins included in the pet foods, treats, and supplements you buy for your pets, you have two primary concerns, 1. Are they manufactured in China and 2. Are the vitamins still have their efficacy. First one is because of the severe lapses in the quality of not only vitamins made in China but basically everything, while the second one is because vitamins degrade due to manufacturing and environmental conditions, such as temperature, air, moisture, exposure to light, transportation, storage etc. We address both these concerns heads on buy having all our vitamins of non-China origin and macroencapsulating them from degradation until it reaches the stomach.



## What is Microencapsulation?

Micro-encapsulation is a very specific technology whereby a given vitamin (or any other active ingredient for that matter) is encapsulated at the tiny micro level such that the target nutrient(s) becomes available only upon reaching certain parts of the digestive system. In other words, such vitamins are released only after reaching your pet's tummy, not before. Below figure describes the microencapsulation process in general.

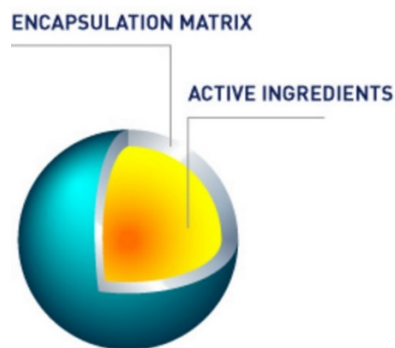


In a nutshell, it is a targeted delivery of vitamins or any other active ingredient in the digestive system. A massive benefit of such a technology is that vitamins are not likely to degrade during processing, transportation, storage or while sitting in the shelves thus increasing the shelf life and remaining active until reaching the stomach. It greatly protects the vitamins from manufacturing or other industrial processes, potential exposure to heat, air, moisture, sunlight, or other such environmental conditions.

While microencapsulation is now commonly used in drug industry, its use in the food industry is quite limited to certain segments only. In the pet food industry, probably not much at all. We haven't seen any pet food, vitamin premix, raw diet supplements, treats or any other pet vitamin supplements that contain microencapsulated vitamins, while also being non-China. Science4Pets is the only one that is bringing such products in the market for the first time.

## Why microencapsulation and why non-China?

At **SFPetfoods**, we address the two primary concerns all pet parents have about the origin of vitamins and their efficacy head on by bringing the vitamins that have not been manufactured in China and microencapsulate them by going one step above and beyond. It helps retain the efficacy of vitamins, increases their stability, improves bioavailability to the animals, and therefore imparts the nutritional benefits vitamins are supposed to provide for the protection of your pets' health. We haven't seen any pet food, vitamin supplement, raw diet supplements, treats or any other pet products that contain microencapsulated vitamins, while also being non-China. **SFPetfoods** is the only one that is bringing such products in the market for the first time. It's an extra step over and above everyone else that we take to provide the protection your pets need and deserve but can't express themselves quite well.



## What the scientists say about microencapsulation?

Below are some really nice scientific peer reviewed articles published in some of the best journals or edited books out there on microencapsulation, be it specifically on vitamins or some other aspects of food or other industries. These references illustrate why microencapsulation is the best when it comes to delivering the intended results, such as stability, efficacy, bioavailability, increased shelf life, etc.

1. Wilson and Shah (2007): Microencapsulation of Vitamins. <http://www.ifrj.upm.edu.my/afjv14%281%292007/1-14.pdf>.
2. Goncalves et al. (2016): Microencapsulation of Vitamin A. <https://repositorio-aberto.up.pt/bitstream/10216/102860/2/141622.1.pdf>.
3. Khare et al. (eds, 2014): Microencapsulation in Food Industry: A Practical Implementation Guide <https://www.elsevier.com/books/microencapsulation-in-the-food-industry/gaonkar/978-0-12-404568-2>
4. Trojanowska et al. (2017): Microencapsulation in Food Chemistry. [http://www.msrrjournal.com/article\\_23652\\_95ae321b29dc78deae5c0bd3d69a0afa.pdf](http://www.msrrjournal.com/article_23652_95ae321b29dc78deae5c0bd3d69a0afa.pdf)
5. Singh et al. (2010). Microencapsulation: A promising technique for controlled drug delivery. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093624/>
6. Šimoliūnas et al. (2019): Bioavailability of Different Vitamin D Oral Supplements in Laboratory Animal Model. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6631968/>. The article says that microencapsulation has the best bioavailability of vitamin D3 in a rat model.
7. Maurya et al. (2020): Vitamin D microencapsulation and fortification: Trends and technologies. <https://www.sciencedirect.com/science/article/pii/S0960076019300585>