

Nanoencapsulation of Omega Fatty Acids in Processed Food Products ^[1]

Omega fatty acids are long chain polyunsaturated fats that have a number of potential [health](#) ^[2] benefits. While beneficial, long-chain lipids oxidize easily, making them difficult to incorporate into foods. These long-chain lipids break down at a faster rate the longer the molecule gets. Eventually these long chain lipids break down into unhealthy, short chain lipids. Recent research into [neutraceuticals](#) ^[3] has examined how to increase the stability of these long chain fatty acids to retain their [health](#) ^[2] benefits and better incorporate them into food products.

There have been recent developments in nano-encapsulating fatty acids such as DHA and [EPA](#) ^[4] with whey protein and nano-encapsulating fatty acids in polysaccharides to create stable, granular beneficial fats that can be incorporated into foods. Encapsulating these long chain lipids in whey protein allows them to be easily incorporated into protein enriched foods like breads and processed meat. Encapsulation of these fatty acids in polysaccharides will allow food processors to increase the nutritional value of sweet foods and drinks. Encapsulating these fats will also help to reduce the sometimes offensive flavor of these lipids that are often harvested from fish, flax or algae.

Ultimately, incorporating these [neutraceuticals](#) ^[3] into processed foods may help to prevent the onset of diseases like hypertension, high cholesterol, diabetes and other diseases where diet is a contributing factor. Nanoencapsulated [neutraceuticals](#) ^[3] like these will allow consumer preferences for carbohydrate intensive diets to hold greater nutritional value.

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Development Stage:

- [Scientific](#) ^[6]

Key Words:

- [Food Additive](#) ^[7]
- [Omega-3](#) ^[8]

- [Nutritional Supplement](#) [9]
- [Nanoencapsulation](#) [10]
- [Neutraceuticals](#) [3]

Mechanism:

- [Passive Nanostructure](#) [11]

Summary:

The encapsulation of Omega fatty acids into proteins and carbohydrates will enhance the nutritional value of processed foods.

Function:

- [Enhanced Nutrition](#) [12]

Source:

Nanotechnology in elevation of the worldwide impact of obesity and obesity-related diseases: potential roles in human health and disease. [13]

Benefit Summary:

[Omega-3](#) [8] capsules allows for the supplementation of diets while reinforcing consumer preferences for simple carbohydrates.

Benefit:

- [Health](#) [14]

Risk Summary:

Public acceptance of genetically modified foods is a synonymous case to nanotechnology in foods. Cultural preferences and risk tolerances will inform the societal risk. The physiological

risks of adding nano-encapsulated omega fats in uncontrolled doses are not known at this time.

Risk Characterization:

- Complex [15]

Risk Assessment:

- Health Risks [16]

Source:

Public acceptance of nanotechnology foods and food packaging: The influence of affect and trust [17]

Facility:

- Food Systems [18]

Source:

Nanotechnology in elevation of the worldwide impact of obesity and obesity-related diseases: potential roles in human health and disease. [13]

Activity:

- Nutritional Fortification [19]

Substitute:

- Nutritional Supplements [20]

Source:

Food nanotechnology: New leverage against iron deficiency : Article : Nature Nanotechnology [21]

Challenge Area:

- [Health](#) [22]



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Links:

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