

# Nanotechnology in Food related applications: A Review

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**Abstract:** Companies are exploring nanomaterials that will be considered not only in the food preparation, but also in adding the nutritious values.

Inclusion of nanomaterials in food packaging is already into existence. In this paper, Nanotechnology and a few more applications related to Food Industry is addressed and reviewed.

**Keywords-**Nanotechnology, Packaging, Nutritional Elements,nanomaterials

## INTRODUCTION

Nanotechnology is having an impact on several aspects of the food industry, from how food is grown to how it is packaged

One example is bottles made with nanocomposites that minimize the leakage of carbon dioxide out of the bottle; this increases the shelf life of carbonated beverages without having to use heavier glass bottles or more expensive cans Ref[1].

Nanotechnology has dominated every field especially agriculture and food based industries. The major connection of nanotechnology in terms of food is improving food processing and nutrition values.

In the next five years, dozens of food products would be treated based on nanotechnology, including a pineapple milkshake that supposedly tastes good and is more nutritious than conventional shakes.

## LITERATURE REVIEW

The nanotechnology is considered as one of the upcoming areas for the benefits of mankind .A few examples from the literature would prove the statement. One example is bottles made with nanocomposites that minimize the leakage of carbon dioxide out of the bottle; this increases the shelf life of carbonated beverages without having to use heavier glass bottles or more expensive cans. Another example is food storage bins with silver nanoparticles embedded in the plastic. The silver nanoparticles kill bacteria from any food previously stored in the bins, minimizing harmful bacteria Ref [2].Likewise, there are many more applications related to Food industries.

There are other food packaging products currently under development. For example ,nanosensors in plastic packaging can detect gases given off by food when it spoils and the packaging itself changes color to alert you to food gone bad. Plastic films are being developed that will allow the food to stay fresher longer. These films are packed with silicate nanoparticles to reduce the flow of oxygen into the package and the leaking of moisture out of the package.

Nanosensors are being developed that can detect bacteria and other contaminants such as salmonella on the surface of food at a packaging plant. This will allow for frequent testing at a much lower cost than is incurred by sending samples to a lab for analysis. This point-of-packaging testing, if conducted properly, has the potential to dramatically reduce the chance of contaminated food reaching grocery store shelves. There

are also nanosensors being developed to detect pesticides on fruit and vegetables.

#### **Nanomaterials for food applications**

Nanoparticles are generally used to add vitamins or other nutrients in food without affecting the taste or appearance. Research is also initiated to develop nanostructures containing nutrients that would be included when nanosensors come to understand any deficiency in your body. Vehemently, this research would result in a energy storage system in our body for the proper functioning of all the organs.

Gold and silver are the two important energy boosting elements found in nature which would be incorporated in health supplements. They exhibit different properties at nanosized dimensions which play vital role in chawanprash and healthy tonics.

Investigators are facing the challenge of lack of knowledge in the above field so as to understand better the health risks if any. There is a requirement of more findings in terms of research in nanotechnology based food applications Ref[3]

#### **CONCLUSIONS**

Nanotechnology encompasses with building blocks only nanometers large. Elements at that scale can take on absolutely different properties not observed in their bulk counterparts. Gold is normally chemically inert, which keeps gold rings lustrous, gold nanoparticles can prove highly reactive. Similarly, Silver is used in health supplements.

Nanoparticles, nanotubes and other nanoscale components might have advantages in many applications but unforeseen consequences are to be studied for the safer side.

#### **REFERENCES**

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