

Promising potentials of nanostructured materials in transforming processed food industry

Nanotechnology has transformed various domains of food sciences, specifically preservation, packaging and food safety research areas. Variety of nanostructured materials (NSMs), ranging from inorganic metal, metal oxides, and their nanocomposites (e.g. silica) to Nano-organic materials, polymeric nanoparticles, nanocoacervates, nanospheres with bioactive agents are currently been explored in the food industry to enhance the shelf life, nutritive levels and lower down the degradation of food materials. Also, the encapsulation of phytochemicals present in the food materials show better solubility, stability, bioavailability and absorption in human gut with nanoparticles-based products. However, this increased inquest of nanotechnology in food industry has also led to certain concerns as raised by many researches like - potential risk of nanotechnology on human health due to their extremely smaller size, easy and higher penetration into the human cells along with their increased accumulation. There are many processes and approaches to deliver nanostructured materials for food products like – Mechano- chemical Processing (MCP) is one of the novel methods used for nanoparticle synthesis, including Zinc oxide, Zinc sulfide, Cadmium sulfide, Silicon dioxide and Cerium dioxide based ones. In our study, we have evaluated the promising potentials of various Nanomaterials based products used for limiting down the low solubility, bioavailability, stability and target specificity of the processed food products.

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