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## A Critical Review on Bio nanotechnology And Food Packaging

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**Abstract:** Technology is of major importance for the sustainability of mankind's development. On the other hand, a key factor of the innovation system and influences prosperity, consumption patterns, lifestyles, social relations and cultural developments. Therefore, the development, production, use and disposal of technical products and systems have impacts on the ecological, economic and social dimensions of sustainable development. In this paper, we will explore the promise, and the potential draw backs, of Bio nanotechnology in the food-packaging industry.

Bio nanotechnology is the emerging research field that comes from the intersection of nanotechnology and biotechnology. Nanotechnology is referring to the design, development, and application of materials which at least one dimension at nanometer scale meanwhile biotechnology is developed based on knowledge about living systems and organisms to create or improve different products. The association of nanotechnology and biotechnology pave a way to develop a hybrid technology with unique features. Thus, this novel technology will be used to improve our living standard in different aspects from developing new medicine, food, and functional cosmetics, introducing new methods to analyze and treat cancer to protect environmental problems, Increasing the useful life of many foods depend on the type of packaging used and correct storage conditions. Today, a large part of the country's products lose their quality and marketability, post storage and packaging conditions is important.

Bio nanotechnology, as a tool for incorporation of biological molecules into nano artifacts, is gaining more and more importance in the field of food packaging. It offers an advanced expectation of food packaging that can ensure longer shelf life of products and safer packaging with improved food quality and traceability. Scope and approach: This review recent focuses on advances in food nonpackaging, including bio-based, improved, active, and smart packaging. Special emphasis is placed on bio-based packaging, including biodegradable packaging and biocompatible packaging, which presents an alternative to most commonly used non-degradable polymer materials. Safety and environmental concerns of (bio)nanotechnology implementation in food packaging were also discussed including new EU directives. Conclusions: The use of nanoparticles and nanocomposites in food packaging increases the mechanical strength and properties of the water and oxygen barrier of packaging and may provide other benefits such as antimicrobial activity and light-blocking properties. Concerns about the migration of nanoparticles from packaging to food have been expressed, but migration tests and risk assessment are unclear. Presumed toxicity, lack of additional data from clinical trials and risk assessment studies limit the use of nanomaterials in the food packaging sector. Therefore, an assessment of benefits and risks must be defined.

**Keywords:** Bio nanotechnology, Food packaging, Application, Nanomaterial, foodsafety.