

over competitors. However, although zeolites represent an effective cation-exchange system that, once orally, ingested delivers good cations and chelates ammonium and several heavy metals, some claim that nano-clinoptilolite, which was recently marketed in Germany, may be potentially harmful, considering the reported mutagenicity of such formulations.¹³⁰⁻¹³² This example accentuates the need for expertise in nanotechnology, highly dedicated independent laboratories, vigilant and stringent regulatory bodies to analyze the claims of advantages, and tight clinical interplay when devising nano-related commercial products.

6.5 Consumer Attitude Towards Nanotechnology in Food-Related Applications

Nanotechnology has revolutionized and transformed food and related industries in the recent years, and for novel issues like those associated with nanotechnology, the media plays a crucial role in molding the consumer attitude. A study was conducted in the United States to assess the media coverage on nanotechnology, and the results show that coverage on food nanotechnology is limited and at times unpredictable. The percentage of science journalists is very small and, most often, food nanotechnology reports are written by journalists who do not have expertise in that area, which results in less thoughtful reviews and reports.¹³³ The commercial success of functional food depends greatly on the consumer attitude and acceptance of the product as part of the daily diet. In 2008, a study was conducted in Switzerland ($n = 249$) to examine the attitude of consumers and the results suggest that consumers preferred to buy functional foods with physiological benefits than psychological health claims. The study was based on a survey where the participants were asked to assess their willingness to buy hypothetical functional foods with various health benefits, such as cardiovascular protection, prevention of osteoporosis and cancer. While the younger consumers showed less interest in functional foods, participants who trusted the food industry were more favorable towards functional food products. The authors added that the study has its limitations; the study was based on survey and no food tasting tests were conducted. Consumers are not willing to compromise the taste of functional food over its nutritional value.¹³⁴

Nanotechnology has attracted large-scale investments from many industries, including the food and beverage industries, and the applications of food nanotechnology are relevant in food processing, nutrient composition and packaging. Although some nanofoods and nanopackings are commercialized in various countries, the awareness towards nanoproducts is still inadequate. Frewer and coworkers analyzed the issues associated with consumer attitude and perception of nanotechnology developments in the food and agriculture sectors based on the available nanotechnology applications.¹³⁵ The authors list a number of questions that need to be answered before enabling technologies like nanotechnology are used in agri-food