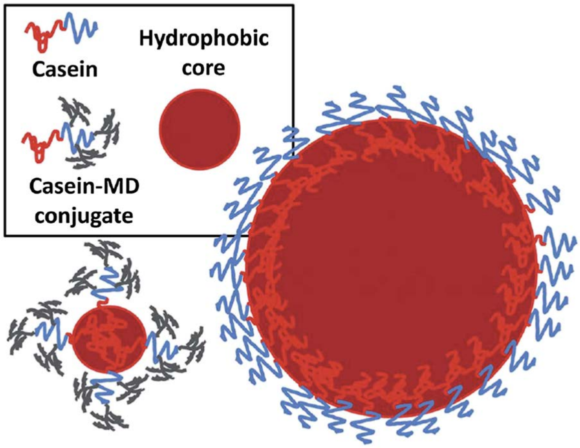

Figure 6.4 Hydrophobic compound encapsulating nanoparticle formed by protein–polysaccharide interaction between casein and maltodextrin (MD). Reprinted with permission from ref. 107 with permission from the Royal Society of Chemistry.

smaller particles. The larvicide effect of the encapsulated essential oil was tested on the third instar of *Stegomyia aegypti* larvae, and the larval mortality was related to the essential oil loading in the nanoparticle. Nanoparticles of cashew gum : chitosan concentration of 1 : 1 and 1 : 10 showed 87% and 75% larval mortality at 48 h, respectively, which further increased to over 90% at 72 h.[108] Although this is not an example of a direct food application, the anti-microbial effect of plant metabolites can be use in the food industry for ecofriendly sanitation purposes.[109] Other reports suggest the use of this essential oil in offering antimicrobial activity against oral pathogens under *in vitro* conditions, as an adjuvant in antibiotic therapy against respiratory tract infections and as an antihelmintic treatment against sheep gastrointestinal nematodes.[110–112] The development of nanoencapsulated *Lippia sidoides* essential oil is an interesting concept that has various potential uses in the food and pharma industries.

6.4 Safety and Regulatory Aspects of Nanofoods

In recent years, a number of nanofoods have been introduced into the market. According to an inventory made in 2011 by the Project on Emerging Nanotechnologies, the US leads the industry with the number of nanoproducts in the market, followed by Europe and Asia. Even with the ambiguity related to the safety and toxicological effects of nanomaterials, the number of products in the market is increasing at an exponential rate.[113] The specific use, biophysical properties and interactions, exposure, uptake and kinetics, and biological effects are some of the factors that are considered during the development and application of nanomaterials. However, the guidance and