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Small things in a big picture: Nanotechnology applications in food processing

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Nanotechnology applications for food and health food sectors have undoubtedly opened up enormous opportunities for innovation and new developments. A cursory look at the development of nanotechnologies offers food nanostructures and nanofood ingredients, additives and supplements. Natural food constituents such as proteins and polysaccharides that generate structure and texture in food products are examples of naturally occurring nanosubstances. The processing of raw materials and ingredients into foods involves the breakdown and re-assembly of natural nanostructures. Nanoscience enables conventional and acceptable methods to be used for the selection and processing of naturally occurring nanostructures to optimize food quality. The nanostructures resulting from such processes, need to be clearly distinguished from the insoluble or indigestible ENP's (Engineered Nano Particles) that may be added to food products to achieve a certain taste, texture or functionality. Currently, Nanotechnology is widely focused on food packaging applications which makes up the largest share of nanofood market. A number of possibilities can be seen in the improvement of packaging material properties in the form of nanocomposites or nanocoatings, both for conventional plastic materials and biodegradable polymers. Low levels of nano-fillers have been used to increase the mechanical and gas and light barrier properties of food packaging materials. Nanotechnologies can also add other intelligent features to food packaging, in terms of monitoring the product quality through integrated sensors and indicators as well as establishing the authenticity of the products. The present work reviews existing literature on nanotechnology applications in food sector mainly focusing nanofood packaging, nanofood structures and nanofood ingredients and additives.

Biography

J.Premkumar is pursuing his doctoral degree in the Department of Food Processing and Engineering in Karunya University, Coimbatore. Currently, he is doing research in the area of nutraceuticals under the guidance of Dr.T.V.Ranganathan in the same university. He carried his M.Tech project at CIPHET, Ludhiana, Punjab.

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Antimicrobial activity of honey against clinical isolates

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The present study was carried out to assess the antibacterial activity of honey samples from various sources against certain clinical isolates. For this purpose, 40 clinical isolates were obtained from samples such as pus, sputum, urine and throat swab and they were identified as *Staphylococcus aureus, E.coli, Pseudomonas spp Streptococcus spp, Klebsiella spp*,and *Proteus spp.* Five honey samples from different sources were used in the study. The antibiogram of the clinical isolates showed that they were multi-drug resistant organisms. These organisms were studied for their sensitivity to honey on the principle of minimum inhibitory concentration (MIC). All the honey samples showed maximum inhibitory effect at its original concentration. The five honey samples had different levels of antiomicrobial activity. Honey from *Melipona irridipennis* showed the highest activity followed respectively by *Apis dorsata* and *Apis indica.* Both the commercial brands were less effective. Among the clinical isolates tested, pseudomonas *spp E.coli* and *staphylococcus aureus* showed highest sensitivity towards honey and streptococcus was found to be the least sensitive. The study shows that honey like antibiotics has varying antibacterial activity, which depends on the source of the honey.