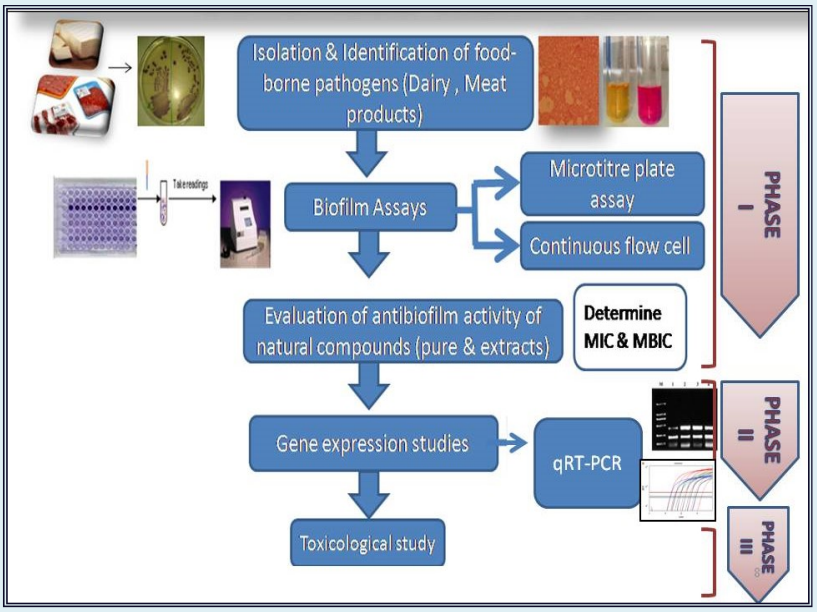
Quercetin Impregnated Amino Functionalized Mesoporous Silica against Food Borne Pathogens

Salient features	➢ Isolation and characterization of food borne pathogens from Indian dairy and meat samples, and study of their biofilm formation. ➢ New strains of *E. coli* and *Salmonella typhimurium* in Indian food products (dairy and meat). ➢ Concerns on their presence in dairy and meat samples, and threat to the food safety. ➢ Demonstration of the design, characterization and testing of nanoparticles impregnated with natural compounds for their efficacy in clearing biofilms from stainless steel surfaces of the food processing equipments and processing plants. ➢ Effectiveness of nanocpmposite, Quercetin impregnated amino functionalized mesoporous silica against both *E. coli* and *Salmonella typhimurium.*
Advantages	✓ Efficacy of natural herbal compounds and phytochemicals (Quercitin, Menthol and Eugenol) against the growth of *E. coli* and and *Salmonella typhimurium*, and spoilage of the food product. ✓ Stability of phytocompound by Quercetin and expansion of its range of application for food packaging and processing. ✓ Control release of Quercetin form mesoporous materials. ✓ Efficacy of the compound against clearing biofilms from stainless steel surfaces.
Process technology / product developed by	Dr. Neetu Kumra Taneja, Department of Basic and Applied Sciences National Institute of Food Technology Entrepreneurship and Management (NIFTEM), Sonepat, Haryana neetu.taneja@niftem.ac.in, drneetu.niftem@gmail.com Dr. Prayaga Murali Krishna, NIFTEM, Kundli, Sonepat, Haryana
Year	2017-18.
Source of funding	MoFPI



More information

Status of commercialization / Patent / Publications

Publications

Sharma, A., Shivaprasad, D.P., Chauhan, K. and Taneja, N.K. 2019. Control of *E. coli* growth and survival in Indian soft cheese (Paneer) using multiple hurdles: phytochemicals, temperature and vacuum. LWT- Food Science and Technology, 114, 108350. https://doi.org/10.1016/j.lwt.2019.108350

Bhardwaj, D., Taneja, N.K., Shivaprasad, D.P., Chakotiya, A., Patel, P., Taneja, P. and Sachdev, D. Isolation, characterization and biofilm formation of antibiotic resistant *E.coli* isolated from dairy and meat products from local market of Sonipat in India. LWT- Food Science and Technology, Communicated.

Rattu, G., Khansili, N., Shivprasad, D.P., Bhardwaj, D., Taneja, P. and Taneja, N.K. Microbial biofilms: The social life of microorganisms. LWT- Food Science and Technology, Communicated.

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Shivprasad, D.P., Sachdev, D. and Taneja, N.K. 2018. SBA/NH2/Q nanocomposite: an impeder of bacterial growth and biofilm. Poster presented in the International

Conference on Recent Advances in Food Processing Technology (iCRAFT'18), Indian Institute of Food Processing Technology, Thanjavur, Tamil Nadu.

Bharadwaj, D.K., Singh, A., Chakotiya, A. and Taneja, N.K. 2018. Characterization of bacterial biofilms in dairy and meat products and their prevention by natural compounds. Paper presented in ICBN 2018, GJU, Hisar, Haryana.

Bionanocomposite for the removal of biofilm from food industry. Poster presented at International Conference on Nanomaterials and Nanotechnology (ICNANO), Allahabad, 1-3 March.

Pratik, O. and Taneja, N.K. 2016. Biofilms and Food Industry. In AFSTI (Mumbai Chapter) Newsletter Magazine (Oct., 2016).

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Persistor Biology of Food Borne Pathogens: Biofilms and nanotechnology of natural phytochemicals to curb the menace. Invited Talk in the National Conference on Advances in Biotechnology: An Interdisciplinary Approach, Sharda University, Greater Noida, 2-3 Nov. 2018.

Novel Combative approach to annihilate complex, multidrug resistant biofilms of E. coli by bionanocomposites. Posted presented in the 2nd International Conference on Antimicrobial Resistance, Novel Drug Discovery and Development: Challenges and Opportunity, 17-19 March, 2019.

Shivaprasad, D.P and Taneja, N.K. 2019. Bionanocomposites and their Application in Food Packaging. FMT Magazine (July 2019 issue).