DRDO – FICCI Accelerated Technology Assessment and Commercialization Programme

Biosynthesis Reactor System

India's agricultural production base is quite strong but at the same time wastage of agricultural produce is massive. The utilization of fruits and vegetables processing is estimated to be around 2.2% of the total production, also industry facing constraints like non-availability of adequate critical infrastructural facilities like cold chain and packing. If the industry can adopt better / improved packing techniques at farm level itself, the energy loss due to transportation and maintenance the freshness of products can add value to the Farm sector. Presently, synthetic imported films are being used to control the respiration in Modified atmosphere packing MAP. Traditionally fruits and vegetables are coated with wax and shellac containing pesticides. The encapsulation of active ingredients like ethylene absorbent, oxygen scavenger and antimicrobial are done in synthetic polymers / commodity plastics like Low density polyethylene LDPE and high density polyethylene HDPE. These synthetic polymers and pesticides are not eco-friendly. There exists a necessity to replace synthetic polymers and pesticides. Agricultural products are biopolymers having a high economic value and widespread market due to its demand in food, cosmetics and pharmaceutical industries. Also, opportunities for adding value to agricultural biopolymers which are abundantly available in nature proteins of plant/animal or as by-products of the food processing industry and concerns over the environmental impact of synthetic film materials are most critical factors behind this interest. Several applications of biopolymer films and coatings have already been realized, mainly in the area of packaging, while a great number of additional applications are envisioned.

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