

Pharmaceutical Process and Design of Novel Drugs

Abstract

Pharmaceutical Bioprocessing is a peer-reviewed journal addressing all issues relating to bioprocessing in the development and manufacture of healthcare products. International Journal of Bioprocessing and Biotechniques aim is to make on-going research work and study available for all readers, as a platform and source for the scientists, research scholars, students and other healthcare practitioners in the fields of bioengineering, biomedical engineering, bio manufacturing, molecular engineering, food processing.

A bioreactor alludes to any produced gadget or framework that bolsters an organically dynamic environment. In one case, a bioreactor is a vessel where a compound cycle is completed which includes creatures or biochemically dynamic substances got from such living beings. This cycle can either be high-impact or anaerobic. These bioreactors are ordinarily round and hollow, going in size from litres to cubic meters, and are regularly made of pure steel. It might likewise allude to a gadget or framework intended to develop cells or tissues with regards to cell culture. These gadgets are being produced for use in tissue designing or biochemical/bioprocess engineering.

Tablet Formulation

In tablet formulations, currently, pectin hydrogels are widely used as binding agents that act as a controlled releasing agent, which are mostly used in colon cancer treatments. Hydrolysed pectin beads are formulated by adopting the inotropic gelation method and are used as a sustained-release drug delivery system. The modulation of low-methoxy pectin by esterification or implementation of calcium pectinase gel beads in formulations also supports the administration of the drug. A report also suggested the effectiveness and controlled release of oral formulations with compacting the pectin substances which were derived from orange and mango peels. These are having an excellent impact with functional polymers and have outstanding binding properties during the formulation of various tablets

Oil Extraction

Essential oils from medicinal plants nowadays are widely adopted in both developed and developing countries due to their valuable medicinal properties against the treatment of different diseases including microbial infectious ailments, depression, anxiety, cancer, and wound healing with no or less side effects. To avoid this, most of the oil processing or pharmaceutical or cosmetic industry uses pectinase enzymes during the extraction process to destroy the emulsifying properties of pectin and promote the liquefaction of cell wall components, ultimately yielding a better volume of products.

Our Pharmaceutical, Bioprocessing and Biomedical Technologies researchers are particularly focused on developing, enhancing and understanding:

- micro-plasma-made nanoparticles and Nano coatings for bio Nano medical applications (antibacterial, bio marking)

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- molecular design of engineered proteins as drug or vaccine candidates
- tissue engineering and regenerative medicines for degenerated organs or cells, especially in cartilage
- drug and gene delivery into cancer cells

Recent years have brought a sea of change in pharmaceutical manufacturing. Regulatory support, combined with recognized scientific and financial benefits are major factors in the widespread adoption of QbD and PAT. The philosophical shift to QbD has encouraged new risk-based approaches in real-time release testing, continuous manufacturing,

and statistical process control. Real-time, in-process analytics have an important role in ensuring quality product and enabling in-process corrections. Focused-beam reflectance, infrared, near-infrared, and Raman spectroscopies are attractive as in-process analytics because they rapidly and non-destructively provide chemical and physical properties information. The sharp Raman spectral features and compatibility with aqueous environments are attractive features for in process measurements. For many years, these features have been harnessed to understand pharmaceutical small molecule crystallization and processing.