Animal Tissue Culturing Services Section Front Page

?Animal cells extracted from their tissue or organs are cultured in aseptic laboratory with environmental conditions same as in vivo and this technique is called as animal cell culture. Animal cells can grow as anchorage dependant or suspension culture. Cell culture techniques are used in cell and molecular biology research and studies. Some of the important areas where cell culture plays an important role are toxicity testing, cancer research, virology, gene therapy, drug discovery and many more. Applications: The animal cell cultures are used for a diverse range of research and development: - Animal cell culture is used to study the effects of new drugs, cosmetics and chemicals on survival and growth of a number of types of cells.Especially liver and kidney cells. Cultured animal cells are also used to determine the maximum permissible dosage of new drug. -Cultured animal cells are used in the production of viruses and these viruses are used to produce vaccines. For example vaccines for deadly diseases like polio, rabies, chicken pox, measles and hepatitis B are produced using animal cell culture. -One of the applications of animal cell culture is the production of hybrid cells by the fusion of different cell types. These hybrid cells are used for a the following purposes: (i) study of the control of gene expression and differentiation, (ii) study of the problem of ‘ malignancy’, (iii) viral application, (iv) gene mapping, (v) production of hybridomas for antibody production. -Cultured animal cells can be genetically altered and can be used in gene therapy technique. First cells are removed from the patient lacking a functional gene or missing a functional gene. These genes are replaced by functional genes and altered cells are culture and grown in laboratory condition. Then these altered cells are introduced into the patient. Another method is by using viral vector, functional gene is inserted into the genome of viral vector and then they are allowed to infect the patient, in the hope that the missing gene will be expressed with the help of the viral vector. Challenges: When a new clinical technology is developed, its safety and efficacy should be examined using animals prior to human trials. This principle is also applied to tissue engineering. Tissue engineering research uses animals not only in primary experiments, but also in secondary testing before clinical application. The final preclinical animal models in which the new technology is tested should mimic the clinical situation as close as possible. Cell–scaffold constructs are often implanted in nude mice to avoid immunorejection. Because nude mouse is too small to evaluate an engineered tissue, a large animal should be used, but the cells in the cell–scaffold construct should be harvested from the same animal. It should be kept in mind that animal models play an essential role in tissue engineering. Future Prespective: Animal tissue culture is becoming an important tool for research and novel technology development. This has been a option to proceed without animal usages high throughput in the field of research and development. Although the technique is in use for basic research but lot of biological and pharmaceutical developments are happening in this field.Researchers are focusing on cells isolated fromtissues of patientsfor biomarker discovery, which has helped researchers to understand disease mechanism, expression of proteins and other signaling pathways contributing towards pathogenesis.Although cell culture is being utilized for preclinical discovery but there was hardly revolutionize in regulatory toxicity

from decades. Toxicity studies are always performed in animal system which requires lot of efforts, money in spite of having low throughput. Recently different groups have developed primary cell models forhepatotoxicity andorgan toxicities, which can boost the pre-clinical development of NCEs with low cost and better throughput. Recently, the boom came up in animal tissue culture field with getting role in translational research. There is always a requirement to connect translational research with animal efficacy models and human system. In translation research, animal's cell models have been developed. Some companies are evening commercializing these cell models which are better predictive and more translatable. In clinic, tissue engineering is emerging as a new field which will help patients with untreatable problems. This technique uses combination of cells for improving or replacing biological function.Initially, lot of animal requirements were there for generating biopharmaceutical products but tissue culture is taking that place which is now used for generation of biopharmaceutical products with low cost and better productivity. Cell culture is now emerging as a growing field which is now helping researchers to take field of discovery to new horizon.
[(http://rsif.royalsocietypublishing.org/content/3/10/5890]. Market Demand: Cosmetic industry is dependent on animal tissue culture. Epidermal cell models are used for developing new cosmetics.Animal cell culture is a widely used technology for producing recombinant proteins. The ability to make post-translational modifications and secrete the active forms of the protein into the culture medium represents major advantages over other processes. The growing market demand for pharmaceuticals has created a need for increased production capacity; however, achieving productivity gains in both the upstream stage and downstream processes can subject cells to aggressive environments such as those involving hydrodynamic stresses. Although numerous studies have explored the consequences of cell damage due to hydrodynamic stress, there has been a lack of understanding of the mechanism of such damage at a cellular level. Cell damage can also influence biomedical applications. Cells manipulated in instruments such as diagnosis and analysis devices can experience hydrodynamic forces.
[(http://symbiosis-koha.informindia.co.in/cgi-bin/koha/opac-detail.pl?biblionumber=378346&query_desc=su%3A%22%20Cell%20biology%22)]