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**PHARMACEUTICAL BIOTECHNOLOGY
(PBIO)**

POSTER PRESENTATIONS

**POSTER PRESENTATION I.
(P BIO)**

Comparative Study On The Stability And Release Of A Model Protein Encapsulated Within Biodegradable PLLA And Chitosan Microparticles

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Frequently used synthetic biodegradable polymer poly-L-lactic acid (PLLA) and natural biodegradable polymer chitosan have been applied for entrapping protein drugs by solvent evaporation method. In this study, encapsulation efficiency, stability and release of a model protein (BSA) encapsulated within synthetic and natural biodegradable polymers were compared. Various analytical techniques such as UV spectrophotometry, bicinchoninic acid (BCA) assay, polyacrylamide gel electrophoresis (SDS-PAGE) were used for protein analysis of BSA microspheres. Using scanning electron microscopy (SEM) and optic microscopy, the surface characteristics of the particles and the particle size distribution were examined. The highest drug encapsulation efficiency was seen in double emulsion method of PLLA microspheres.

BSA release profiles were obtained by performing the in vitro release in phosphate buffer (pH: 7.4). At pre-determined intervals the aqueous media was removed with a syringe after centrifugation and the supernatant was analysed by different methods.

In the result of this study, effects of different polymers on formulation, stability and release characteristics of model protein BSA was compared and discussed.

POSTER PRESENTATION II. (PBIO)

Effect Of Amino acids On The Bacterial Transformation Of Plasmid DNA

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Transformation is one of the cornerstones of molecular genetics, because it is often the best way to reintroduce DNA into cells. Preparing "competent" bacteria by targeting with calcium chloride is the most commonly used method for transformation, which makes bacteria cell wall permeable to DNA transfer. Another way by which DNA can be introduced into bacteria cells is electroporation. The electrical shock seems to open the cells, and DNA move into cells. The method requires special expensive equipment and have poor reproducibility. Transfection of foreign genetic materials into cells by lipids has become a common technique for mammalian cell systems, but transformation efficiency of these carriers for bacterial cells haven't been investigated fully yet.

In our study, transformation efficiency of various carrier formulations were examined. The objective of the investigation is to find out a sample and convenient way of transformation. Here, three types of material were selected as being, amino acids (alanine, valine, leucine), cationic lipids (DOTAP:DOPE, 1:1 w/w) and a nonionic surfactant (Tween 80). Various compositions of these above mentioned materials were examined for their transformation efficiencies.

Results of the study demonstrated that the usage of amino acids especially with longer carbon chain can enhance the transformation efficiency of plasmid DNA.

**POSTER PRESENTATION III.
(P BIO)**

Horseradish Mediated Removal Of Phenol From Water

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Plant materials were found useful in the decontamination of water polluted with phenolic compounds. The detoxification effect is due to peroxidases contained in the plant tissue. The enzymes mediated oxidative coupling of the pollutants, followed by precipitation of the formed polymers from the aqueous phase. A synthetic waste water buffered at pH= 7 containing 1 mM phenol was treated in this research using minced horseradish and horseradish juice. The cut horseradish or horseradish juice were added to phenol solution in buffer as enzyme source. The reaction was initiated with the addition of hydrogen peroxide. After three hours stirring the phenol content of the mixture was determined. More than 90% of phenol was removed in this way.

POSTER PRESENTATION IV. (P BIO)

A New Approach To Diagnose Diseases: DNA Fingerprint

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The chemical structure of everyone's DNA is the same. The only difference between people is the order of the base pairs. There are so many millions of base pairs in each person's DNA that every person has a different sequence. Using these sequences, every person could be identified solely by the sequence of their base pairs. However, because there are so many millions of base pairs, the task would be very time-consuming. Instead, scientists are able to use a shorter method, because of repeating patterns in DNA. These patterns do not, however, give an individual "fingerprint," but they are able to determine whether two DNA samples are from the same person, related people, or non-related people. Scientists use a small number of sequences of DNA that are known to vary among individuals a great deal, and analyze those to get a certain probability of a match.

DNA fingerprint has been widely used in forensic medicine to identify the criminals. Because a person inherits his or her VNTRs (Variable Number Tandem Repeats) from his or her parents via genes, it is suggested that DNA fingerprint may be used as a method of estimating genetic hereditary diseases. The matching sequences or abnormalities in the sequence are determined and compared to identify the disease. This may also be useful for genetic drug development.

DNA fingerprint can be done by the following methods:

- a. Southern blot,
- b. Making a Radioactive Probe
- c. Creating a Hybridization Reaction;
- d. VNTRs

Like nearly everything else in the scientific world, nothing about DNA fingerprinting is 100% assured. The term DNA fingerprint implies that, like a fingerprint, the VNTR pattern for a given person is utterly and completely unique to that person. Keeping this in mind, people with genetic diseases may be classified based on their DNA fingerprints and this data bank may serve as an expert system to identify such diseases. Of course, the level of probability rises a question in accuracy. Errors in the hybridization and probing process must also be taken into account for this probability. In this study, the possible application of DNA fingerprint in diagnosis of genetic diseases will be emphasized with examples from DNA databanks. Advantages and disadvantages of the technique will be discussed.