Single Cell Suspension and the Production of Factor VIII and Dilution Viability in Transfected Chinese Hamster Ovarian Cells

Moore, Jessica

Hemophilia A is a recessive X-Linked disorder that effects one in every five thousand males. Hemophilia is characterized by a deficiency in Factor VIII (FVIII) in the bloodstream. Without FVIII, blood coagulation can not occur, and patients suffer from a variety of symptoms as a result. In order to treat hemophilia, patients undergo extensive protein replacement therapy. This experiment works with producing FVIII from transfected cells in suspension within the medium, rather than plated form, and tests the viability of FVIII produced at different dilution levels. Dilution levels are important, as by diluting the FVIII for treatment, risks such as treatment tolerance and antigen production decrease exponentially. In order to test, Chinese Hamster Ovarian cells in suspension (CHO-S) were transfected with the BHK-ReNeo-Li-4-196 gene in order to promote FVIII production. Cells were grown in the medium for 12 days, and NOVA testing as well as cell pathology were done daily. A clotting assay was also performed daily in order to determine FVIII activity and dilution viability of samples taken. The results after 12 days showed that the cells in suspension, while having a tendency to clump, did produce FVIII that was still viable at a dilution level of one fourth. This opens the door to new potential production methods of FVIII that are cheaper and healthier for patients.

Awards Won:

Fourth Award of $500