CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY

Name(s)

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Project Number

S0416

Project Title

The Study of A3174 G and G3877A Double Mutation in the 3' UTR of the SRD5A2 Gene

Abstract

Objectives/Goals

The A3174G and G3877A are double mutation, which is in the SRD5A2 gene of the 3#untranslated region (UTR). The double mutant has been found to be common in males. This has become an interest in whether the double mutation will become a significant factor for developing prostate cancer by determining if the enzyme activity of the 5alpha-reductase does increase. To determine the enzymatic activity of the 5aplha-reductase my overall goal is to reconstruct my SNP through site directed mutagensis. Then the DNA will be transfected into African green monkey kidney cells to amplify the copy of DNA
and Vector. Later a Thin Layer Chromatography protocol is used to determine the enzymatic activity of the double mutation.

Methods/Materials

To determine the enzymatic ativity of the SRD5A2 gene with the A3174G and G3877A double mutation a Site Directed Mutagensis protocol is used to reconstruct the SNP. The reason why we need to reconstruct the plasmid is because the A3174G comes as a mutant and the G3877A comes as a Wild Type so I will need to reconstruct the G3877A to a mutant. Therefore I will have a double mutant. Second I transform the SNP to amplify the copy of the plasmid with the gene. Third a Miniprep is performed to purify the plasmid DNA. Fourth a digestion and electrophoresis is performed to make sure I have a correct fragment size DNA. Fifth a sequence is used to make sure I actually have the correct sequence. Then a Maxi prep is used to obtain an larger amount of purify plasmid DNA to be used for transfection. After Maxi prep a sequence, Digestion and Electrophoresis is performed once again. Next a B- glactosidase assay is used to test the efficiency of the transfection. Finally my mentor will perform a Thin Layer Chromatography(TLC) because in this protocol the samples will have to be radioactive and so as a student I am not allow to work with radioactive materials. The reason why TLC is important for this study is because TLC allows us to analyze the enzymatic activity of the 5 alpha #reductase.

Results

The double mutation did not show a significant increase of the 5 alpha reductase activity.

Conclusions/Discussion

The double mutation may not be a possible factor in males developing prostate cancer.

Summary Statement

The A3174G and G3877A double have not show a significant increase of the 5 alpha reductase activity based on my data

Help Received

Dr. Juergen Reichardt provided guidance and the chance to work under the USC at the Institute for Genetic Medicine (IGM).: Frank Luh provided tremendous guidance help performing the TLC experiments.