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Project Title

Cheaper Cancer Detection: An Immunoassay Kit

Abstract

Objectives/Goals

To find a cheap and effective method to detect multiple types of cancer with the use of the alpha fetoprotein

Methods/Materials

I created a test strip with rayon polyester blends and lined it with monoclonal antibodies that will bind with the alpha fetoprotein and release a dye that will produce a result as to whether or not the patient has cancer.

Results

The test I developed can identify cancer with a 78.729% accuracy rate.

Conclusions/Discussion

The overall purpose of the lab was to find a method to identify that was quick and easy, but also cheap and cost effective so that it can be used by everyone anywhere. The results found from this investigation showed that if the immunoassay kit was placed in an opaque black box for 3 minutes, there was a 78.6% that the test would correctly identify liver ovarian or testicular cancer. The positive results that were found in this lab did indeed support the hypothesis, because the kit that was developed was indeed able have the antibodies present with in the kit bind with the alpha fetoproteins and release a dye. The biggest challenge in this lab, came in the beginning of the physical testing when the phone app was unable to identify the colors produced by the instant immunoassay kit. This issue was overcome, with the use of an opaque black box that protected the kit from any outside light for the wicking period, which allowed the dye strips to properly develop. Unfortunately, like any other lab investigation this lab did have a handful of sources of error. Some of the sources of error that came with this project was the fact that only one mouse was used in the production of the monoclonal antibodies, which increases the chances for the products results to have been skewed due to the genomic flaws that the one mouse might have had. Another source of error in this lab investigation is the fact that all of the testing was done under laboratory lighting with direct-indirect ambient lighting that was parallel to the bench top, something that most people will not find in an average home. And lastly, the last source of error that came with this investigation is that fact the kit was only tested with 3 different sample of diseased blood (Liver, testicular, and ovarian cancer). This source of error makes it difficult to know whether or not the immunoassay kit will identify liver, testicular, and ovarian cancer in all situations.

Summary Statement

I created a test trip with monoclonal antibodies that is able to test whether a patient has one of 3 types of cancer (Liver, ovarian or testicular

Help Received

A professor from UC Davis allowed me to use his lab in order to build my test strip.