Development of a Urinalysis Immunoassay for Cortisol Detection

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One of the most common health problems across the globe is the imbalance of hormones in the human body. However, although many suffer from such imbalances, most often, the affected people cannot tell that they have this ailment. This is because the symptoms of a hormone imbalance are often inward symptoms that do not become evident until extreme circumstances arise. Cortisol is the hormone in the human body that regulates stress levels. When cortisol becomes imbalanced, it can cause changes in a person's blood pressure, muscle strength, and energy levels. The purpose of this project was to create a test strip that can easily measure a person's general cortisol levels. This was done by finding a chemical with an observable reaction that changes depending on cortisol level. First, the cortisol was tested for its pH, boiling point, and other chemical properties. Then these properties were used to create a list of chemicals that could possibly react with the cortisol. The chemicals chosen were added to a cortisol dilution and observed to see if a chemical reaction occurred. After, each was applied into a test strip that could measure if the hormone was present. This study resulted in the creation of a test that successfully measures the general level of cortisol in a human's urine or saliva in an efficient and inexpensive manner.

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